

Using Design to Connect Children Through Playful Discovery

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Abstract

This paper presents the first stage of FUSE, a project presented here as an example of how interdisciplinary researchers, university outreach staff and schools can come together to address the systemic inequalities in education exacerbated by the Covid-19 pandemic. Children's connections with their school, their families and with each other was central to this collaboration. Children were encouraged to explore their domestic situations and the materials and objects they found available to them through playful discovery, utilising a series of prompt posters and a box of carefully chosen materials. The results of their playful and creative activities were shared using a number of return pathways including mobile phones, photos and physical artefacts. Using collaborative design methods, semi-structured interviews and visual documentation of artefacts we have identified a number of tools and techniques that have helped to engage and make connections with children, school teachers and peers. Unexpectedly the project has also strengthened the connections that children have with their siblings, parents and grandparents through imaginative, experimental and playful activities. This paper shares the elements from this project that helped to create the mindset for a playful approach to discovery. Through an analysis of the multiple return channels that tell us about the way the FUSE boxes were used we map how this has had an impact on the children's approach to discovery-led activity, to schools changing approach to non-punitive interventions with challenging children and how this is informing policy development within these schools.

Keywords: Education, Co-design, Children, Language, Equality, Playful, Discovery

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Introduction

In the U.K. parents had to suddenly home school due to the Covid 19 pandemic. Children became disconnected from their schools, teachers and peers and many parents struggled to support their children's learning. Some families had the resources to facilitate online learning and connect with teachers in virtual learning environments, children looked after and children of key workers were allowed to continue attending school. This left many children, not visible; these children were part of families who either lacked resources or lacked knowledge to use resources. These families often did not have a strong educational base on which to draw in order to support learning for their children. In some cases, these families were provided with laptop computers and means of internet access but these were never activated or used by the children. These families were already often struggling with precarious incomes, insecure food supplies and poor access to green areas and gardens, under resourced in every way. The combination of these factors led to a considerable number of families in Lancaster and Morecambe being significantly more impacted by Covid 19 than others with more resource and more contingency that they could draw on.

The 'Box' project responded to this situation, not by parachuting in technology but rather developing a high-quality set of physical resources in a cantilever toolbox, scissors, bulldog clips, fixings, string, elastic, chops sticks and drawing and writing equipment. Accompanying the 'Box' was a range of research led provocations, not prescriptive worksheets but non prescriptive prompts.

This paper explores how the box and prompt poster resources led to imaginative, self-directed and playful discovery, that re-connected children with their teachers and strengthened the bonds that they already had with their parents, siblings and grandparents and how a multidisciplinary response led to policy changes in primary schools.

Approach

The schools that took part in this project were all based in Morecambe and Lancaster in the north west of the U.K. there is a high percentage of children who receive free school meals and the communities there could be described as under resourced and under heard.

The response to this situation, might be interpreted as the pre-co-design stage of the larger FUSE project. Under pre-Covid 19 condition this 'Box' resource would have been a co-design project, gathering diverse groups of adults and children together to address systemic issues in education (Paracha et al. 2019; Sanders and Stappers 2008; Vaajakallio, Mattelmäki, and Lee 2010). However social distancing laws prevented this and the very people who might have been part of the multiple design teams were unable to access the internet or meet face to face. Although this response was co-ordinated by a multidisciplinary team and the projects were generated by a call out across multiple disciplines in the university, it would not be described as co-design as the users did not directly contribute to the process (Cruickshank, Coupe, and Hennessy 2016; Simonsen and Robertson 2013; Steen 2013). It might however be seen as a pre-co-design stage which laid the pathway for collaborative design to really happen when the Covid 19 restrictions were lifted. The approach adopted in this case or more accurately imposed upon it was one of collaboration between the multidisciplinary stakeholders who had access to, and the knowledge to use, digital communications. Encouragement and opportunity were provided to those children who received a 'Box', asking for feedback and suggestions for further materials and contents when their resources

needed to be replenished. The design team were able to respond to the children's feedback, making changes and in time those children would be invited to participate in the workshops discussed in the conclusion of this paper.

Methodology

The research methods used in this project were a response to an unprecedented situation.

A core group of researchers from design, linguistics and outreach workers provided support and momentum for a wider group involved in the project. Emphasis was given to methods of communication to ensure timely and appropriate responses for researchers and teachers, researchers were mindful that teachers workloads and demands on time had increased.

There were also a number of return channels set up for children and parents to share their artefacts and thoughts with researchers and teachers. Firstly; children had the option to take the physical artifacts into school to have them displayed in the windows of school so that their peers would be able to see them. Secondly; children or parents could send photographs via their mobile phones directly to school and the teachers would respond to the child and then post the photographs on the school website. Thirdly; children were given postcards and stamps and were invited to write and draw on a postcard and send it in to school, this method was not a preferred means of sharing stories and artefacts.

Although many families lacked resources, sending photographs of artefacts via mobile phone did not seem to be an issue and was the preferred method, these images were often accompanied with comments from parents on how much their child was enjoying using the prompts and box and they also shared who had been involved in the creation of the artefacts. Teachers who normally taught the classes issued with the 'Box' fed back to head teachers, there were expected and also unexpected responses. The head teachers participated in semi structured interviews with the researchers in the depths of the first and second lock down situations and also as restrictions began to ease, their insights helped researchers to understand the changes in children's, parents, siblings and teacher's behaviour in domestic environments and in the classrooms.

Creating Project Resources

The 'Box' resource emerged in two distinct ways firstly the actual box of materials, which was carefully chosen to provide components and fixings that challenged children to make, build and explore things. The contents were not gathered by chance, there was no glue or easy fix solutions in the box, there was no glitter or decorative elements. The intension was always to challenge the children to experiment, try, test and fail with no right way or instruction to follow or images as comparison. What if? and how can? Were the questions we intended to provoke. The 'Box' emerged through an iterative process over a period of weeks. The cantilever style was intended not just as a home for the materials supplied but also as storage for found and collected objects curated by the children. It has the potential to evolve into very a individualised resource.

The core, cross disciplinary team discussed on multiple occasions what resources the children would have access to in their homes. Assumptions that perceived everyday objects like sticky tape, scissors and string were put aside. The researchers understood that most household would have some furniture, bedding, kitchen equipment and food packaging also structural

elements like doors, handles on cupboards and so on. These were all considered as potential places that could be incorporated into built structures. Figure 1. Shows the 'Box' and teachers from a participating school.



Figure 1. 'Box' and teachers from a participating school

The second element that accompanied the 'Box' were the prompt posters. A call was put out across the university for ideas for projects, for primary school children to do at home. Projects were returned from science, computing, engineering and design. These projects varied in complexity and specification and so it was decided that they would be used to inspire and influence far less prescriptive provocations (prompts), the intention was to deliver much more than a worksheet for children to follow or fill in.

An example of this was a potential project idea that explored a section of coastline, a map would be included of the coast and a collecting jar and sieve would also be included in the proposed activity pack accompanied by instructions. The core interdisciplinary team reflected on the resources and support that the children receiving the pack, would have available to them. Gaining access to the coast even though it was in close proximity was not realistically achievable for primary school children on their own and given even simple tasks to read and follow would be problematic. This project was distilled to 'Follow a bug', which would be achievable anywhere, resources were provided to draw or write or make, in response to the activity but no instruction was given. This was not about doing experiments sitting at a desk or reproducing a school environment in the home. This project promoted physical, experimental, playful activities. This was done by distilling the language in the original projects down to two or three words, thus leaving only the essence of the activity. In order to see if others outside the design team were able to do this, we asked participants of a university-led science festival (funded by the Economic and Social Science Research Council (ESRC) to attend an interactive workshop called 'looking through the lens of a 6yr old' to test our ideas on distilling prescriptive activities into fundamental language. The workshop explained the process of taking an idea and distilling it until only 3 words were left to describe a non-prescriptive, playful activity that had an outcome. Firstly, discussions at the end of the workshop, revealed that this activity was more difficult than it first seemed, the distillation took three or four iterations, each time removing any prescriptive words. Secondly, post workshop discussions explored why more of children's education should be non-prescriptive allowing them to use imaginative learning techniques, removing criteria, assessment and comparison of peers. The benefits being that the children would take ownership of their learning and that it would be self-directed, and they would enjoy it. Figure 2. Shows a selection of prompts that were given out to children.

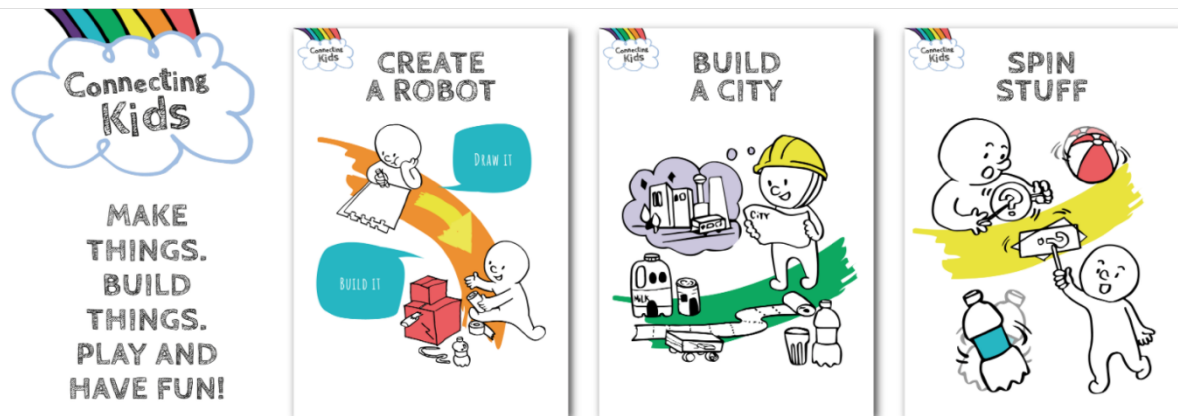


Figure 2. prompt posters (Graphics by Nuri Kwon)

Figure 3. is an example of how the interactive workshop helped the distillation of projects that lead to a provocation or prompt that is non prescriptive. Each iterative stage removes prescriptive words until only the fundamental essence of a project is left, that still has an outcome.

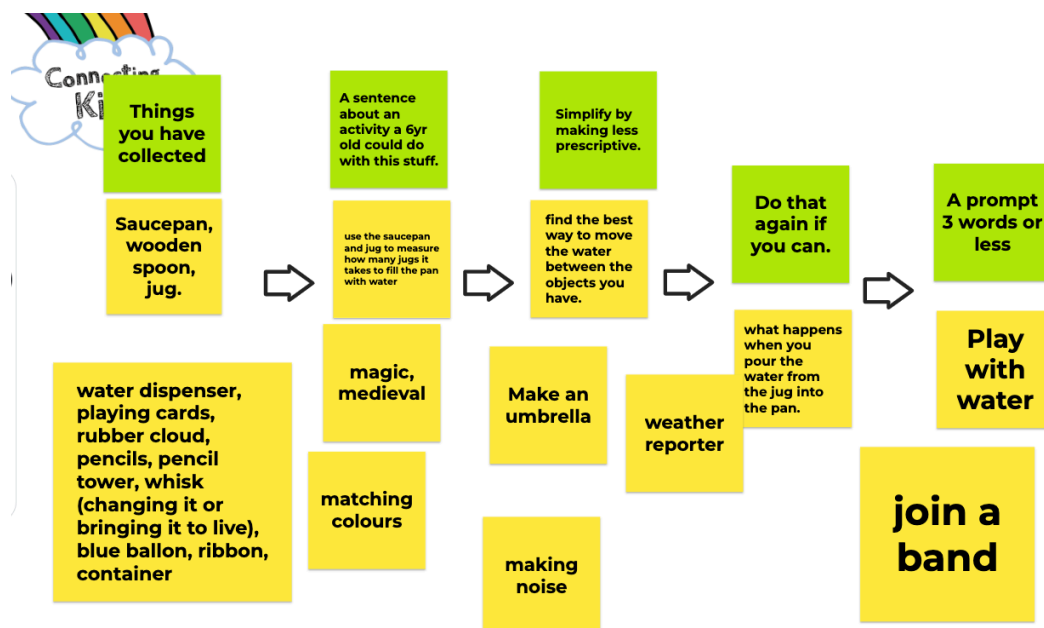


Figure 3. Distilling projects to fundamental language

Getting Resources to Those Who Needed Them

There were a number of issues that needed to be addressed before the realisation and distribution of these resources.

Beyond Imagination, Lancaster University's design research laboratory agreed to fund the initial round of 500 box resources. The budget for each child's resources was set at between ten and twelve pounds sterling.

The unprecedented situation that the Covid 19 pandemic created was challenging, the multidisciplinary team including university staff and teachers, did not meet face to face until after social distancing legislation was lifted. All meetings for the development of the resources were carried out online or on the telephone. The unfamiliarity with online meetings and software were problematic for the academic team at times but those members of the team who were not affiliated to the university were not privileged to the same digital communications channels, this highlighted another level of inequality and access to adequate resources.

The teachers in school at this time were under significant pressure to continue to deliver learning in the classroom, online and via the postal service, often visiting children's houses before and after school hours to continue contact and care for their wellbeing as well as their learning. To ensure that demands on teacher's time was minimal by the researchers and outreach staff there would be only one point of contact and that person would be responsible for arranging appropriate meetings and discussions.

The box, resources and prompt posters, were developed and prototyped by individuals within the team and all the materials were ordered online and delivered to the university. Outreach staff and volunteer students who were already living on site in the university packed the boxes and they were then delivered in batches to schools by the university outreach staff, in their cars to begin with and then by van.

Schools distributed the boxes in a number of ways, children who were already in schools were given boxes, those children who were at home were invited into school to collect their box or it was delivered to them at home by teaching staff. The box was distributed with three prompt posters initially but more posters were released in batches of three each week, teachers reported that children were asking for the next set of posters before they had been sent and were completing the activities as soon as they received them. Children who were not supposed to be in school during the social distancing lockdown periods were asking if they could attend after school computer classes in one school, this allowed them to pick up a poster before it was sent via the postal service, enabling the children to receive them a whole day in advance.

Responses to the Resources

Parents of the children who used the 'Box' resource fed back that they had observed their children working with siblings on projects and that this was unusual, they reported that existing bonds between parents and grandparents had been strengthened, in part because parents and grandparents were not intimidated by the prompts, often they did not do homework with children as they thought they would not be able to do it. The prompts were not recognised as school work.

As restrictions began to ease children were encouraged to take their 'Box' into school and use it to help them visualise abstract concepts, not just in design and technology and art but across the curriculum of subjects. Teachers began to notice some of the materials from the 'Box' creeping into homework projects in other areas of the curriculum, suggesting that the mindset for playful discovery was travelling from the informality of home and children were seeing the potential applications of this mindset.

Teachers encouraged children to use the ‘Box’ when they got stuck on a project or when they began to misbehave after losing concentration. The resource was given to children instead of punitive measures in some cases, allowing them to be playful but still focussed on the work in hand.

Teachers from a special school reported that using the ‘Box’ as a mediation tool had helped one child to be reintegrated into mainstream education. Figure 4. Shows some of the responses from isolated children followed by accompanying messages from parents.



Figure 4. Some of the responses from isolated children

- “She has really enjoyed the box! Thank you so much, I will get a pic of ‘C’ with her makes as well send in.”
- “ ‘A’ has really enjoyed making things out of his craft box. Thank you, here are some of the bits he’s been busy making.”
- “The girls have finished the robot they made together”

Potentially the boxes of each child might change and evolve individually, each child adding their own resources or collections of materials and artefacts.

Conclusion

In this paper we have shown that using designerly thinking (Cross 1982) and fundamental language supports children and teachers to reignite imaginative, experimental ways to connect and learn. Approximately 3000 ‘Box’ resource packs have been distributed to children up to this point.

The project has had impact at multiple levels, it has helped to reignite the imagination of primary school children and reconnect them with their teachers during the unprecedented situation that resulted from the Covid 19 pandemic. It has helped to strengthen the relationships that already existed between children and their parents, grandparents and siblings. Furthermore, the ‘Box’ has given teachers a mediation tool that helps children to be imaginative, supporting playful discovery in the classroom. Teachers are responding to the changes seen in the children and researchers are seeing changes in practices in schools. Head teachers reported that children were to be given access to the ‘box’ on their desks, to add richness to their learning and children would not need to ask to use this resource.

The teachers who have been interviewed so far in this project have highlighted elements that they said helped to create the mindset for playful discovery, as follows;

- Embracing and valuing failure
- Being comfortable with uncertainty
- Being experimental
- Being playful
- Informality
- Non prescriptive
- No assessment
- No comparison to others
- Self-directed
- Joyful

The Box project was a product of the Covid 19 emergency, we have distributed over 3000 boxes and the replenishment of these boxes is an ongoing activity and part of a long-term commitment to the schools and children. Our learning from the Box project also informed the development of a new project with longer term aims, exploiting the possibilities to work more directly with children and staff in schools. Fuse: codesigning discovery, is a project engaging 60 children and their teachers and support staff. A series of workshops for teachers and children have taken place to establish how to share fundamental language and new ways of using designerly thinking in learning. Researchers will be scaling the Fuse project to support more children and teachers to uncover playful approaches to discovery. There remain fundamental issues with the language used in design practices. They centre on providing explicit, shared language that can be used by anyone who wants to be a confident agent of change.

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