ENHANCING YOUNG PEOPLES' DIGITAL COMPETENCES

DIGITAL YOUTH WORK STRATEGIC NATIONAL AGENCY CO-OPERATION

An evaluation of a partnership programme

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DYW DIGITAL YOUTH WORK STRATEGIC NATIONAL AGENCY CO-OPERATION

Erasmus+ Enriching lives, opening minds.

Introduction

Background

This report has been developed as part of the Strategic National Agency Cooperation (SNAC) on Digital Youth Work (DYW), which improves and develops digital youth work across Europe. The importance of digital competencies has been magnified in current times. Life is fundamentally digital for many young people, while some are on the other side of the digital divide. However, digital youth work has a lot to offer for all. Digitality is a convenient tool, an appealing activity and essential content in youth work. Digital Youth Work is a long-term project of the National Agencies of Erasmus+ Youth and the European Solidarity Corps. The project is a part of the continuing development of digital youth work in Europe, and it builds on the Council Conclusions on Digital Youth Work (2019). The project website and European Reports on the Strategic National Agency Cooperation are available here:

https://www.oph.fi/en/education-development-and-internationalisation/long-term-cooperation-projects/digital-youth-work

The project is divided into 5 Work Packages (WP), with the work carried out between 2021 – 2022:

1. National strategies for digital youth work
2. Digital competences and digital capacity in youth work
3. Enhancing young peoples' digital competences
4. New practices for online youth work
5. Quality requirements for virtual and blended mobilities

The partners in this strategic cooperation are the national agencies of Erasmus+ Youth and the European Solidarity Corps in Belgium Flanders, Estonia, Finland, Germany, Ireland (coordinators) and Cyprus, France, Hungary, Iceland, Latvia, Lithuania, Malta, Netherlands, Portugal, Romania, Slovenia, and Turkey as well as the National Youth Council of Ireland, SALTO Inclusion & Diversity, SALTO South East Europe, SALTO Training and Co-operation and Verke the Centre of Expertise for Digital Youth Work in Finland.

This report is the outcome of research undertaken as part of Work Package 3 (WP3), carried out in Ireland, Iceland and Finland. Within this Work Package (WP), the impact on young people engaging in digital youth work was examined and particular focus was placed on exploring the potential of science, technology, art, engineering and mathematics (STEAM) in youth work to enhance creativity and digital competences.

Digital Youth Work Council Conclusions invite the member states to "consider all barriers, including all forms of discrimination and gender stereotyping, that could negatively affect young people's opportunities and motivation to acquire digital competence throughout their education, training and professional pathways, and to take up science, technology, art, engineering and mathematics (STEAM) studies and careers" as well as to "strengthen the role of youth work in supporting young people's creative use of technology and give them the skills to be both critical consumers and active creators in technological terms."

The importance of digital competences has been magnified in current times, including the concepts of digital literacy and the role of the youth sector in enhancing young people's participation in the digital society. Digital poverty and the digital divide have been obstacles that youth organisations have faced in working with young people during the pandemic. Hence, this Work Package aimed to examine how STEAM/ creative digital youth work can support the most excluded young people to enhance their personal, social, and critical digital skills.

In Ireland, this Work Package was led by Léargas in partnership with the National Youth Council of Ireland with the aim of promoting STEAM (Science, Technology, Engineering, the Arts and Mathematics) and Digital Youth Work, and evaluating its impact on participant youth and youth workers. In Iceland, the work was led by Landskrifstofa Erasmus+ The Icelandic Erasmus+ National Agency, and in Finland, by Opetushallitus, Utbildningsstyrelsen, The Finnish National Agency for Education. In each location, independent researchers were engaged to carry out the research into STEAM and Digital Youth Work programmes, and to report on the findings. This report was compiled, based on the three national-level reports, by the Irish research team.

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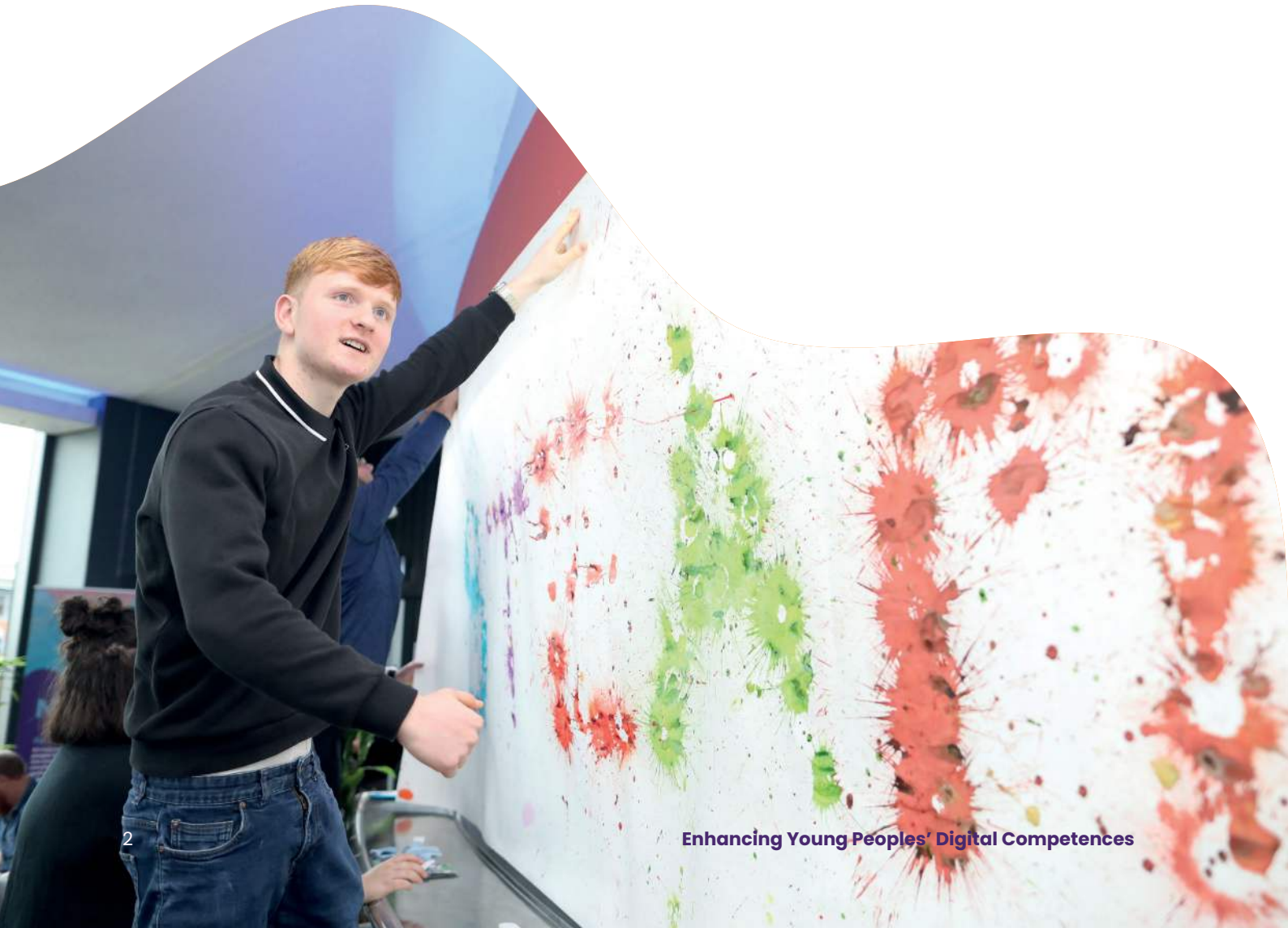


Methodology

The involved teams from Ireland, Iceland and Finland connected to share the background of the contexts within which this work would be carried out, and to determine the research questions, which emerged as the following, one which explored youth outcomes, the other focused on the youth workers:

1. How does participating in STEAM and Digital Youth Work programmes influence youth participants':
   - **a)** learning and competence development
   - **b)** identity formation
   - **c)** future aspirations?
2. In what ways does facilitating STEAM and Digital Youth Work programmes influence youth workers':
   - **a)** personal and professional learning?
   - **b)** perceptions of how the programme has impacted the youth they work with?
   - **c)** ability to achieve youth work outcomes and social impact (intended/ aspirational)?

It was determined relatively early in the process that there was a lack of shared understanding of the term "STEAM", with it being a much more common acronym for the involved organisations in Ireland compared to Iceland and Finland, despite the fact that similar activities were undertaken in all locations.

Data gathered for this report was primarily qualitative, collected through online and in-person semi-structured interviews and focus groups, surveys, and the analysis of publicly available digital artefacts. Researcher observational field notes complement this data, which allow the researchers to identify moments of learning, interactions between youth with peers and with youth workers, and the roles played by the youth workers in supporting the development of STEAM and digital competences.

The relative involvement in WP3 varied across the three countries. Ireland, as coordinating partner of this WP, had greater resources available to engage with larger numbers of youth workers and young people, while in Iceland and Finland, the researchers were limited to interviews with a smaller number of youth workers. A shared framework was developed to guide the semi-structured interviews with youth workers across the three locations, and additionally in Ireland, frameworks were developed for interviews with young people aged under 12 years, and those over 12 years.

Ireland:

The following types of organisations and services participated in the research in Ireland:

- Two were repeat-engagement STEM or STEAM clubs/programmes within a wider youth work organisation, both serving primary-school aged children.
- Three organisations embedded STEAM into the timetables for young people who had left formal education, but who were working towards formal educational qualifications with youth work organisations

- Three were youth work services or organisations which offered a range of services to young people, and offered short-term STEAM projects to specific groups of young people who participated regularly in their programmes. One of these was a special interest group for LGBTQ+ youth, one offered a STEAM camp to all young people who attended the centre, and one was a youth club for primary school aged children.
- One partner was an arts organisation with an existing partnership programme with local schools; this organisation created a specific STEAM strand in their programme.
- Two partners were youth organisations with regular meetings and outdoor collaborative activities for members, but with little or no prior STEAM experience
- One organisation was a youth club under the auspices of an association for people with disabilities.

All of these organisations received support from the National Youth Council of Ireland to undertake a STEAM project, with the agreement that they would also participate in this research. Overall the programmes covered a wide geographical spread within the Republic of Ireland, and the organisations involved served young people between the ages of 10 and 30, from a range of socio-economic backgrounds, and facing varying levels of disadvantage and social exclusion.

Twenty-four young people from nine Youth Work organisations were interviewed in total. Feedback from youth workers during an initial meeting highlighted the fact that engaging the young people online would be challenging. In the end, an online group interview with four older teenagers was convened in one location, but all other interviews with youth participants were conducted in person, either individually or with small groups. Eight of the interviewees were primary school-aged (12 years or under), while sixteen were aged 13 years or older. Youth workers from eleven Youth Work organisations were interviewed either in person or online, and in one case, a collaborating artist also joined the interview. Three researchers conducted a total of sixteen interviews, lasting between 30 - 47 minutes for youth workers and 27 - 60 minutes for youth participants, depending on the group profile.

Iceland:

In Iceland, three different programmes undertaking various types of digital youth work were involved in the research for this study. One is a music programme, hosting seminars and band camps where young people can learn various forms of music-making. One is a coding and computer programming programme, hosting many different seminars and courses related to programming, computer skills and STEAM activities. The third is an e-sports organisation, hosting seminars, tournaments and 'hang outs' related to various e-sports and games for young people. Two youth workers were interviewed from one of the programmes and one from each of the others.

Finland:

Research in Finland focused exclusively on 'Maker' activities. Maker education is considered to be interest-driven, student-centred, experiential learning that foregrounds the use of rich tools and media to construct artifacts of learning, either physical or digital. Importance is placed on the design and iteration process, and peer-learning and cooperation in a communal space in which ideas are hacked and remixed to develop shareable objects. These approaches have gained popularity in recent years and are often termed the 'maker movement'.[1]

In this study, four parties using Maker activities in different ways in Finland were examined.

- A municipal youth work development project focusing on digital youth work. The aim of their activities is to give young people something to do, deliver technology education, and balance gender differences in the world of technology education. The interviewee had developed an interest in Maker activities through their studies, and then proceeded to developing their skills independently.
- An open Makerspace in a library. The library's goal is to provide young people with an approachable space in which to learn and make new things with their hands. The service is intended for makers of all ages and levels. In the library which the interviewee represents, guidance was always available when the employee was present, and activities targeted

[1] Blikstein, P. (2018). Maker movement in education: History and prospects. **Handbook of technology education**, 419, 437.

at users of different ages were also organised. Activities intended for young people were both organised openly for all young people and targeted at those spending time in the library's youth facility in cooperation with a youth worker. A fee was only charged for materials. The interviewee had a qualification in both visual arts and library services. They found that the qualification in visual arts helped broaden their view of what it is possible to do in a library, how library activities can be seen in a wider perspective than only through textual literacy, and how the idea of lifelong learning could be expanded in the library.

- A private actor in the field of basic education in the arts that organised fee-paying robotics school as a club intended for children and young people. The aim of the activities was to get young people to use technology as part of creative methods. While studying art, the interviewee had developed an enthusiasm for Maker activities with a fellow student, and they had started developing the idea of a robotics school while still students.
- A municipal service that provided one-off Maker activities for schools and young people in their leisure time. At the time of the interview, the Makerspace operated downstairs in youth facilities. The objective of the activities had become to instruct teachers, youth workers, theatre staff and other municipal employees in Maker activities, enabling them to integrate these activities into their work contents. The Makerspace was about to move to the municipal library, where it will be openly available in the future.

Activities common across more than one location included Maker activities such as 3D printing, electronics, and coding, as well as digital music production and gaming. Social media use was mentioned in all three locations.

The qualitative data collected in each location was analysed using thematic analysis (Braun & Clarke, 2006[2]). The three reports were then analysed together to attempt to determine cross-cutting themes. It is important to note however, that the scale of the research varied widely across the locations, and the fact is that these findings are tentative and based on a very small and inconsistent sample. Further research with comparative samples would allow for more robust generalisations. Information on the national reports are available here.

[2] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.

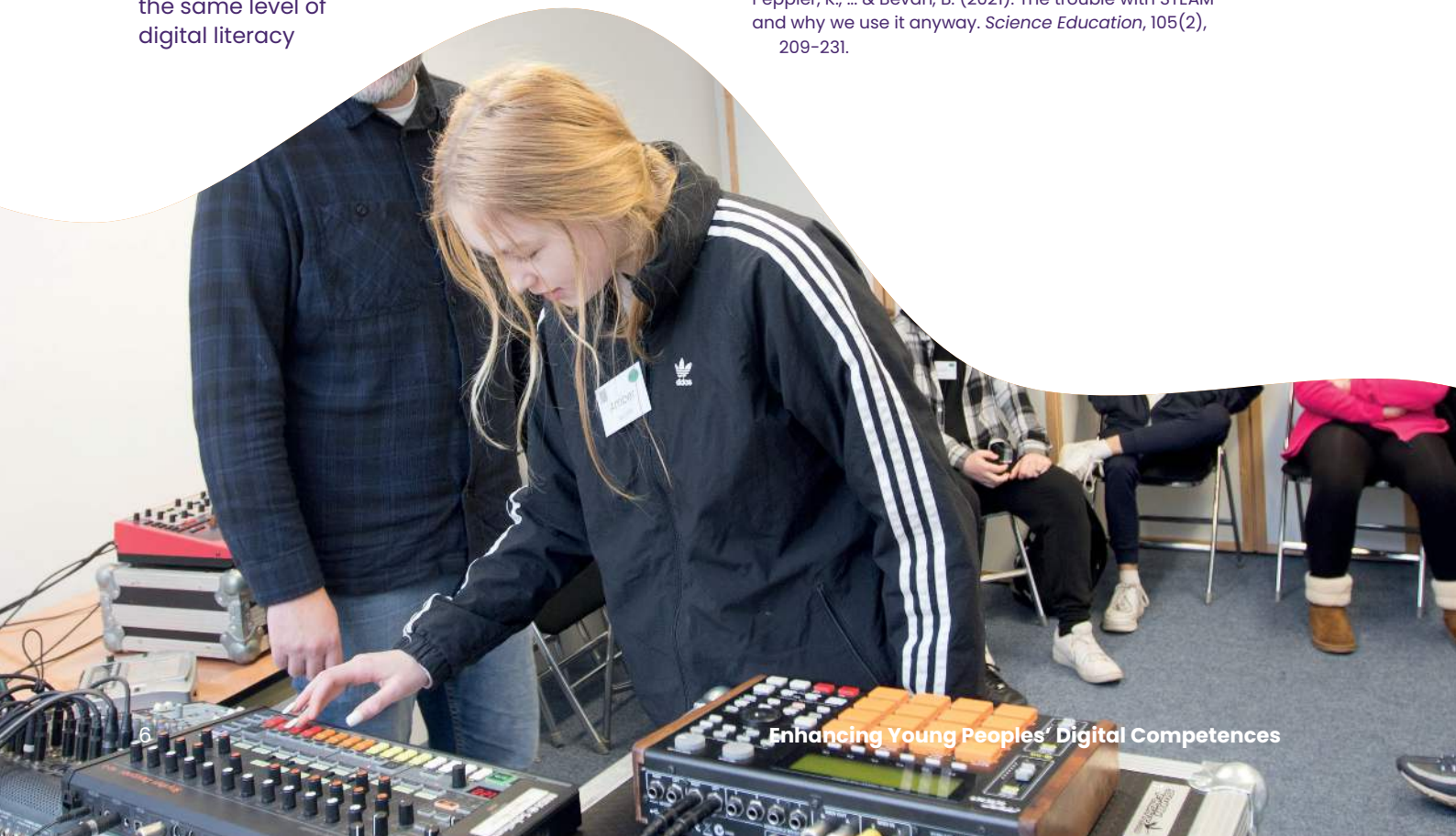
Findings

The Importance of Reaching Shared Definitions

Agreement on shared definitions is crucial in STEAM and creative digital youth work. Digital youth work can have different meanings to various organisations and practitioners, spanning different countries. Similarly, STEAM is a frequently debated term (see Mejias et al., 2021[3]), and the level of integration of the disciplines can vary, as can the relative role of the arts and the STEM disciplines. In STEM or STEAM initiatives, technology may be used in a fundamental or superficial manner, and its use does not necessarily imply advanced critical digital literacy. Despite being tech-savvy, some youth may not possess the same level of digital literacy and awareness as initially assumed by their youth workers, as noted by some interviewees in Ireland. As seen in Iceland and Finland, many organisations that promote the creative use of technology by young people do not consider what they do as "digital youth work".

To consolidate the disparate sectors, and to harness the potential of STEAM and creative digital youth work to enhance young peoples' digital competences, it is vital to have a clear and shared understanding of the terms, concepts and objectives involved in these programmes. Frameworks, exemplars or case studies showcasing the various configurations and types of initiatives may be useful to support organisations to orient themselves with the sector.

[3] Mejias, S., Thompson, N., Sedas, R. M., Rosin, M., Soep, E., Peppler, K., ... & Bevan, B. (2021). The trouble with STEAM and why we use it anyway. *Science Education*, 105(2), 209-231.



Enhancing young peoples' knowledge, skills and competences

SKILLS

- Technical skills; working with new tools or materials
- Social skills & teamwork
- Presenting publicly

COMPETENCES

- Self-confidence
- Creativity & self-expression
- Comunication
- Resilience, persistence, mistake-making

DIGITAL FLUENCY

- Digital capabilities
- Digital & data literacy
- Connection & communication through digital means
- Multidisciplinary – weaving computational thinking alongside art and design.

Across the three locations, STEAM and creative digital youth work were perceived as being effective in enhancing the knowledge, skills and competences of the young people involved. In Iceland, some youth workers mentioned that to them, the self-confidence the participants gained through the digital youth work was more important than the actual technical learning. Presenting work publicly to an audience is a common feature in the STEAM programmes studied; this serves to develop confidence, while having a tangible output to share with others was mentioned as a valuable outcome that allows young people to be proud of themselves and their learning and achievements. In both Ireland and Finland, it is recognised that STEAM and creative digital projects and activities offer young people the chance to learn iteratively from mistakes, and to develop patience, resilience and persistence. In all locations, the opportunities for collaboration, teamwork and peer-learning are considered valuable. The acquisition and development of knowledge, skills and competences in these settings were also interwoven with the development of youth digital fluency. These activities serve to enhance digital capabilities through the use of digital tools. Digital and data literacy are developed, as young people are required to access, organise and utilise digital data, and in some cases, are asked to evaluate and adapt it in a critical and discerning manner. Digital tools are used to communicate and to connect with one another and with audiences. The programmes studied also demonstrate the capacity for technology to be used within multidisciplinary programmes – for example, settings which draw together computational thinking and problem-solving with approaches and practices from art and design.

The research findings suggest that in STEAM and digital youth work settings, technology can serve as a tool for creative expression and experimentation. **While digital literacy and technological competence are important skills for young people to develop, they need not be the primary focus of STEAM activities.** Instead, technology can be integrated with other modes of creative self-expression, developing artistic practices and tackling socio-scientific issues. This approach not only expands young people's digital skills but also fosters their creativity, critical thinking, and problem-solving abilities. However, there is a risk of overemphasising digital literacy in STEAM and digital youth work

programmes, which can create a sense of pressure and anxiety for young people. As one youth worker from Finland noted, "I feel it is forced down our throats as the number one goal in everything. And this is what it should be, but it is a terribly heavy load to take on." Therefore, STEAM and digital youth work programmes should strike a balance between digital literacy and other important learning outcomes, such as social and emotional development, community engagement, and cultural understanding. By integrating technology with other forms of creative expression, STEAM and digital youth work programmes can help young people develop a holistic set of skills and competencies that prepare them for the challenges and opportunities of the future.

STEAM and Digital Youth Work help young people to develop community and a sense of belonging, which drive engagement and learning

Across the three locations, it was clear that the content of the learning took a back seat to the social elements of learning that were happening - young people were using technology creatively in settings that allowed them to feel safe, heard and included. There were multiple mentions of the value of the relationships developed though STEAM and DYW, increased opportunity to collaborate on learning compared to that afforded in formal learning, and in some cases, suggestions that the settings, combined with the digital tools and the content were valuable to tackle loneliness and isolation - e.g. in Finland, gaming was perceived as a "factor that prevents exclusion and promotes equality". In Ireland, youth interviewees frequently alluded to the strong interpersonal bonds developed through their STEAM and DYW projects, with a number reporting that in their youth clubs, they feel like a large family working together. One respondent said "it's like my second family", while another stated "this group, we do that a little bit, we refer to each other as family because this is like a public group where we're all honest with each other". A further interviewee mentioned that "you're gonna get support from each other. Like, we were always so close to each other… we're like a big family". For some who are not involved in more "traditional" hobbies and activities or who might have additional learning needs, the activities offered in creative digital youth work can be welcoming:

> "Young people who maybe don't feel well and like many who have some sort of, like have autism or ADHD or just like have a hard time socially. And they have often just thrived" (Youth Worker, Iceland).

The research findings suggest that STEAM and creative digital youth work settings can foster a sense of belonging and build a community where young people can express themselves, explore their creativity, and challenge the status quo. A case study from a young person in Ireland, highlights the limitations of traditional school-based learning and the value of non-formal learning spaces. This young person, who is transgender and from rural Ireland, believes that there is "a beauty in science" and is creative. However, they feel that school "crushes the spirit" and fails to cater to individual interests and learning styles. This sentiment is echoed by many young people who feel that schools prioritise standardised testing and rote learning over creativity, critical thinking, and exploration. In contrast, STEAM and digital youth work programmes offer a more flexible and inclusive approach to learning, where young people can pursue their interests and create tangible artefacts of learning. By empowering young people to take ownership of their learning and embrace their individuality, these programmes can help to cultivate a generation of confident, creative, and resilient learners.

Research findings from across the programmes studied indicate the **significance of youth ownership and agency**. Youth are more engaged and invested in their learning when they have a say in the direction of their creative digital learning, such as choosing a project topic or creating something relevant to other people

like them, as was the case in Ireland for a group of young people with disabilities, who learned how to design objects and use a 3D printer. A member of this group mentioned the fact that they engaged with the project because it was tailored to suit their needs as learners, and to address the needs of people with disabilities:

> "it was good to see that it was there to suit our needs. So, like, the more things that we see to suit our needs the more we like them, the more we think maybe we could make some ourselves to use in everyday life".

They take pride and gain a sense of achievement in creating something new and tangible, whether it is a digital artwork, a game, or a website. By gaining access to tools and technologies they would not otherwise have at home or school, they are empowered to explore their creativity and develop new skills to create meaningful projects that make a difference in their communities. A common theme among youth in these programmes is their concern for climate and environmental issues - one young person in Ireland noted that they enjoyed the combination of the team experience, and doing something that helped them individually as well as helping the planet:

> "the team experience. Yeah, I got to do something cool like that as a group, and we all got to spend time together learning how to do this thing that was going to help the environment and help us overall and a new skill as well, yeah."

In Finland, care for the environment was intertwined with the maker ethos: the activities

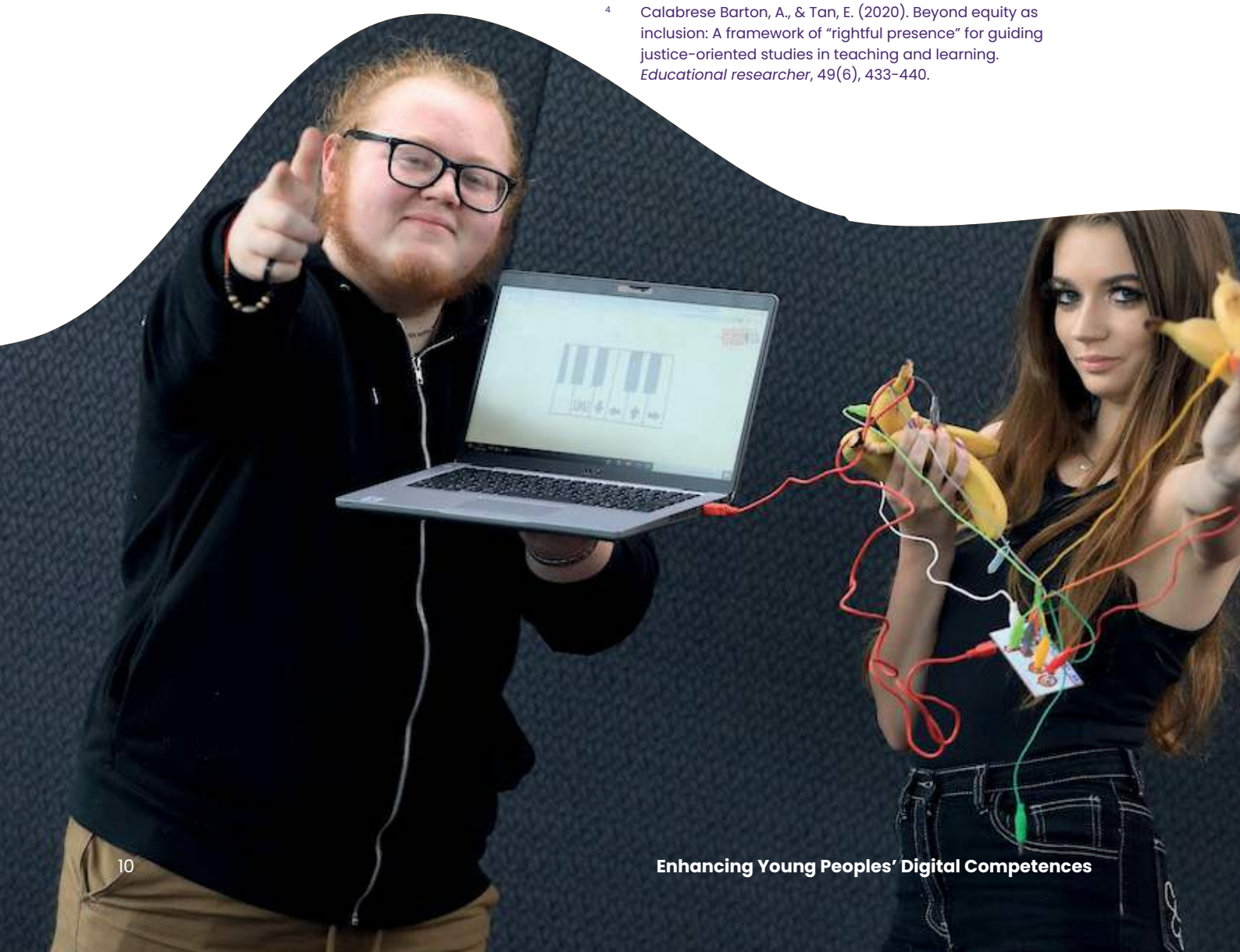
should not produce more material goods for the environment to deal with. Every product made should have a purpose, and nothing is produced just for fun. Making use of and repairing damaged items was an important part of these activities, as was recycling, and careful consideration of the lifecycle of the materials used in the makerspaces.

Ultimately, these programmes can help to cultivate a generation of young people who are empowered, engaged, and equipped with the skills and knowledge to tackle the challenges of the 21st century.

Potential for STEAM / Creative Digital Youth Work

The potential for STEAM / creative digital youth work is vast, as it offers a unique opportunity to integrate critical thinking and address important issues beyond technology. By encouraging young people to question and interrogate their relationships with data, technology, and algorithms, technology-based creative programmes can serve as a starting point to address a range of issues, including climate change, sustainability, racism, bias, democracy, and human rights. Furthermore, STEAM initiatives can support future learning pathways and careers in STEM sectors, as well as arts, creative, and cultural industries. Such programmes can also promote "rightful presence" and shift power relations, offering inclusive and accessible means for self-expression and tackling injustice (Calabrese Barton & Tan, 2020)[4]. Additionally, STEAM initiatives help learners identify with technology in ways that support subsequent community changemaking projects, as seen with young people in Ireland who created a public art exhibition to highlight anti-LGBTQ+ violence and bullying in their area, as a result of their experience in the first STEAM project. Overall, STEAM/creative digital youth work has the potential to inspire young people to use technology as a tool for positive change and create a better future for themselves and their communities.

[4] Calabrese Barton, A., & Tan, E. (2020). Beyond equity as inclusion: A framework of "rightful presence" for guiding justice-oriented studies in teaching and learning. *Educational researcher*, 49(6), 433-440.



Barriers and Challenges for STEAM / Creative Digital Youth Work

While STEAM/creative digital youth work hold create potential for transformative learning and growth, there are also significant barriers and challenges for the sector that need to be addressed. One major challenge is infrastructure; specifically the need for spaces that can accommodate youth-led creative digital learning. Currently, such programmes are often happening in disparate spaces, which can make it difficult for young people to access the resources and support they need. Another challenge is professional learning, as the STEAM sector spans youth work, arts and creative practices, technology, computer science, and STEM education. It can be challenging to provide relevant professional learning opportunities that meet the diverse needs of these different sectors, and there is no one-size-fits-all solution. Finally, financial considerations are also a major barrier to the growth and sustainability of STEAM/creative digital youth work initiatives. It can be challenging to secure funding for programmes or organisations offering creative digital youth work, and without sustainable funding, these programmes may struggle to provide the necessary resources and support for young people. Addressing these barriers and challenges will be critical to unlocking the full potential of STEAM/creative digital youth work and ensuring that all young people have access to the resources and support they need to thrive in the digital age.

In light of the challenges and barriers facing STEAM/creative digital youth work, it is more important than ever to promote and develop these initiatives. As the young person from Ireland who participated in a creative digital music production program said, "Like the best thing ever…like I forget about hard moments about 2020 because of this moment we spend in this project." This quote highlights the power of STEAM/creative digital youth work to not only teach valuable skills but also provide a sense of joy, accomplishment, and community. By investing in and supporting these programmes, we can help young people overcome the challenges they face and empower them to create a better future for themselves and their communities. Let us work together to break down the barriers and ensure that all young people have access to the transformative opportunities offered by STEAM/creative digital youth work.

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