

Let's Play the Arcade Machines

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“Let’s Play the Arcade Machines” showcases games made by children in schools in the Wester Hailes area of Edinburgh. The project aims to expose the children to a constructionist style of learning; supporting them to create and remix games about their local area using the Scratch programming environment, whilst encouraging them to engage with the idea that further study of computing could lead them to interesting and fulfilling careers.

Children, learning, coding, constructionism, Arcade games, Scratch programming

1. BIOGRAPHIES

Fiona Stewart is a lecturer in the School of Computing at Edinburgh Napier University. Her research focusses on how children approach learning digital skills, and in particular the strategies they use when faced with challenging tasks.

Dr. Tom Flint is a lecturer at Edinburgh Napier University. Tom’s work examines cultural experiences. His creative technology practice is in collaboration with artists, helping to bring their context into digital technology. Tom also works with arts organisations to contextually digitise collections.

Dr. Tanis Grandison is a lecturer in the School of Computing at Edinburgh Napier University. Her research considers how digital media and technology can be used to facilitate creative placemaking, critical and community heritage practices. Central to her research is the use of Psychogeography to elicit site specific responses to place.

Craig Tyrie is a youth worker at Whale Arts Edinburgh, he runs a regular computer club for local children.

2. OUTLINE OF THE WORK

“Let’s Play the Arcade Machines” showcases the games that have been created by the children of Wester Hailes, Edinburgh as part of the “Let’s Play” public engagement project funded by the Royal Academy of Engineering’s Ingenious Fund.

Primary 6 and 7 children (aged 10-12) from four schools worked with staff and students from Edinburgh Napier University to co-design arcade games that reflected their local area and their

interests. They planned their games and learnt some basic Scratch coding techniques before taking part in a Psychogeography walk, capturing the stories, sounds and images of their local area to use within their games. The assets they collected and created can be seen and heard within the games showcased on the arcade machines.

3. THE ARCADE MACHINES

Visitors to the Interaction Gallery will be invited to play the games created by the children on bespoke Arcade machines. Users can expect to experience a range of fun, strange and wonderful games that reflect the children’s lives, experiences and interests.



Figure 1: One of the Arcade Machines

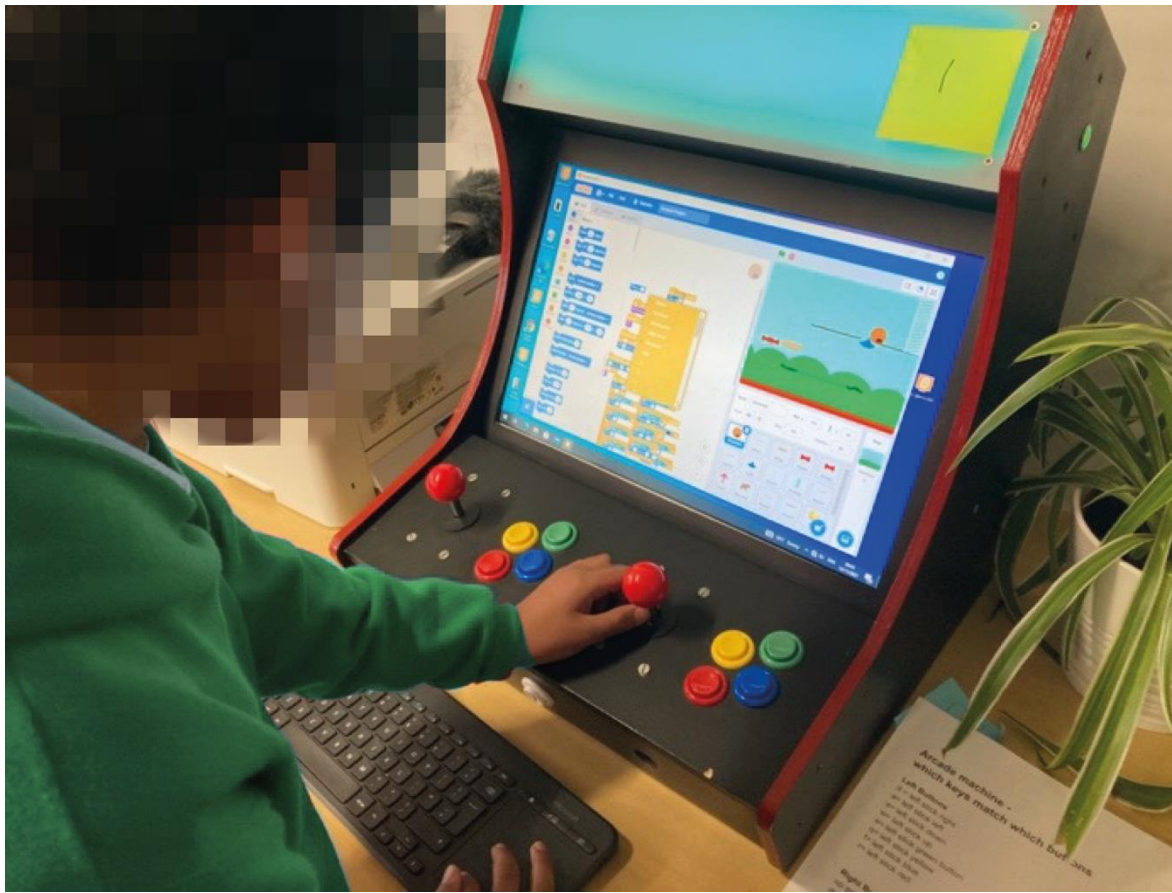


Figure 2: One of the pupils makes some final tweaks to his group's game before play testing on the machine.



Figure 3: An image from one of the games featuring Lulu, a local dog, collecting bones in the woods next to the school.

4. RATIONALE

Designing Arcade games exposed the children to new approaches in learning; helping them learn new coding skills incrementally while constructing their games and, importantly, allowing them to have fun and feel a sense of achievement. Scratch was chosen as the programming language; it was designed to support a constructionist way of learning, allowing children to create their own games, but also to “remix” existing games, adding their own stories. (Resnick, 2020)

The media the children gathered on the Psychogeography walks is pivotal to the final game designs. Small teams of children were equipped with audio recorders and tablets and asked to explore their local area capturing oral stories and memories as well as taking photographs and making audio clips to include in their games. This method further tested the 4P framework for creative placemaking (Participatory, Performative, Playful and Polyvocal) developed by Grandison et al. (2021) as an extension to Resnick's work.

The Arcade Machines were a key factor in helping the children to crystallise their design ideas, acting as “material anchors” (Hutchins, 2005). Due to understanding how and where their completed games would be showcased the children were able to develop and test game ideas that were appropriate for the machines.

Whilst Let's Play is primarily a Public Engagement project, data has also been gathered allowing the researchers on the team to further explore how children engage with learning digital technology and how the data captured on the psychogeography walks can feed into this. The finished games have been shown at various events around Edinburgh; linking the project with industry speakers and giving the children who attend the opportunity to engage with those already working in the Games Industry and those studying and teaching computing. The children who took part have also been offered the chance to continue creating by joining the computer club at Whale Arts.

5. TECHNICAL DESCRIPTION

There are 3 tabletop Arcade Machines. They are essentially a standard PC within a custom made case that have been connected to traditional arcade joysticks and buttons – they are designed to “plug and play”, with no set up required.

The Machines have no special technical requirements – they require a standard power socket. They are tabletops machines, so a sturdy table will be required for each machine.

6. ACKNOWLEDGEMENTS

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Most importantly, thank you to all the pupils who worked so hard on the project, shared their amazing ideas and created some incredible arcade games.

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