Game Design
For Youth Work

February 2025
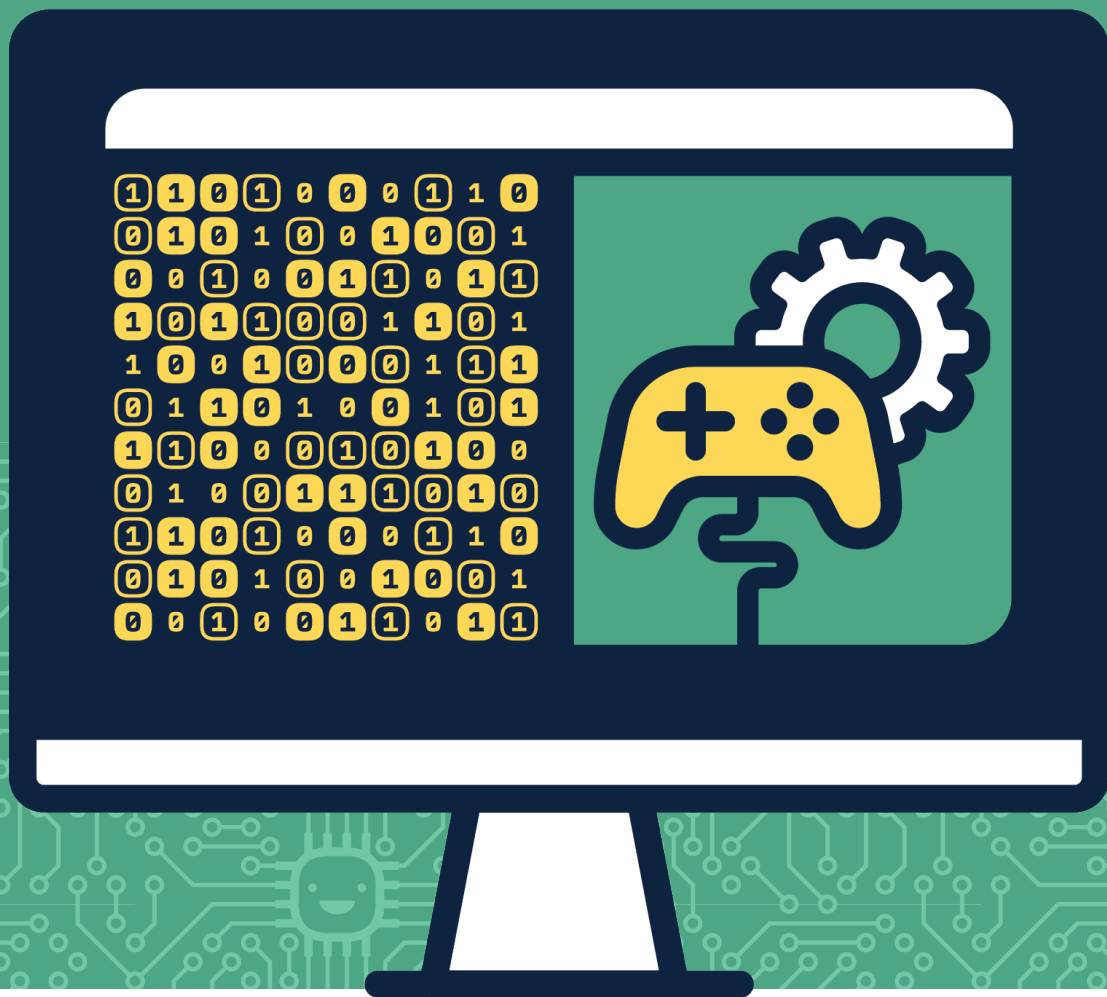
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Contents

Introduction

It was a chilly day in late November when two groups of young people converged on the YouthLink Scotland base in central Edinburgh. The excitement was palpable as they took part in an icebreaker, made the most of the on-tap hot chocolate and competed in a Mario Kart tournament.

The purpose? We were meeting to celebrate a digital game development project and do some end-of-project evaluation work.

Not just that, in the course of the day, the young people from two youth organisations, OYCI and The DataKirk would be sharing their digital games ideas with teams of student developers from Abertay University, who were about to put in some serious developer time to bring their games to life.

Conversations took place that day about **Dodge the Fog** and **Scales of Sorrow**, the two games concepts that the young people had worked on, with a thoughtful exchange of ideas and influences between the youth groups and the students.

We want to share about the journey that these two groups of young people have been on, together with their youth workers, because this project - with digital inclusion at its heart - has been about how to do digital youth work in a way that is relevant for every young person. We've learned a great deal about the resources, knowledge, time and support that's needed to deliver well, so this resource zooms in on the process we've been through, as well as sharing about the benefits for the young people and of course some of the challenges that we've experienced along the way.

We also want to share some of the key activities that are available to use in your youth work setting, helping you to make game development an accessible and inclusive aspect of your digital youth work.

"The project has changed my view about the future because game development will be the next big sector."

"The workshops at Abertay have helped. They are really useful. When I get home, I can download the apps myself and get better at it – and then maybe show other people – here and back at home."

— Young People

THE INCLUSIVE DIGITAL ECONOMY NETWORK+

This project was supported by INCLUDE+, The Inclusive Digital Economy Network, which receives its funding from the Engineering and Physical Sciences Research Council

From 2022 to 2027, this five-year program aims to build a robust knowledge community addressing inequalities in digital society.
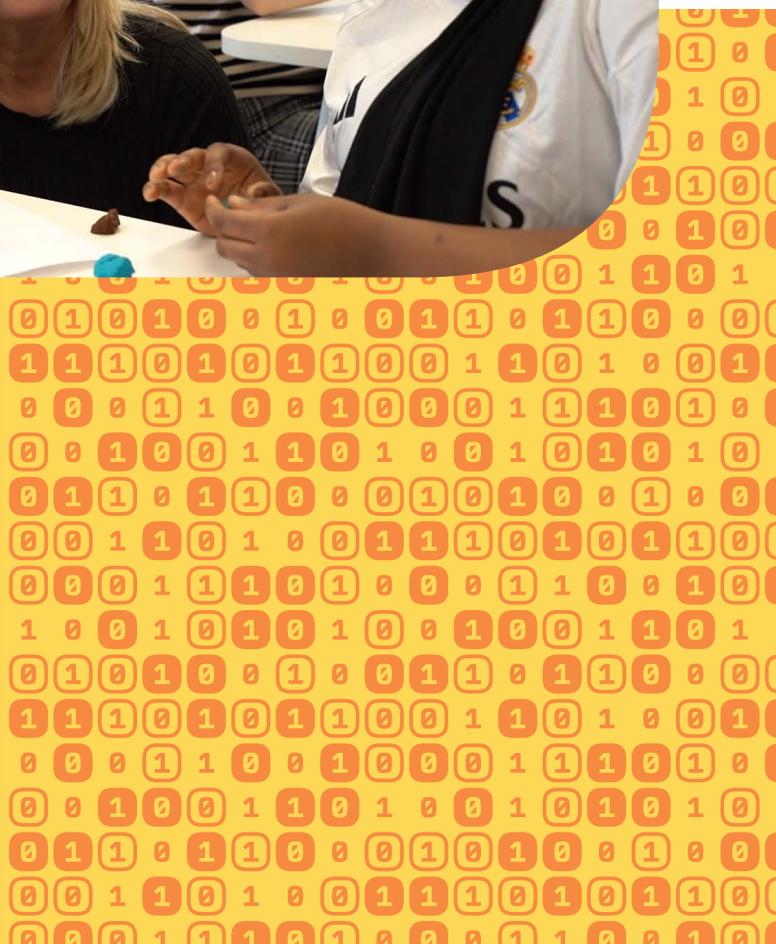
Bridging the Digital Divide

We set out to explore how informal education – specifically digital youth work - can help to bridge the digital divide, enabling young people to respond positively to the growing disparities in our society. Two groups of young people took part in creating digital games.

Our project shows that a youth work setting creates a positive environment where young people can develop their digital literacy and interests in a non-threatening context where they can see and value the relevance to their lives.

At the start we said: "This is the one if you are interested in digital skills including game development - whether you are creative, like coding, are curious about new things or like projects with other people."

Digital Inclusion

Include+, our funders, were looking to support projects, *"That seek to enhance digital equity through collaborative forms of civic action".*

Digital inclusion is defined (by the UN[1]) as *"equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere"*.

Our project was about exploring how young people can develop digital skills that are relevant to them in a fun and equitable environment. We chose to work with groups whose location or role mean they are tackling issues that can lead to exclusion: rural location, socio-economic, ethnicity, neurodiversity and others.

Young people worked in teams, learning from each other, with support from their youth workers and expert input via a series of workshops delivered at Abertay University. The role of the young people themselves in owning and shaping the project is a key element in shaping our approach and essential if digital equity is to be improved.

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[1]   https://www.un.org/techenvoy/sites/www.un.org.techenvoy/files/general/Definition_Digital-Inclusion.pdf

Our ambition

Our aim beyond the project is to see more of this kind of work established across Scotland, following the best practice of digital youth work and contributing to a more digitally inclusive society, where all young people can use digital in a way that enhances their own lives, opens opportunities and improves young people's abilities to withstand the risks inherent in a digital society.

We invite you to read on to find out more about the two youth work organisations, the teams of young people who worked together to create a digital game, the valuable input from Abertay University, our thoughts about the Include+ approach to meaningful digital inclusion, how we evaluated the project and more about working in partnership with higher education.

Timeline

February 2024

- Open call for youth work organisations to join the project.

March

- OYCI and The DataKirk selected for the project.

April

- YouthLink, Abertay University, OYCI and The DataKirk meet to develop a plan.

May

- OYCI and The DataKirk recruit young people to join their groups, with baseline evaluation work and consultation with the young people.

June

- First of five workshops in the digital game development studio at Abertay University.

- **Workshop1: Game Design Workshop**, exploring ideation, conceptualisation, and design techniques for game-making

July

- **Workshop 2: Game Engines Workshop**, exploring programming and visual scripting to develop interaction and game mechanics

- **Workshop 3: Audio Design Workshop** exploring the visual development of assets to be used in a game environment

- OYCI runs a week-long digital gaming holiday programme

- The DataKirk meets mainly online

August

- Both groups have games ideas emerging from the creative process:

- OYCI presents **Scales of Sorrow**

- The DataKirk presents **Dodge the Fog**

- **Workshop 4: Visual Design Workshop** exploring sound and music in games, recording and editing audio and sound effects for games

- Midpoint evaluation interviews with young people and team.

September

- Appointed a "digital technologist in residence" - a pro from the games industry in Scotland who would support the young people and help them develop their ideas.

- Team at Include+ sharing event in Leeds.

- Additional funding secured for developer time to to help realise the young people's game ideas.

October

- **Workshop 5: Games Jam** at Abertay University

November

- Celebration, evaluation work and meeting the student developers

December

- Writing up

January to March 2025

- Resources available for sharing with sector

- Presentation at Digital Youth Work conference

- Student teams from Abertay University developing the games

About us

YouthLink Scotland

The national agency for youth work, the collective voice of the youth work sector in Scotland. YouthLink Scotland led the work and provided the impact evaluation.

OYCI

Universal youth work organisation, based in Tillicoultry, Clackmannanshire. A group of local young people came together to develop a game.

The DataKirk

Edinburgh based social enterprise, empowering underrepresented groups to develop their data literacy. Young people from across Scotland met online and attended the workshops.

Abertay University

University in Dundee with around 4,000 students, it also hosts the world's first degree in computer games. Dr Andrew Reid led on the delivery of youth-led game development workshops with collegial support from Dr Jung In Jung and Miss Kayleigh MacLeod.

Include+ Network

A network funded by UKRI, that connects academic thinking about digital inclusion with third sector, public sector, industry and national policy. Provided the funding, supported the development.

EPSRC

The Engineering and Physical Sciences Research Council provide the funding to the Include+ Network who made this project possible.

Youth Work and Game Design:
What We Learned

We set out to demonstrate the relevance of digital youth work to the digital inclusion agenda and to explore how to do it well. This was an incredibly positive project where young people grew in confidence and teamwork skills as well as developing specific knowledge around game development.
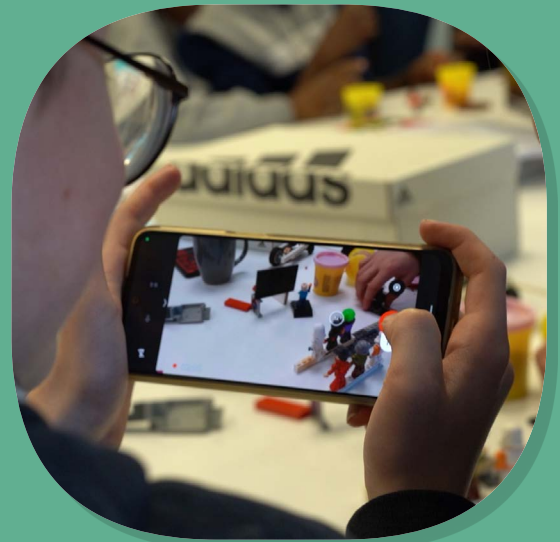
We are convinced of the value of this type of digital youth work project in helping young people to develop their skills. By evaluating the impact of the project, using the National Youth Work Outcomes and Skills Framework, we can see clearly the difference that this project made to the young people who were directly involved.

We are reassured about the strong connections between youth work and digital inclusion. (page 23) Youth work creates a valuable environment for digital skills development because it starts from where young people are at, is voluntary and values partnership working between adults and young people.

We were surprised by how much the young people enjoyed the **broader opportunitie**s that the project provided - travel to other cities, socialising within and between groups and engaging with the adults. In particular, visiting a university several times was important to many, helping them to become confident in the new environment and more able to envisage themselves participating in a higher education setting in future. This is a key aspect of the direct benefit to young people of participating.

We were impressed by the **expert input** from Abertay University. This input drove the project forward, providing a valuable framework for the groups to discover what's involved in game design and be able to develop their own ideas.

We were delighted by the **young people's levels of engagement**. Their teamwork was strong, with young people contributing different skills and interests - artist, coder, designer, audio engineer. Their confidence built as the project developed.

We were challenged by the **young people's expectations**. We had invited them to "create something amazing". While we believe they have succeeded, they would like their end products to look and feel like commercial full-production games. There were different needs, a wide age range, different skill-levels, abilities and interests.

We were pleased with the success of **bringing together a team** of adults with different knowledge and skills. It created a rich, creative environment where the young people could produce unique, imaginative work. The mix of skills, different backgrounds and different inputs was key to this process, with creativity forming the catalyst for everything else.

We recognise that the success of our project was dependent on having **sufficient resources** to envisage, plan, deliver, assess impact and create outputs from the project. Time, resources, expert input, valuable academic knowledge, and bringing different skills together all contributed to the success of this project.

We acknowledge the **huge contribution of the youth workers** involved who put in time, effort and energy to support the young people and help them realise their ambitions.

"I hope that when this project finishes that the game somehow gets enough attention that even the council or the government could see it so they could maybe change some rules."

— About Dodge the Fog, developed by The DataKirk,
   a game that explores vaping and routes for young people to stop or stay away.

The OYCI story

OYCI (Ochil Youths Community Improvement) exists so all young people in Clackmannanshire can flourish. We create space and opportunities for young people to be themselves while they figure out what is important to them, and what they might want to learn and achieve.

We called our project **Codesign** because we wanted to emphasise the role of the young people in leading the development. We invited our currently attending young people to participate and we also extended the invite out to the local community. The young people we work with are facing barriers to participation and inclusion, including place-based health inequality, neurodiversity, social and financial inequalities.

The unique selling point of the project was the idea that the young people could learn to create a video game and this was met with huge enthusiasm.

Visiting the game design studio at Abertay University for the five workshops was definitely a highlight.
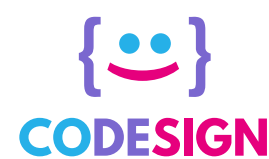
"Abertay has been great because it's a real experience of a uni – and an insight into what it might be like to study game development. Also, the teaching team here have a greater depth of knowledge that they can pass on. It's nice too that it's a day out – the young people see it as a fun thing to do.

"The content in the sessions at Abertay really encourages them to come up with their own ideas.

"At Abertay, they have been encouraged to move around and work with new people – not just in their friend groups."

— Youth Worker

Back at base the young people worked in teams, taking on different roles, to develop their ideas. The staff acted as the client, and it was a team effort to create the final product.
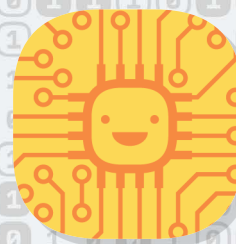
Games Concept: Scales of Sorrow

In a world where earth is destroyed and ruled by dragons, you must work together with your dragons and team to defend your homeland. Can you save humanity?

The game is an RPG open world game and you can switch between third person and first person perspective. In game play there are good and bad dragons, and you can collect eggs, raise them and use them to battle. Defeating dragons spawns food or candy.

The Games Jam at Abertay was the final workshop and young people could work in teams, with plenty of time and freedom to get creative. Some worked on creating design materials where others were busy coding.

The young people achieved an incredible amount, working together and sharing their skills.

Youth workers commented on how young people's knowledge and skills have improved considerably, with the levels of creativity a real surprise. Young people's social development and their awareness of key issues with inclusion at the heart of everything.

Young peoples' perspectives

"This is something we would never have the opportunity to do if it weren't for this."

"It has helped me to learn to respect other people's opinions."

"I'm not getting as frustrated when I get something wrong as we're in it together and the team can help."

Youth worker perspective

"I've really enjoyed it. It's helped me see what a course like this would be like and an insight into game development. I'm thinking of doing an engineering / software development degree so it's all really useful for me. "

"I've got more confident to teach people skills – how I explain things has changed. I've learned to tailor my language for different skill levels and adapt to different groups. What's helped is practice and just watching and listening to more experienced youth workers in different contexts – not just digital."

The DataKirk Story

The DataKirk is all about empowering underrepresented communities in Scotland with digital skills. We are an Edinburgh based social enterprise founded in May 2019 with the aim of closing both the data divide and the attainment gap in Scotland.

Addressing both digital exclusion and socio-economic challenges, this project offered participants the opportunity to explore and create their own digital projects, including games, apps, and other tech-based solutions.

By fostering a collaborative and creative environment, the project provides valuable hands-on experiences that help young people build confidence, enhance their digital literacy, and develop key skills necessary for success in an increasingly digital world."

Recruitment of Young People

The project commenced with an inclusive recruitment process, demonstrating strong interest from young people as we received over 40 expressions of interest.

- The project engaged a diverse group of **young people aged 11 to 18**.
- The gender distrobition of young people was **66% male, 34% female.**

Project Co-creation Phase

The co-creation phase included dynamic sessions designed to identify challenges and generate innovative solutions.

Our activities included:

- **Warm-Up Exercises:** Activities like "Dream Maps" and "Combination Exercises" sparked creativity and built rapport among participants.

- **Identifying Challenges:** Using Innobox Tools and Sitra Megatrends, participants explored societal changes and identified issues such as vaping addiction, cyberbullying, and digital exclusion.

This phase set the foundation for subsequent workshops, ensuring ideas were grounded in participant experiences and interests.

Idea Generation

During our Co-creation exercise, young people outlined the key challenges they identified and their creative ideas for games and applications to address these issues:

Social and Emotional Challenges

- Peer Pressure & Cyberbullying
- Low Self-Esteem
- Being Left Out (Exclusion)

Motivation and Skill Development

- Lack of Interest
- Lack of Creativity
- Self-Discovery

Digital Literacy and Well-being

- Addiction to Vaping & Game Addiction
- Misinformation
- Accessibility

"The difference between learning in a youth group and in school is youth group makes it more fun and interactive for everyone."

— Young person

Game Concept: Dodge the Fog

The Game Concept **Dodge the Fog** is an engaging and educational endless runner game designed to raise awareness among middle and high school students about the negative effects of vaping. Through dynamic gameplay and subtle educational messages, players will learn about the importance of lung health and making healthy lifestyle choices.

Workshops at Abertay

Building on the co-creation phase and the team's subsequent sessions, workshops at Abertay University provided young people with professional tools and techniques to further refine their concepts.

These sessions deepened participants' technical expertise and refined their creative outputs.

"I've learned to share my opinions and listen to others."

"The workshops at Abertay were amazing. I've started using the tools at home to practice."

"I didn't think I'd like game design, but now I'm considering it as a career."

"I feel more confident in speaking up and working with others"

Meaningful Digital Inclusion Workshop at Leeds University

One participant represented the group at the Digital Inclusion Event, run by the Include+ Network in Leeds. Confidently presenting the group's work, he shared:

"This project showed me how much I can achieve when I step out of my comfort zone. Presenting at the workshop was a big moment for me, it proved I've grown in confidence and skills."

Youth worker reflections

"Our project achieved its goal of empowering young people through digital innovation. By building confidence, enhancing digital literacy, and fostering collaboration, the program equipped participants with skills for a digital future. The project has demonstrated significant impact, with notable improvements in confidence, communication, problem-solving, and teamwork. Digital skills development, while progressing, remains an area for further enhancement. Young people expressed high levels of satisfaction and enthusiasm, contributing to a positive and proactive learning environment."

— **Youth Worker**
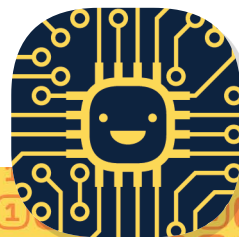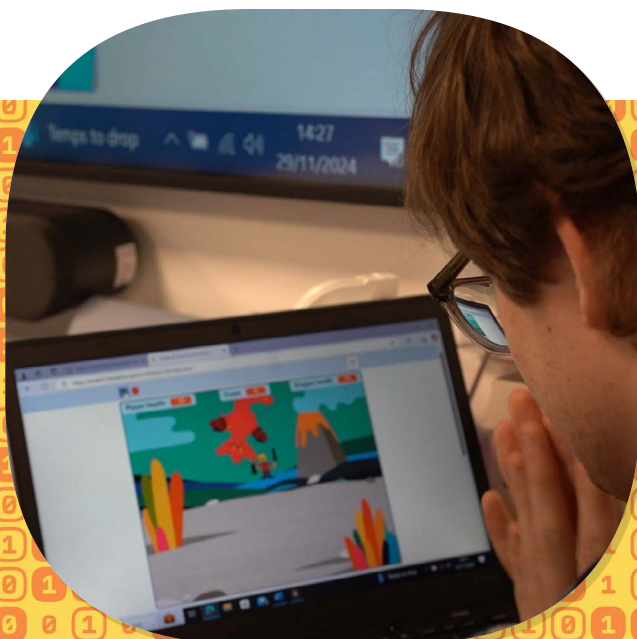
Evaluating Impact

We explored the impact of the digital youth work experience for the young people who took part, noticing the importance of the partnership between youth work and university.

Young people's learning goals at the beginning of the project

Young people arrived on the project with a wide range of skills and strengths. In early conversations with youth workers about the skills they hoped they might improve through the project, young people across both groups highlighted the following:

- **More confidence to work in teams** – whilst they had some experience of working in groups, a number said they struggled in louder groups and in groups of unfamiliar peers

- **Improved communication skills** – in particular sharing their own opinions; feeling confident to share ideas in a group; listening and compromising

- **More confidence to ask for help** when they need it and to keep trying if things don't work out the first time

- **Higher level digital skills** – particularly knowledge of software and creating things from scratch

Impact on Young People

A total of 31 young people participated in the project. Young people were supported to reflect on their learning regularly over the course of the project through a combination of questionnaires, informal discussions with youth workers, interviews with YouthLink Scotland staff and youth worker observations. Looking at this evidence in the round, it is clear that the programme provided a development opportunity that met and exceeded young people's initial expectations.

The Impact:

21 young people took part in the end of programme evaluation. Of these:

18 developed stronger communication skills – particularly in:

- Offering their own opinions and ideas
- Building ideas with others
- Listening
- Asking for help when they need it
- Leading group discussions
- Reaching consensus decisions as a group

18 improved their team working skills, particularly in:

- Learning from one another and sharing knowledge
- Giving feedback to one another

15 improved in confidence – particularly in:

- Applying skills in new situations
- Working with new people (adults and peers)

14 improved their problem solving skills – particularly:

- Critical thinking
- Creative thinking
- Breaking down tasks into smaller parts

12 (of 15 young people) improved their digital skills, particularly

- Learning about open source software
- Coding
- Content creation
- Understanding of AI

Qualitative data suggests that some young people also:

- Built positive relationships with peers and adults which enhanced their learning experience
- Gained valuable experience of collective decision making
- Developed a stronger sense of personal and collective agency to influence change

A few young people are leaving the programme with new aspirations for the future:

> 'The project has changed my view about the future because game development will be the next big sector.'

> "I didn't think I'd like game design, but I'm now considering it as a career."

How did the partnership between youth work and university support young people's learning and engagement?

Importantly, the programme offered young people a number of completely new learning opportunities:

> "I had never been to a university in Scotland."

> "It was my first time making a game far away from home."

> "It was a surprise to visit new cities: Edinburgh and Dundee."

> "The project showed me how much I can achieve when I step out of my comfort zone. Presenting at the workshop at Leeds University was a big moment for me – it proved I've grown in confidence and skills."

> "It's been a big thing for them travelling to Dundee, being away from their parents which is giving them freedom"

Young people particularly valued the experience of visiting Abertay university and learning from the team there:

> "Coming to Abertay is good – having the opportunity to learn at first hand with the university team is really helpful."

> "The workshops at Abertay are really useful. When I get home, I can download the apps myself and get better at it and then maybe show other people – here and back at home."

> "The workshops at Abertay were amazing. I've started using the tools at home to practice."

> "I don't mind the travel time [to Abertay] – I know I am coming to learn things that will be useful and build my skills."

> "Abertay has been great because it's a real experience of a uni and an insight into what it might be like to study game development. Also the teaching team have a greater depth of knowledge that they can pass on."

Young people also recognised the value of the youth work approach in supporting them to lead their own learning:

"The difference between learning in school and in a youth group is that a youth group makes [it] more fun and interactive for everyone."

"We work things out together – [my youth worker] doesn't tell me what to do."

"He is approachable and patient – we set goals and that helps me feel like I can meet the goals."

"My youth worker is patient with people – takes time to understand people more. I think I learn from my youth worker's softer manner – sometimes it changes how I am with others in the group too – like 'follow the leader' you know?"

"They break things down into smaller chunks to deal with issues so nothing is too big to fix and you don't need to start again."

"If you think you can't do something he helps you fix it – he lets you take a breather if people get worked up."

"[My youth worker] is responsive – makes me want to be quicker too about how I contribute to the group – for example identifying the research I need to do."

"[The youth worker] gives positive feedback and is encouraging."

"[The youth worker] is patient and gives positive feedback – encourages us to try our best. He understands young people."

"If you have a problem, you can approach him and you don't need to be scared about him shouting."

"He encouraging me gives me motivation to try new things out and keep on trying."

We used the National Youth Work Outcomes and Skills Framework as the basis for our approach to evaluating impact.

Find out more about <u>using the framework to evaluate digital youth work</u>.

See Appendix 1 for further data.

Youth Work and Digital Inclusion

In our project we aimed to notice the role of youth work in supporting young people to create digital equity in the face of the current challenges in society. We wanted to explore how a digital youth work project, set up in a supportive youth work setting, would meet the digital inclusion approaches and principles. Here we demonstrate the important and close connections between youth work, digital youth work and digital inclusion.
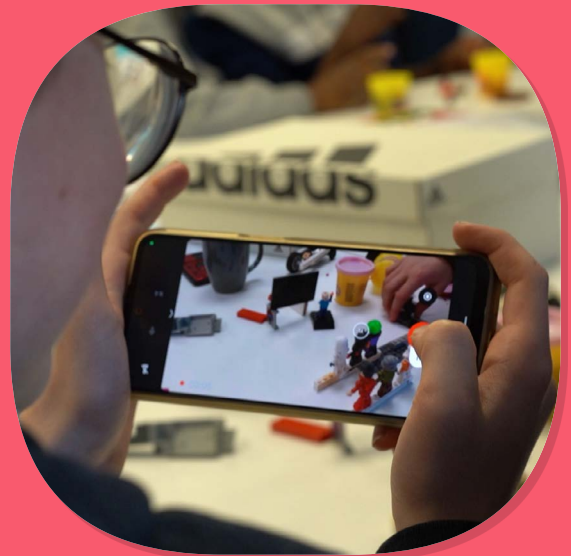
> *"The pace of digital change appears to be causing marginalised groups, including young people impacted by poverty and other issues, to live with an increasing sense of precarity."*
>
> — Include + Network

The youth work setting

Our project is firmly rooted in the context of youth work, where inclusion is routinely put front and centre. For example on the YouthLink Scotland website we introduce the principles of youth work like this:

> *"Youth work promotes values of inclusion, mutual respect, equality and the involvement of young people in decision-making. It is about building relationships based on trust and shared understanding, and using the strength of these relationships to develop a person-centred approach to the development of young people."*
>
> — YouthLink Scotland

The digital youth work context

The purpose of digital youth work is about supporting young people to be[2]:

- Engaged and empowered, active and creative in digital society

- Developing digital, STEAM and media literacy skills

- Confident, resilient and optimistic for the future

- Able to manage personal, social and formal relationships in the digital era

- Considering the risks of digitalisation, making informed and reasoned decisions, and taking control of their digital identity

Our project, set up with both youth work principles and digital youth work approaches at its heart, by definition had digital inclusion as a clear priority. The Include+ principles enabled us to explore this in more detail.

2   https://digitalyouthwork.eu/wp-content/
      uploads/2019/09/european-guidelines-for-digital-
      youth-work-web.pdf

IN+
PRINCIPLES

THE INCLUSIVE DIGITAL ECONOMY NETWORK+
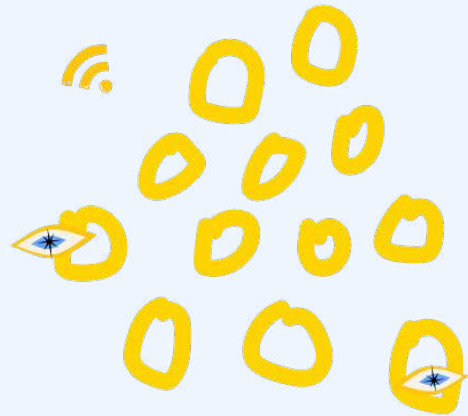
Connecting with the INCLUDE+ Principles

The project was funded by the Include+ Network and a core requirement was to explore the [Include+ Principles](#) and how to apply them in our project setting. From the very start we could see a clear alignment between the Include+ principles and the youth work approach.

The Include+ principles of **meaningful digital inclusion**, an **holistic approach**, **diversity**, **collective care**, **responsiveness** and **sustainability** sit comfortably with the youth work approach which emphasises the role of the young people as individuals and as a group in determining the content of the youth work project and therefore increasing the likelihood of real learning and transformation taking place. The context of youth work: set in communities, led by and for young people, starting from where they are at is naturally holistic, responsive, inclusive and diverse. Youth work is by definition a situation of collective care, where the aims are always to support, encourage, nurture and empower young people.

Here are the six Include+ Principles, with our reflections on how our project explores, reflects and fulfills the principles.

Meaningful Digital Inclusion

For us, digital inclusion is primarily about helping young people - all young people, regardless of background - develop the skills they need to thrive in a digital world.

Our youth-led research and development project was designed to explore how digital skills activities, co-created in a youth work setting, can empower young people to change their own futures and influence others.

> *"There are hegemonic issues in the games industry and this project has been eye opening to the potential to make changes. It has given a sense of the impact of grassroot communities. If the young people go on to study computer science or something in future, the games industry would benefit from being more diverse. The youth work setting is more about the experience rather than the learning objectives. It is about giving young people the tools and experiences to discover what they find interesting. It's about creating building blocks rather than a learning objective (which is the usual process in the university) - which is exciting and terrifying.*
>
> *"Young people have been showing their digital literacy using examples of games they play and drawing on their lived experience which is informing their design practice. They are bringing something of themselves...."*

— Abertay University

> *"On this project I've learned to think more critically about information."*

— Young person

> *"I think it's helped that I've not done any game development before. Doing this project has helped me get to know what happens behind the scenes online – for example AI and how this works. Working with a group of peers has also been a good learning experience – learning from one another rather than just learning from adults."*

— Young person

Diversity

In the context of this project, diversity has influenced the groups that we have chosen to work with. In the process of looking for groups we stated that we wanted to work with groups that were based in a high SIMD area and potential working with particular groups who might otherwise be digitally excluded. The groups we chose represented our interest in thinking about diversity.

The DataKirk primarily supports ethnic minorities from migratory and low socio-economic backgrounds living in Scotland.

OYCI is based in a small rural community with poor access to public transport. A number of the young people in the group are neuro-diverse.

> *"Different young people have different starting points. To keep them engaged there's something about speed to a clear result that is important. They come to have fun here and if we were insisting that they did all of the coding some of them just wouldn't come."*

— Youth Worker

> *"I made a conscious decision about which staff to ask to take part in this project, including women, to ensure we are showing diversity. I have a working-class background and the first generation in my family to go to university. I think we need to demystify who can attend university and break down barriers."*

— Abertay University

Youth workers were clearly inclusive in their approach to recruiting young people and the potential for different roles within the team supported this, together with the supportive relational approach of the youth workers.

> *"People like me don't normally get to do this."*

— Young Person

Holistic Approach

Youth work is about helping young people to develop positive relationships and flourish. The youth work context for our digital equity work meant that we were interested in the whole person - not just their digital skills development, but their teamwork, confidence building, overall growth and positivity. Our impact evaluation work shows the broad benefit of the project, with individuals clearly thriving.

Fundamentally the project was solutions focused – helping young people to ideate, discover and develop digital solutions in a way that enables them to move beyond the problem. The young people were learning new skills, with some expert input but they were the ones who were leading on the creative process, which made the project fundamentally satisfying for the participants.

> *"Holistic approach and diversity can be clearly linked with youth work principles like starting from where young people are; young people being full partners in learning and shaping their own learning - so what this programme looks like across the 2 settings will be quite different given different ages, backgrounds and interests of the young people - and the team at Abertay adapting all the time to try to offer learning that is engaging and at the right level."*

— YouthLink Scotland

Collective Care

A youth group setting is naturally a place where people think about and support each other. The youth workers' role in this project focused on ensuring the wellbeing of the project, helping young people within the group to support each other.

> *"My youth worker ... has a good sense of fun: some topics you think you are going to find boring, but he's helped to change my point of view."*

— Young person

> *"My youth worker is kind and responsive. I think I learn from my youth worker's softer manner – sometimes it changes how I am with others in the group to – like 'follow the leader' you know?"*

— Young person

> *"The other young people in the group have helped me develop my skills. Some of them are more experienced than the young people I work with in college – we share what we know with one another."*

— Young person

Responsiveness

Young people and youth workers partner together to develop ideas and create something meaningful.

Regular check-ins between youth workers and young people, plus regular project meetings all help us build a flexible and responsive environment for this project. Bringing diverse groups with different needs together was a challenge. It took time. Spending time together and interactive activities were all important.

> *"This is more about the learner experience, less concerned about producing a game at the end. I have been concerned about how to pitch this to young people and the language we're using. I try to explain everything but sometimes they still don't understand. I think some elements of the workshops have been too far reaching. Maybe in future we could focus on just one element. I'd also like to look at what schools are doing because I have been using my experience of foundational first year university students. I also feel that we need to give more individual support to young people than adults."*

— Abertay University

Sustainability

This project helped two particular groups to carry out some valuable digital youth work, for a short period of time, however the benefit of the project goes well beyond that. YouthLink's involvement is to amplify that work so that the wider youth work sector in Scotland can benefit. This is already happening, through sharing at conferences and creating these resources. The value of the connections with other sectors is expected to have long-lasting ripples of influence.

> *"I think that the sustainability will be seen in the developing skills of the young people...but the sustainability of the approach itself could perhaps be reinforced if there was more time and space for the team at Abertay to work directly with and upskill youth workers."*

— Abertay University

One of our key concerns is not just to explore what might be helpful to young people facing the challenge of precarity, but to create an environment where they can explore the challenge for themselves, create meaningful interventions with appropriate support and then see those resources shared across Scotland, the UK and Europe. The digital games that will be outputs from the project add an additional element.

The young people in the groups seemed to interpret digital inclusion in relation to using digital for good - creating digital games that would have a positive impact on their peers.

Scales of Sorrow is a game that explores themes around people accepting and understanding each other. Dodge the Fog looks at issues to do with vaping in our society. The young people saw the relevance of a digital game as a medium for exploring a topic with other young people in a youth work setting. The power of story, imagination and gaming playing in a medium that is familiar to them, all came into play.

Youth Work and External Expertise

Our project benefited from bringing together knowledge and expertise from different sources in a way that was relevant and accessible to young people. Our experience of working across sectors feels relevant to other digital youth work projects, and also more widely in relation to how youth work projects can benefit from external expertise.

The topic could change, but the concept that youth work organisations can learn from the expertise held in higher education and elsewhere is important for young people to connect their present experience and reality with potential pathways for the future.

Overall we learned that it takes time to develop relationships, that collaboration across sectors broadens understanding and is mutually beneficial and that young people really appreciate the opportunity to visit a university, not just to see it, but to spend profitable time there and take part in meaningful work together.

Youth work practice backed by academic thinking

The academic context for the project was the work of the Include+ network, and their interests in digital inclusion and responses to the challenges created by increasing precarity in our society. Links with the academics were of benefit to the project, helping us to think about the relevance of our work in the context of a rapidly digitising society.

In particular, a number of the team and one of the older young people (age 18) participated in the Meaningful Digital Inclusion event in Leeds, contributing to a workshop about the project, networking with others involved in this area and hearing about other digital inclusion projects from around the world.

Digital games: academic expertise

Abertay University became an anchor partner in the project, and were generous with their in kind support. Workshops delivered by Abertay University created a clear structure to the project, with a sense of progression towards a goal. Dr Andrew Reid's knowledge and experience around teaching game design has been an invaluable element. Workshops were also curated and delivered with support from Dr Jung In Jung (soundscapes) and Kayleigh MacLeod (visual moodboards).

Dr Reid's enthusiasm for the youth work context and understanding of how youth work can play a role in widening access to higher education was a key element to success. He reflects:

"The workshops have been designed and delivered using scaffolding so each workshop builds to the next. Game design underpins everything. The final workshop was a 'game jam' where young people worked in teams to create a game.

Working together and their social learning has been really important. This has included becoming comfortable at not knowing all of the answers, learning from each other and supporting each other.

By coming to Abertay, the young people have been coming to a new environment and a new city. It has helped having consistency in the staff supporting them and also getting to know each other. This has meant that even if they have not enjoyed the particular workshop, hopefully they will have enjoyed the company and had a good experience.

I have been pleasantly surprised in the lack of drop-off of the young people. We would have expected some drop-off, but they want to be here and are curious to continue learning. This shows the progress made in the workshops.

Many of the skills they are developing are intangible and unlike with the uni, there is no assessment to provide evidence of progress. But, the fact they have turned up to 5 workshops shows the progress. So whether they make a game in the end or not, they will have learned skills that give them the best chance to develop as individuals and help make informed decisions for their futures."

— **Abertay University**

Digital games: commercial expertise

We also explored the idea of a *"digital technologists in residence"* for each project, sourcing individuals in the games industry to support each youth work organisation. We decided not to seek these individuals at the start of the project, until the projects were more defined. We anticipated that the young people would have a role in appointing and briefing the technologists in residence. For a number of reasons this ended up being a very peripheral aspect of the project. Volunteers were identified through the Scottish Games Network. Challenges around timing for visits was limiting. The ready support of Abertay University and their ability to respond and explain in appropriate ways meant that advice from others felt less critical to success. Nonetheless, these connections feel important to providing insight into the games industry in Scotland and may yet be important in relation to the outputs from the project.

Approach to learning

For young people in a youth work setting, the focus is on enjoying being together, being directly involved in defining the activity, with the learning, although real, feeling almost like a by-product.

"Colleagues have been keen to understand how the activities have worked. The youth work approach is a completely different skill set compared with uni, colleges and schools. The expectations, hierarchies and learning is different in youth work, particularly because it is person-centred, young people voluntarily participate – very different from formal education. So, for academics coming to a youth work setting they need to appreciate the difference and not try to teach. The workshops felt dynamic and invigorating to my teaching practice – I'll take things from this that I will use to enhance formal learning."

— **Abertay University**

What this meant in practice was a need to simplify the language used in delivery of the content, to allow plenty time for the young people to explore ideas and to provide flexibility through the workshop sessions with regular breaks (especially for pizza!)

Partnering with Higher Education

Understanding the nature of context of youth work is important as a starting point for any successful venture. A shared belief in the value of the work underpinned this project, with a commitment to inclusion evident from all the different participants.

Pathways to careers

This project connected young people's interest in digital games with the wider world of game development. It helped them to understand some of the different skills involved, educational opportunities available and potential career opportunities.

"One young person told us they want to work in game design and that was demonstrated every week, coming in with a real sense of purpose."

— **Youth worker**

Development for youth workers

The workshops at Abertay were offered as input for the young people. Reflecting on the project we are aware that the content of the workshops is also directly relevant as training input for youth workers. We are actively seeking resources to enable us to deliver training to youth workers to support around confidence building and knowledge development to enable more digital youth work across Scotland.

"In recent times, opportunities for young people to engage with game development are increasing with its integration into school curriculum and the running of "code clubs" in community spaces. These are really positive steps, but within these are other challenges of inequality for consideration: only certain schools are supportive of - and equipped to - deliver games education, and code clubs are often run in high-populous cities and communities and are less accessible to rural communities. A review into these inequalities - in line with the Scottish Government's No One Left Behind policy - would be a recommendation from this project to ensure the design and delivery of digital inclusion activities (including game development) follows a just approach."

— **Abertay University**

Hints and tips to run a successful digital game design project

These ideas are based on the learning from the digital game development projects described in this resource. Every situation is different, so take what's useful to help you with your digital game development.

1. Start with youth work outcomes

Root your project in the outcomes that you want to see for the young people involved. Youth work can provide a meaningful and relevant context for digital skills development and the inclusive and participative setting helps to make this a positive experience for all. Thinking about the desired outcomes and how you will measure these, right from the start, will mean that you can see the impact of the project. You'll find help with this in the Impact Evaluation section on digitialyouthwork.scot, based on the National Youth Work Outcomes and Skills framework.

2. Think through who can do what

Different people can bring different things to a project and digital game development can provide a positive setting for genuine partnership working. Seek out knowledge, from youth workers and volunteers, but also from the young people themselves. Teamwork was definitely how it worked for us - bringing people together with different skills and interests and creating the environment where they can work.

3. Seek out external support

Game design is a growing industry in Scotland and therefore represents an opportunity for young people as a potential career. Helping young people to connect their interest in gaming with the world of education and work can create potential pathways for them, so input from older young people, local volunteers, people already working in the industry can all be valuable. See Youth work and External Expertise (link). Tinderbox Collective are an example of an organiation that can provide support around setting up a digital game design.

4. Make time for creativity

There are stages in the game design process, so make sure you allow time for young people to get to know each other, explore, discover and plan. The ideation and prototyping stages of game development will set up the project, before anything digital is created. We found that young people were interested in different aspects of the project and took different roles in the development.

> *It has been a really good opportunity for young people to be creative – and I think we've seen young people rise to the creative challenge in a really positive – and sometimes surprising way.*

— Youth Worker

5. Practice

If you are leading a session that involves technology that's new to you, always take time to get familiar with it first, before working with the group.

6. Teamwork means a role for everyone

There are lots of different tasks and aspects of game development, so help people to find the one that suits them, whether storytelling, graphic design, audio, coding, planning, directing and more.

> *It's been interesting to get to understand young people's motivations for being involved in the project. Some like the idea of making the game – the coding and the software – others are interested in creating the visual artwork more than the technical aspects.*

— Youth Worker

7. Be realistic

Game development doesn't have to be complicated. There are simple activities outlined in this resource that will help you through the process and provide a framework for success. Development tools such as Scratch and Gamemaker are easy to get started with and ideal for young people to use in a youth work setting.

8. Using the kit you have

Developing digital games requires access to a range of equipment - and also must satisfy the minimum device requirements for different software. With the changing and evolving nature of game development, the level-to-entry for devices and software requirements is increasingly reducing: while you can invest in high-performance devices to create high-fidelity worlds and stories, you can equally build games using standard-specification laptops, tablets, and mobile phones.

Some recommended free/low-cost software to consider include:

- **Game Engines:** Scratch, Bitsy, GameMaker, PlayCanvas, Construct3, Twinery, Microsoft MakeCode Arcade

- **Art and Visual Production:** Krita (2D), Blender (3D), Piskel

- **Audio and Sound Production:** Audacity, Soundly, Freesound, Bandlab

- **Digital Design:** Miro, Figma, Marvel App, Adobe XD

Each software will provide a guide to the recommended/minimum requirements to run the software, and it is recommended you check these to ensure compatibility with your devices.

Alternatively, game development can take place without the requirement of highly-sophisticated development machines (or, indeed, the need for computers at all!) There are many non-digital practices that can be used in game development, leading to the creation of paper prototypes, tabletop (card/board) games, and physical location games.

Youth Work and Game Design:
Activities and Resources

Below is a set of recommended activities to engage young people in game development practices. While each activity can be run independently, it is lightly recommended that these activities are run in the sequence that they are presented. This intends to provide a scaffolding effect for young people to learn skills and gain experiences that will be relevant and useful in the next activity.

1. Game ideation

Ideation focuses on the practice of coming up with ideas for games: some can find this very straightforward (particularly where they are influenced by games that they play) while others can find this challenging (starting with a "blank slate" can be a daunting task). We recommend that this activity is done in small groups (between 2-4 people) to accommodate peer-support and learning.

- [Game ideation activities](#)

2. Physical prototyping and testing

Once you have a game idea that you would be keen to develop further, the next stage is to think about how people can play the game. Our minds may instantly jump towards a digital interface, a game controller, a console or a PC, and some fancy coding skills - however, games can be designed, created and played using physical materials in a quick and cost-effective manner. This is what's known as "paper prototyping".

- [Physical prototyping activities](#)

3. Visual moodboards

A moodboard is a visual tool which constructs images, text, and other visual elements based on a connected theme or premise. The goal of a moodboard is to communicate a concept, vision, emotion, and consensus for a project. In a game context, a moodboard can be a helpful way to communicate ideas based on pre-existing examples and resources, such as influential games, films, architecture, physical locations, optical representations, or other connected influences for a given project.

- [Visual moodboard activities](#)

4. Soundscapes

A soundscape is a sound (or collection of sounds) that evokes a sense of place or environmental context. A sound that echoes may suggest a feeling of enclosure or being underground, while the sound of birdsong may evoke memories of the seaside or a sense of openness and freedom. Soundscapes can be useful in representing sections of the game through aural stimuli without the need to program mechanics or interactivity to convey a theme or environment.

- [Soundscape activities](#)

5. Curated programming activities (from Scratch and/or GameMaker)

Interactivity is a component that separates games from other forms of media: players actively play games and influence what happens on a screen, a board, or in the physical environment. In a digital context, this requires programming to build scripts that represent the behaviours, sequences, and management of the game's systems. Every action, reaction, sound piece, visual cue, and menu has to be programmed.

- [Curated programming activities](#)

6. Run a Game Jam

If you have explored each of the aforementioned activities with your young people, you might consider running a "game jam". This is a rapid development process which challenges communities of game developers to create games in a very short space of time: this can take place over one month, one week, one weekend, or (in extreme cases) one day!

- [Run a Game Jam](#)

Workshop Slides

The following slides were used for the five Abertay University workshops and are a useful learning resource:

- [Workshop 1: Game Design](#)
- [Workshop 2: Game Engine](#)
- [Workshop 3: Game Audio](#)
- [Workshop 4: Game Art](#)
- [Workshop 5: Game Jam](#)

Appendix 1:
Codesign Session Planning from OYCI

A typical Codesign session would look something like this:

Ice Breaker

We always begin sessions with a light touch fun game to get everyone into the room (they were joining us after a busy school day) and set the tone for the session.

Main Activity

Our activity was guided by the workshops at Abertay, after each of these we would work on that element, which allowed the concept of "Scales of Sorrow" to be born quite early on in the process, then developed the more the project went on. Every young person developed skills across each area of the design process, but towards the end of the project they broke into teams depending on where their interest lay. A sound team, art team, and overall design team guided the game to where it is now.

Thematic Conversation

The theme that guided the project was 'inclusion'. At the start of the project these conversations were guided by youth workers and time was set aside to have them, making sure the young people understood what inclusion was, and could have a safe space to share their own experiences. As the project went on youth workers would revisit the theme in context of the game, which led to a lot of conversations about dragons perhaps being misunderstood.

Soft Skills Development

At the beginning of any OYCI project we create a working together agreement, and as the project went on this lends itself to facilitated discussions around teamwork.

Cool Down/Free Play

Towards the end of each session we tried to build in time for the young people to relax and game – after all it's their love of gaming that brought them together, and that should be honoured in the room.

We worked in six week blocks, with weekly tasks and goals for the young people. This example shows a block after the initial idea "Scales of Sorrow" had been decided on.

Week 1:

Icebreaker:	**Gaming Pictionary**
Main task:	**Creating a mood board** *for "Scales of Sorrow" – what kind of game is it, what does it look like, how does it make people feel.*
Facilitated Discussion:	**How to resolve creative differences**

Week 2:

Icebreaker:	**Gaming Hangman**
Main task:	**Deciding on how to divide the work,** *what team will you be on, will you switch half way through? This was coupled with team building exercise – We gave them the summary of a random game. In their chosen roles (audio, visuals etc); each group generated an aspect of the game without discussion with the other groups (sound effect, character design, controls)*
	Once finished we bring the different aspects created together and see if they unite well or not, highlighting the importance of communication as an overall team.

Week 3:

Icebreaker:	**Game Title/Not a Game Title** *(title is read out and they must guess if it is a real game title or fake)*
Main activity:	**Working in their groups to create an element of the game – sound, art, or overall design.** *Young people work in separate groups with support from the design team and with times to discuss ideas collaboratively with other teams.*
Facilitated discussion:	**Feedback** *– what is good feedback? How does it feel to receive bad feedback? What is compromise and why is it important?*

Week 4:

Icebreaker:	**Sketch Challenge** *(young people are given vocal instructions on how to sketch a game character and must see who can get the closest to the original without seeing a picture)*
Main activity:	**Present to other groups** *the elements you have been working on, share feedback with each other. Time given to edit work based on feedback following this discussion.*

Week 5:

Icebreaker:	**Gaming quiz**
Main activity:	**Art and Design team work together**: *Design team focus on paper/digital prototype using the art- making it playable. Design lead, art help fill gaps. Audio team grind demo list of all needed tracks/SFX*
	Demonstrate what you have to the group. *Play the paper prototype with audio team playing sounds/music alongside it.*

Week 6:

Icebreaker:	**YP choice**
Main activity:	**Bring all the elements together** *and present to youth workers for questions.*
Facilitated discussion:	**Have they enjoyed it, or found anything challenging?** *How they feel re skills/indicators?*

Appendix 2:
Collated Evidence - Impact Evaluation

Skill	Number of young people who made progress	Young Persons' Feedback & Youth Worker Observations
Confidence	**15**/21	**Young person's feedback:** "I achieved confidence...making friends and sharing my ideas in developing a game."
Communication	**18**/21	**Young persons' feedback:** "I've become a stronger communicator as a result of this project, especially listening to other people's ideas and opinions." "I think I've improved, both at giving my own opinions and listening to other people's opinions. And I've got more comfortable asking for help if I need it." "I improved my presentation skills." "I feel like I am listened to." "At the start of the project, I found It nerve wracking to share ideas - not anymore." "I feel more confident in speaking up and working with others." **Youth workers' observations:** "At first they would be silent - now they feel part of a group and they ask for help when they need it." "They have become more adept at sharing opinions and asking for help when needed." "RV was communicating very confidently - she made sure people listened when she was talking." "One young person started the project very quiet and reserved and by the end was leading the group, confidently sharing ideas." "The sound design team worked really well - checking in and communicating well with each other despite not being friends outside of the project." "One young person created a lot of opportunities for others to share their ideas despite having loads of his own." "Many of the young people have begun to lead group discussions."

Problem Solving	**14**/21	**Youth workers' observations:** "On this project, I've learned to think more critically about information - for example we needed to look at statistical information relating to vaping figures so that we could understand who to target the game for and make a game that fits the audience and isn't too hard or too easy" "We've seen the young people coming up with new ideas - they are given a task but they can choose how to tackle it and they have a lot of creative freedom." "One young person noted that they found it difficult to break things down into smaller parts at the start of the project but this has improved."
Team work	**18**/21	**Young persons' feedback:** "The other young people in the group have helped me to develop my skills. Some of them are more experienced than the young people I work with in college - we share what we know with one another." "To make the most of [this experience] you need to be able to hear other people's perspectives." "Working on this project has helped me not get as annoyed when I don't get things right - because everyone is the same - it's new to everyone and we are all working as a team." "Working with a group of peers has been a good learning experience - learning from one another rather than just learning from adults." **Youth workers' observations:** "Coming here has made me a better team player." "Young people have improved their collaboration skills - you can see that here at Abertay and back at OYCI." "The environment has encouraged the group to work together - with the team work and the uni workers helping." "The art team particularly worked well to delegate different tasks to each other and just got on with It." "What they've achieved over the project is amazing - being in different groups and being able to bring everything together." "The group became more adept at giving each other feedback."
Digital Skills	**12**/15	**Young persons' feedback:** "We've learned which apps are good for which games and learned different types of coding." "I've learned to do music for the games." "I've learned how to create digital content." "Doing this project has helped me get to know what happens behind the scenes online - for example, AI and how this works." "I've gained so many skills -coding, game design and Scratch - plus I had fun!" **Youth workers' observations:** "Coding is really new to some of the young people - they haven't really used any of the software before so it's a big jump for them." "Young people have enhanced their abilities in research, content creation and critical analysis."

Skill	Young Persons' Feedback & Youth Worker Observations
Resilience	
Relationships	**Young persons' feedback:** "I have created bonds in the group so it is easier to communicate." **Youth workers' observations:** "JS has made new friends and is loving it." "Now they work together with ease - they were strangers but now they work together - they look forward to working together."
Decision-making	**Youth workers' observations:** "More than half of the group said they were actively engaged in decision making [at the mid-point of the project]" "Overall the group made decisions as a team very well."
Organising and planning	
Leadership	
Looking after myself	
Creating Change	**Young persons' feedback:** "We created the game and we were the people who made the game what it was." "Hopefully [our game] will go big and help young people not to smoke." "I hope that..the game gets enough attention that even the Council or Government could see it and they could maybe change some rules [about vaping]." "We hope that Scales of Sorrow will be made for lots of platforms."

Meet the Team

Hilary Phillips

Hilary leads on digital youth work at YouthLink Scotland.

I watched with awe as the young people banded together to create digital games. Their creativity was the bedrock for some truly inspiring outputs.

Gill Gracie

Gill leads YouthLink Scotland's work on gathering impact on the Scottish Attainment Challenge.

The collaboration between young people, youth work teams and Abertay University has offered a memorable and impactful learning experience for everyone involved. We need more partnerships like these in Scottish education.

Amy Calder

Dr Amy Calder leads on research using participatory research methods at YouthLink Scotland.

It's been amazing to see the young people working as a team to develop ideas for their game. A real highlight was seeing the young people and the students discuss how to bring their games to life. It was clear how much it meant to the young people to be listened to and taken seriously.

Andrew Reid

Dr Andrew Reid is a Lecturer in Games Production at Abertay University.

This has been a very rewarding experience on a personal and professional level. The young people have been a credit to themselves and the youth organisations that support them. I hope that their involvement in this project has encouraged them to continue making games into the future.

Azeem Adeyemi

Azeem Adeyemi is Digital Solutions Lead at DataKirk.

It's incredible to see how young people bring so much energy and enthusiasm to every session. Their passion for making a real difference never fails to inspire me.

Nimat Jimoh-Umaru

Nimat Jimoh-Umaru is a data analyst at DataKirk.

I'm incredibly proud to have been part of the game design journey with the Young People. This experience has not only inspired me, but also given me the chance to be part of something impactful.

Lisa Keddie

Lisa is the Engagement Lead for OYCI.

This has been a brilliant project for our young people, allowing their creativity to shine as they delved into the world of game design.

Joe Driver

Joe is a Youth Worker at OYCI with a focus on digital youth work.

Watching our young people thrive has been a privilege and we can't wait for all to see their work.

Matthew

Matthew is a sessional worker at OYCI

.I have enjoyed being part of this project and learning as well as helping the young people . I'm looking forward to seeing the end result.

digital

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