



University of  
Sheffield



Nottingham Trent  
University



European Research Council

Established by the European Commission



# Project Fortitude

---

Final Report

# Contents

<b>Acknowledgements</b>	<b>4</b>
<b>Executive Summary</b>	<b>5</b>
<b>Introduction</b>	<b>6</b>
<b>1. A new legal capability framework for children</b>	<b>8</b>
<b>1.1. Baseline legal capability</b>	<b>8</b>
<b>1.1.1. Baseline legal capability – Learning outcomes</b>	<b>9</b>
<b>1.1.2. An example from <i>Law Yeah!</i></b>	<b>9</b>
<b>1.2. Intermediate level</b>	<b>10</b>
<b>1.2.1. Intermediate level – additional learning outcomes</b>	<b>11</b>
<b>1.2.2. An example from <i>Law Yeah!</i></b>	<b>11</b>
<b>1.3. Advanced level</b>	<b>12</b>
<b>1.3.1. Advanced level - level – additional learning outcomes</b>	<b>12</b>
<b>1.3.2. <i>Law Yeah!</i> – moving from the specific to the general</b>	<b>13</b>
<b>1.4. Confidence</b>	<b>13</b>
<b>2. Developing <i>Law Yeah!</i></b>	<b>14</b>
<b>2.1. Underpinning research</b>	<b>15</b>
<b>2.2. Theories of play and serious games</b>	<b>15</b>
<b>2.3. Research with children</b>	<b>16</b>
<b>2.3.1. Ethics Approvals</b>	<b>17</b>
<b>2.4. Developing game scenarios</b>	<b>17</b>
<b>2.4.1. Mapping and storytelling</b>	<b>18</b>
<b>2.4.2. Identifying relatable settings for scenarios</b>	<b>19</b>
<b>2.4.3. Scenario creation</b>	<b>19</b>
<b>2.4.4. Adverse Childhood Experiences</b>	<b>19</b>
<b>2.4.5. Diamond-ranking &amp; storyboarding</b>	<b>20</b>
<b>2.4.6. Working with a commercial developer</b>	<b>22</b>
<b>2.4.7. Prototype testing</b>	<b>22</b>
<b>2.4.8. Finalising scenarios</b>	<b>23</b>
<b>2.4.9. The technical build</b>	<b>23</b>
<b>2.5. Developing the board game</b>	<b>24</b>
<b>2.5.1. Game premise</b>	<b>24</b>
<b>2.5.2. Knowledge, Skills and Wild cards</b>	<b>25</b>
<b>2.5.3. Reading requirements</b>	<b>26</b>

<b>3. Measuring legal capability</b>	<b>27</b>
3.1. Measuring knowledge	28
3.2. Measuring skills	28
3.2.1. Scoring	29
3.3. Measuring confidence	30
3.3.1. Developing the scale	30
3.4. Gamification of measures	31
3.4.1. Sustainability	32
<b>4. Evaluating <i>Law Yeah!</i></b>	<b>33</b>
4.1. The inclusive case study	34
4.1.1. Recruitment & participation	35
4.1.3. Research activities	37
4.1.2. Analysis and findings	38
4.2. The quantitative study	39
4.2.1. The study design	39
4.2.2. Types of play	39
4.2.3. Participant and school demographics	40
4.2.4. Recruitment	40
4.2.5. Participation	41
4.2.6. Approach to analysis	41
4.3. Findings – primary schools	41
4.3.1. Context Analysis: Knowledge	42
4.3.2. Context Analysis: Skills	42
4.3.3. Context Analysis: Confidence	43
4.4. Secondary school findings	43
<b>5. Conclusion</b>	<b>45</b>
<b>References</b>	<b>46</b>
<b>Appendices</b>	<b>48</b>

# Acknowledgements

**The European Research Council (ERC)** funded this research under the European Union's Horizon 2020 research and innovation programme (Grant agreement No. 818457).

**The project lead** was Professor Dawn Watkins. The project was based at the University of Leicester from May 2019 to November 2020, and at the University of Sheffield from January 2022 to May 2025. Due to the impacts of Covid-19, the research was suspended from December 2020 until January 2022.

**Senior research** collaborators were Professor Clare Wood Nottingham Trent University Psychology (2019-2025), Professor Nigel Balmer and Professor Pascoe Pleasence, University College London Faculty of Laws (2019-2020).

## Research team members were:

### School of Law, University of Sheffield:

Research associates Dr Ann George, Dr Dimitra Magkafa and Dr Charlotte Mills, and Jon Gunnell (project manager).

### Nottingham Trent University (NTU) Psychology:

Dr Emanuele Fino (senior researcher), Suzannah Hemsley (research assistant), Professor Thom Baguley (non-costed consultant).

### University of Leicester:

Professor Effie Law (senior researcher), Professor Alex Moseley (educational designer), Research associates Dr Sophia Gowers, Dr Naomi Lott and Dr Kat Mycock, and Research assistants Dr Mayuri Gogoi, Jo Nyamuda and Dr Anna Zsubori.

**Over 800 children and young people** took part in this research, including our child and young people advisory boards, and we would like to thank them very much for giving up their time and sharing their ideas with us.

In line with the ethics approvals secured for the research, we are not naming the schools which took part, but we would like to thank all the headteachers, teachers, parents and carers who enabled this research to happen.

We would also like to thank the small group of **adult advisers** who contributed their expertise at various stages of the project.

### Suggested citation:

Watkins, D., George, A., Hemsley, S., Magkafa, D., Mills, C. and Wood, C., (2025) Project Fortitude Final Report. Sheffield: University of Sheffield and Nottingham Trent University.

## Executive Summary

Project Fortitude is a pioneering research initiative. Its aim has been to create resources which improve children and young people's 'legal capability' – i.e. their ability to deal effectively with law-related issues they encounter in their everyday lives.

The project's focus on children and young people (hereafter 'children') moves beyond previous research into legal capability, which has focused on adults or those nearing adulthood. Another significant innovation is its application of game-based learning in this context.

This report outlines how the project team has worked with children and with a commercial developer (Four, Sheffield) to create *Law Yeah!* (freely available at [law-yeah.com](http://law-yeah.com)) a digital game designed to help players improve their legal capability, through engaging with scenarios encountered in their everyday lives. A board game version is also available.

Companion 'gamified' measures were created and used in the research to evaluate how far (if at all) legal knowledge, skills and confidence improved among participants who played the digital game.

This evaluation demonstrated a significant increase in legal knowledge and skills among participants aged 7-11 years, when the game was played in primary schools. There was also a modest increase in confidence, but not one that was statistically significant.

Legal knowledge improved best when the game was played in teacher-led sessions on a whiteboard, whereas independent play on school tablets or PCs was most effective for improving skills. There were no significant improvements for participants who played the game independently at home.

A separate case study evaluation also showed positive outcomes (increased knowledge of the law) for children aged 3-6 years. However, insufficient data were gathered to evaluate the effectiveness of the digital game for participants aged 11-15 years, from secondary schools.

The project was based in England and considered the child's legal position in this jurisdiction. However, both the digital and board game versions of *Law Yeah!* have been designed to be adapted for use in other populations, under a free-licensing system.

A new theoretical framework for developing children's legal capability was created in this project, which can also be used to support the development of learning interventions in other populations. This framework can be applied to a range of methods of delivery, and not only game-based learning.



# Introduction

The aim of this project has been to create resources which enable children to improve their legal capability.

On paper, children are both empowered and protected by domestic law, and by the United Nations Convention on the Rights of the Child ('UNCRC'). In practice, however, we know that many children suffer, or are at risk of suffering violence, abuse and neglect.

This research aimed to provide opportunities for children, especially those who are at risk, to understand how the law and the UNCRC apply to them, and to the adults involved in their care; so increasing the likelihood of them accessing support and securing protection from harm.

More broadly, this project sought to strengthen all children's capability to deal effectively with the many other law-related issues that they encounter in their day-to-day lives. This is based on the view that children are competent social actors, whose views should be taken seriously (Prout, 2002).

## Focus on play

A focus on play was central to the project and our approach represents a generalisation of a successful game-based intervention called Adventures with Lex created in the Law in Children's Lives project, funded by the Economic and Social Research Council (ESRC) from 2014-2016.

In keeping with this approach, the main output from project Fortitude is *Law Yeah!* a digital game designed to help players improve their legal capability, through engaging with scenarios encountered in their everyday lives. A board game version is also available.

The digital game was designed to be suitable for players from a young age (3 years upwards), and for older players of mixed abilities, with or without adult support. The board game is more suitable for players aged 7 years upwards.

## A new framework

As well as being informed by theories of play and serious games, the design of *Law Yeah!* was informed by a new theoretical framework for developing children's legal capability, created in this research project.

To some extent this framework draws on existing adult-focused legal capability scholarship. For example, it is structured around three foundational elements of knowledge, skills and confidence (Jones, 2010). However, it also departs from this scholarship in a number of distinctive ways.

For example, rather than focusing on a person's ability to deal effectively with 'justiciable' issues, it includes issues which are relevant to the UNCRC, but for which no legal remedy is currently available. This includes key provision such as the child's right to express their views, and have these views taken seriously, on matters that affect them (Article 12).

The framework also turns the usual approach to legal education upside down as it 'decentres' the law and legal institutions, and instead places the learner and their lived experience its core. This means that children begin by learning how the law and/or the UNCRC applies to specific situations, before going on to learn more about the law, legal institutions and the UNCRC more generally.

## Gamified measures

Companion 'gamified' measures were created and used in this research to evaluate how far (if at all) legal knowledge, skills and confidence improved among participants who played the digital *Law Yeah!* game.

The knowledge test consisted of 12 multiple choice questions (one set for primary school children, and another for secondary school children), and the situational judgement test comprised another 12 scenario-based questions (the same for both age groups). These were developed incrementally, drawing on advice from children and adult experts on content, and from children and the commercial developer on design.

A psychometric scale was developed to measure children's levels of confidence, linked to their rights under the UNCRC. This Children's Rights Confidence Questionnaire (CRCQ) scale included questions connected to self-efficacy and collective efficacy (Bandura, 1997 and 2000). It also included questions linked to three basic psychological needs (autonomy, competence and relatedness) which are considered key to self-determination (Deci and Ryan, 2004).

## Working with children

Working with children was an essential feature of the project, yet one which was challenging to achieve. The original intention was to recruit groups of children across a wide age range, from a number of different school settings, and to continue to work with these groups for the duration of the research.

Initial steps were positive, with 139 children aged between 3 and 14 years being recruited from six schools in Leicester and surrounding areas. Research visits commenced in Autumn 2019, with participants engaging in mapping and storytelling activities; providing valuable insights into the places they go, the things they see, and things that happen there.

However, research visits came to an abrupt and unexpected halt, following the nationwide lockdown announced on 23 March 2020, due to Covid-19. As restrictions continued into Autumn 2020, sadly it proved necessary to suspend the project.

The project restarted in January 2022, at the University of Sheffield – making it necessary to recruit new groups of participants locally. This was eventually successful, with over 400 participants becoming engaged in research activities from the Autumn 2022 onwards. However, the original aim of continuity was disrupted, which is a limitation of the research.

Two new Child and Young Person Advisory Boards were recruited in Sheffield (one secondary, one primary). The primary group involved the same 11 children throughout, who met with the research team regularly to discuss and review progress. Membership and meetings with the secondary group were more ad hoc, but the group provided valuable insights on a range of issues, particularly on game design.

Towards the end of the project, when the board game was being designed, two further advisory boards who were already children's rights ambassadors for their schools (one secondary, one primary) were recruited to offer advice on design and content.

## Evaluating *Law Yeah!*

The digital *Law Yeah!* game was evaluated in two different ways: through qualitative case studies undertaken with 3-6 year olds (which we termed 'the inclusive case study') and a larger scale quantitative study involving groups of children aged 7-15 years (primary and secondary), who completing the gamified measures before and after repeated game play, and 'business as usual' control groups.

The inclusive case study work was undertaken with an early version of the digital game. As a result, it was hindered to some extent by technical glitches at this stage of its development, but nonetheless there was evidence from across the case studies that repeated playing of the game positively impacted the majority of the children's knowledge in relation to understanding when a situation was problematic and who may be able to help them.

In terms of the larger-scale evaluation with older children, insufficient data were gathered at post-test to evaluate the effectiveness of the digital game for participants aged 11-15 years, from secondary schools. However, there was evidence of a significant increase in legal knowledge and skills among participants aged 7-11 years, when the game was played in primary school contexts. There was also a modest increase in confidence, but not one that was statistically significant.

Legal knowledge improved best when the game was played in teacher-led sessions on a whiteboard, whereas independent play on school tablets or PCs was most effective for improving skills. Interestingly, there were no significant improvements for participants who played the game independently at home.

The project concluded on time and within budget. It has largely met its objectives, providing a robust foundation for future development, and creating valuable opportunities for children to improve their legal capability.



## Section 1

# A new legal capability framework

# 1. A new legal capability framework for children

The legal capability framework for children consists of three levels (baseline, intermediate and advanced). It is designed to be applied flexibly in light of the evolving capacities of each child, in line with Article 5 of the UNCRC.

It focuses on the knowledge, skills and confidence a child needs in order to deal effectively with law-related issues they encounter in their everyday lives. This may be in person, or online - at home, at school, and in their communities.

For some children these law-related issues include experiencing neglect or abuse. In these circumstances, it is vital that children know how the law and the UNCRC applies to them, and that they possess the necessary skills and confidence to seek help, or take other appropriate action, to secure protection from harm.

For others, the issues may be more mundane, such as buying something which turns out to be faulty. Here, a legally capable child will understand their consumer rights, and be able to take steps (with or without adult support) to secure a remedy.

And for children who become involved in wrong-doing (bullying, for example), being legally capable means that they will understand that they can be liable under the civil law for causing harm to others, and criminally responsible from the age of 10.

Notably, the issues are not limited to those which are justiciable, and can include those which are relevant to the UNCRC, but for which no legal remedy is currently available. A continued emphasis on the child's right to express their views on matters that affect them, and to have these views taken seriously (UNCRC Article 12) is a core feature of the framework.

## 1.1. Baseline legal capability

The framework turns the usual approach to legal education upside down as it 'decentres' the law and legal institutions, and instead place the learner and their lived experience its core. This means that children begin by learning how the law and/or the UNCRC applies to specific situations, before going on to learn more about the law, legal institutions and the UNCRC more generally.

Crucially, this means that the framework is relevant for all children, including very young children and some children with additional learning needs – for whom legal capability may not only begin but remain at baseline level.

The framework prioritises safeguarding at this level, and envisages that through scenario-based learning, linked to the application of the UNCRC, the child will be able to recognise when a situation is a problem, seek help from an appropriate person, and escalate if help is not forthcoming.

### 1.1.1. Baseline legal capability – Learning outcomes

<b>Knowledge</b>	<p>I know there is an international document called the UNCRC that says I have rights.</p> <p>Knowledge I know how the UNCRC applies to situations I encounter in my everyday life.</p> <p>I know I have the right to speak about things that affect me.</p>
<b>Skills</b>	<p>I am able to recognise when a situation I encounter is a problem.</p> <p>Skills I am able to identify appropriate sources of support.</p> <p>I am able to take appropriate action (e.g. seek help).</p> <p>I am able to escalate the action appropriately.</p>
<b>Confidence</b>	<p>I am more confident to speak up when I face a difficult situation.</p> <p>Confidence I am more confident that I can have a successful outcome if I face a difficult situation.</p>

### 1.1.2. An example from *Law Yeah!*

In a scenario where someone is being bullied by someone at school, *Advocat* (a key character in the game) advises the player that they have a right to be protected from being hurt by this person. The player is then asked to decide what to do about this, by selecting one of four options provided, and receives feedback on their choice.

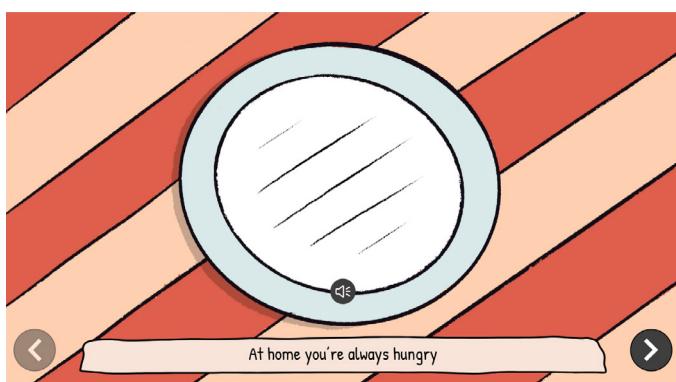


Screenshot from *bullying scenario*



Advocat giving advice in *bullying scenario*

It is only after completing this stage that the player is encouraged to link this information to their generic right to be protected from harm under Article 19 of the UNCRC, and then to learn more about the law, legal institutions and the UNCRC in 'the legal training ground'.



Screenshot from *lack of food scenario*

The child's right to be protected from harm under Article 19 is repeated in a scenario where the child is not being given enough food to eat at home. Again, the focus is on applied learning, with *Advocat* advising the player that 'you have the right to be given enough food to eat'.

This scenario is included in memory of Daniel Pelka (2007-2012) who was starved, abused and eventually murdered by his mother and her partner but attended school throughout this period of abuse. At school, Daniel always appeared hungry and was often found scavenging in bins for food. However, Daniel's mother's explanations for this behaviour were accepted by the school and there is no record of anyone talking directly to Daniel about his life at home or the reasons for his apparent hunger (Coventry LSCB, 2013).



Advocat giving advice in *lack of food scenario*

## 1.2. Intermediate level

The framework is incremental, with each level being a prerequisite to the next. So at intermediate level, all the baseline level learning outcomes remain relevant. The approach to learning also remains the same at this level, meaning that as knowledge of domestic law is introduced, the focus remains on knowledge linked to children's lived experiences.

So just as at baseline level the child is expected to know that there is something called the UNCRC that says they have rights, here they are expected to appreciate there are rules called laws that apply to everyone. However, more detailed knowledge of the UNCRC and/or the law remains limited to the application of these provisions in context.

### 1.2.1. Intermediate level – additional learning outcomes

<b>Knowledge</b>	<p>I know that in the country where I live there are rules called laws that apply to everyone and that have legal outcomes.</p> <p>I know how the domestic law applies to this situation.</p>
<b>Skills</b>	<p>I am able to identify the possible consequences of this situation.</p> <p>I am able to identify an appropriate remedy in this situation.</p>

Whereas safeguarding and help-seeking remain a fundamental concern, at this stage it is also envisaged that the child may also begin to encounter circumstances where it is appropriate to act themselves (individually or collectively) to resolve a problem.

They are also expected to develop an appreciation of the possible negative consequences arising from their own or others' wrong-doing, tempered by the development of an understanding of the limits of police powers – in relation to stop and search, for example.

### 1.2.2. An example from Law Yeah!

In this scenario, the player has bought a t-shirt from a shop, and wants to return it, because they have changed their mind.



Advocat giving advice in bullying scenario

Advocat advises that they don't have the right to return it they have changed their mind, but also explains that if the t-shirt had been damaged when they bought it, they would have had the right to return it.

After this, the player has the opportunity to match the applied legal information to the relevant legal provision (here the Consumer Rights Act 2015) and then to find the source of this act (from a choice of Parliament, the courts, or the UNCRC).

**Match your right**  
Tap the Law that matches what Advocat says!

**Consumer Rights Act 2015**  
People have the right to return things that they have bought in a shop if they are broken or damaged.

**Children and Young Persons Act 1933**  
It is against the law for anyone aged 16 and over to neglect, abandon, or mistreat a child on purpose when they are supposed to be looking after them.

**Malicious Communications Act 1988**  
It is against the law to send messages online that are threatening or harmful.

Match your right screenshot

Where did this come from?  
Drag it to the right place!

**Consumer Rights Act 2015**

UNCRC Court Parliament

Find the source screenshot

After engaging with this applied learning, the player can then – if they want to – access 'the legal training ground' to find out more about the law, legal institutions and the UNCRC more generally.

### 1.3. Advanced level

It is only at this level – so only after they have engaged with learning linked directly to their lived experiences, and focused on applied legal and UNCRC knowledge, that there is an expectation that children will know about the sources of law, the different types of law, the legal system (e.g. how laws are made), and to demonstrate a more generalised understanding of the UNCRC.

It is also only at this stage that children are expected to demonstrate an ability identify for themselves the relevant UNCRC articles or legal provisions to a situation they encounter, and draw on this as the basis for taking appropriate action. This aligns with the

so-called ‘IRAC’ model used in undergraduate legal education, which invites law students to identify the legal issue and the relevant legal rule/s, then apply these to form a conclusion.

Once they have reached this level, we envisage that some children may also develop a sophisticated understanding of the relationship between legal and UNCRC rights, and a more critical understanding of the law and the legal system more generally. Hence the ability to communicate concerns about inadequacies in the law, or lack of rights provision to a lawmaker/policy maker is included as an additional skill at this level.

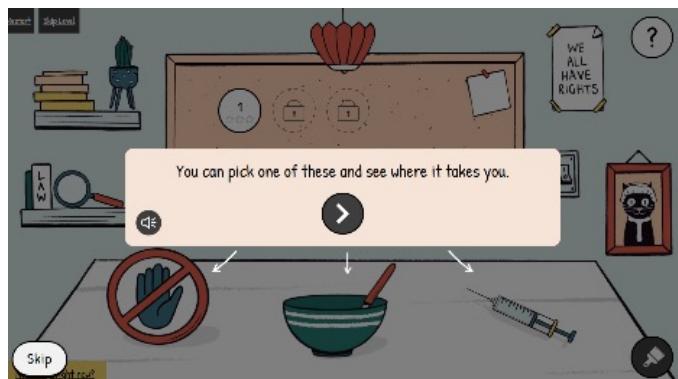
#### 1.3.1. Advanced level - level – additional learning outcomes

<b>Knowledge</b>	<p>I know the sources of law and children’s rights (Parliament, courts, UNCRC)</p> <p>I understand how the legal system works</p> <p>I know what the domestic law and/or the UNCRC says in general about a situation I encounter.</p> <p>I have a critical understanding of law and rights under UNCRC, and how they relate to each other.</p>
<b>Skills</b>	<p>I can identify the UNCRC article or the law (statute or case name) which is relevant to this situation.</p> <p>I can communicate my concerns about inadequacies about the law, or lack of rights provision to a lawmaker/policy maker.</p> <p>I am able to transfer my learning about rights and law to new contexts.</p>

This is the point at which children’s legal capability most closely aligns with access to justice in the formal sense. However, in contrast to adult-focused legal capability frameworks, the framework does not include initiating or navigating legal proceedings independently as a skill, even at this most advanced level. Rather, the ability to engage with legal professionals, or other advice and support services, forms part of the skill of identifying appropriate sources of support, and taking appropriate action, which begins at baseline level and develops incrementally.

Research into moral development and social cognitive domain theory indicates that children will recognise elements of their original experience and transfer their knowledge and skills when making decisions in other contexts (Nucci and Nucci, 1982; Smetana, 1984). Hence the skill of transferring learning to new contexts is included at this level.

### 1.3.2. Law Yeah! – moving from the specific to the general



Game hub screenshot

The positioning of more generalised knowledge at the advanced level of the framework is reflected in the design of the digital *Law Yeah!* game. From the outset, players are encouraged to explore scenarios, linked to objects in a central portal.

Access to the legal training ground is via an unmarked magnifying glass on a shelf, and pop ups that encourage players to visit the legal training ground appear only after the completion of the first few scenarios – to encourage initial engagement with applied legal learning. On accessing this area, players can explore the provisions of the UNCRC, and complete activities designed to develop their understanding of the legal system.

### 1.4. Confidence

It is notable that in this framework the learning outcomes relating to confidence remain the same. This is because confidence is understood in this framework as consisting of three components: self-efficacy, collective efficacy, and self-determination.

Research suggests that the extent to which a person is likely to act is linked to their belief in their ability to complete a task or achieve a goal (self-efficacy), and for groups, their shared belief (collective efficacy) (Bandura, 1997 and 2000).

Research also indicates that people are intrinsically motivated to act (or 'self-determine') when three basic psychological needs are met. These are: autonomy (freedom of choices), competence (mastery) and relatedness (sense of belonging) (Deci and Ryan, 2004).

The framework is designed to be instrumental in initiating and developing children's self/collective efficacy, and self-determination, prioritising applied legal/rights knowledge, and continually emphasising the child's right to speak up in matters that affect them.



Legal training ground screenshot



## Section 2

### Developing *Law Yeah!*

## 2. Developing Law Yeah!

As well as being informed by the legal capability framework created in the project, the development of the *Law Yeah!* game was informed by theories of play and serious games. In practice, its design and content were informed by research conducted with children across the lifespan of the project, and in conjunction with a commercial developer in its latter stages.

### 2.1. Underpinning research

The Fortitude project represents a generalisation of a successful game-based intervention created in the Law in Children's Lives research project, based at the University of Leicester and funded by a transformative grant from the Economic and Social Research Council from 2014-2016. In this project, a digital game Adventures with Lex was created and applied as a research tool to explore the legal understandings of over 600 children aged 8-11 years.

The project demonstrated that the incorporation of game-based design can prompt strong levels of engagement and enjoyment among the primary-school aged research participants (Barwick et al., 2016; Law et al. 2016).

The findings also demonstrated that the state of 'everyday' legal knowledge among children was a cause for concern (Watkins et al., 2018). Although children possessed a very strong understanding of and concern for gender equality, they rarely identified the relevance of their legal rights in this context. No child referred to their rights under the UNCRC; indicating that the UK government was not effectively fulfilling its Article 42 obligation to make the provisions of the convention known to children; concerns which have been confirmed more recently by the UN Committee on the Rights of the Child (UNCRC, 2023).

Children held limited knowledge or erroneous beliefs about the levels of force that adult authority figures are permitted to exercise over them. This is worrying because research suggests that children require a clear understanding of the limits of appropriate adult behaviour in order to reduce their vulnerability to abuse (Briggs and Hawkins, 1993). Many children were unsure whether the police were allowed to hit them (Watkins et al., 2018). And although some 63.9 per

cent of children correctly identified the age of criminal responsibility as 10 years old, they also demonstrated a strong tendency to associate the notion of criminal responsibility with imprisonment without trial (Watkins et al., 2016).

### 2.2. Theories of play and serious games

The aims of project Fortitude moved beyond those of the Law in Children's Lives project, as they focused on education and improving children's legal capability, rather than just on measurement, and data gathering. These aims were based on the hypothesis that children's legal capability can be developed through engagement with game-based learning.

At a broad level, this hypothesis rests on theories of play, drawing on the works of Johan Huizinga (1872-1945), Roger Caillois (1913-1978), Brian Sutton Smith (1924-2015), Bernard Suits (1925-2007), Jane McGonigal, Stuart Brown and Miguel Sicart (contemporaries). A notable characteristic of this scholarship is that it emphasises the role of play as a cultural or social activity and, more particularly, on the role of play in forming culture. Based on this, one of the longer-term aims of the project is to promote a culture of legal capability among children, by making *Law Yeah!* freely and widely available to them.

More particularly, research establishes that so-called 'serious games' which prioritise learning objectives beyond (just) entertainment can be effective tools for developing players' knowledge and skills acquisition (Girard et al., 2013). Possible reasons for the effectiveness of serious games include their high levels of interactivity and accessibility, and enhanced levels of engagement and motivation among learners (Anastasiadis et al., 2018).

It has been recognised games which are intrinsically motivating are most effective in engaging the player, and enhancing their enjoyment. The significance of intrinsic motivation is also recognised in the research on self-determination (one element of 'confidence' in this project), meaning that external rewards were deliberately limited in the design of the *Law Yeah!* game.

## 2.3. Research with children

As outlined in Table 1 below, the development of the *Law Yeah!* game was informed at various stages by the ideas, views and feedback of over 600 children, from a diverse range of settings in Leicester, Sheffield and surrounding areas.

Table 1: Game development participants

Setting	Number of children	Groups (school years)	Ages (years)	Activity	Dates (school terms)
<b>Primary School F (City)</b>	31	Nursery Reception	3-5	Mapping and storytelling	Autumn 2019 & Spring 2020
<b>Primary School E (Rural)</b>	15	Nursery Reception Years 1 & 2	3-7		
<b>Primary School B (City)</b>	18	Years 1-6	5-11		
<b>Primary School A (Semi-rural)</b>	59	Years 3-6	7-11		
<b>Secondary School D (City)</b>	3	Year 7	11-12		
<b>Secondary School C (Fee-paying, City)</b>	12	Year 9	13-14		
<b>Secondary School G (City)</b>	22	Year 9	13-14	Diamond-sorting, story boarding, game and measures development	Autumn 2022 & Spring 2023
<b>Secondary School H (City)</b>	54	Year 8 & 9	13-15		
<b>Primary School J (City)</b>	316 (maximum at any one time)	Years 3-6	7-11	Diamond-sorting, story boarding, game and measures development	Autumn 2022
<b>Primary School N (City)</b>	7	Year 4, then moved up to Year 5	8-10	Game and measures development Prototype testing	Spring & Summer 2023 Summer 2024
<b>Secondary School M (City)</b>	36	Years 7-9	11-14	Game and measures development Prototype testing	Spring 2023 to Summer 2024
<b>Secondary School K (City)</b>	19	Years 7-11	11-16	Child and Young Person Advisory Board	Autumn 2022 until Spring 2025
<b>Primary School L (City)</b>	11	Year 3 at outset, Year 5 at project end	7-10		Summer 2022 until Summer 2025
<b>Primary School J (City)</b>	10	Years 3-6	7-11	Child and Young Person Advisory Board (Children's Rights)	Spring & Summer 2025
<b>Secondary School R (City)</b>	12	Years 7-10	11-15		

This was a change from the original plan, which was to work to develop the game consistently with groups and schools recruited at the outset, at least up until the evaluation stage, when new groups and schools would be invited to take part.

Research visits commenced in Autumn 2019, with 139 children aged between 3 and 14 years, at six different schools in Leicester and surrounding areas. A group of Year 8 pupils from another school was due to take part from March 2020. However, research visits came to an abrupt and unexpected halt, following the nationwide lockdown announced on 23 March 2020, due to Covid-19.

Due to ongoing Covid restrictions, it became necessary to suspend the project from 1 December 2020 until 31 December 2021. The project restarted on 1 January 2022, at the University of Sheffield. New groups of participants were recruited, and research activities took place again from the Autumn term 2022 onwards.

Two new Child and Young Person Advisory Boards were recruited in Sheffield (one secondary, one primary). The primary group involved the same 11 children throughout, who met with the research team regularly to discuss and review progress. Membership and meetings with the secondary group were more ad hoc, but the group provided valuable insights on a range of issues, particularly on game design.

Towards the end of the project, when the board game was being designed, two further advisory boards who were already children's rights ambassadors for their schools (one secondary, one primary) were recruited to offer advice on design and content.

### 2.3.1. Ethics Approvals

All research activities were carried out in accordance with prior ethical approvals from the Research Ethics Committees of the University of Leicester and the University of Sheffield, (see appendix 1 for list of approvals), with overall monitoring from the ERC.

Informed consent from the Headteacher and from parents/carers was obtained in advance. Take up varied across settings. For School N, information and consent forms were translated into seven different languages at the Headteacher's request, to encourage parent engagement. Nevertheless, from two Year 4 classes (each of approx. 30 pupils) just 7 completed consent forms were returned, and a small number returned with 'no consent' marked on them.

School J was an exception to the usual approach, as the Headteacher required that all children in Key Stage 2 (Years 3-6) be given the opportunity to take part, as part of the school's PSHE (personal, social, health and economic education) provision for the term. With ethics approval, an 'opt-out' approach was taken in this setting, meaning that parents/carers were notified of the planned research activities in advance and given the opportunity to withdraw their consent, by notifying their child's class teacher. Before the research activities started, the research team also visited the school, explained the research to children in their classes, and answered questions. Initial work with schools G and H was also carried out on this basis.

No withdrawals were received. However, this did not mean that all children took part in every session. At the start of every research visit - at every school, researchers reminded children of their rights as research participants, using a set of images created in the course of the project. This includes the right to withdraw from the research activities at any time, which children actively exercised when they chose to do so. In practice, this meant that they returned to their normal class activities, or spent time reading instead.

Similarly to school J, school M was willing to accommodate the research activities so long as they could be incorporated into the school's existing agenda. For school M, this meant that involvement in the research was made available to groups of pupils on a termly basis, as one of a range of options in their extra-curricular and enrichment program. Parent/carer consent was obtained for those who opted to take part.

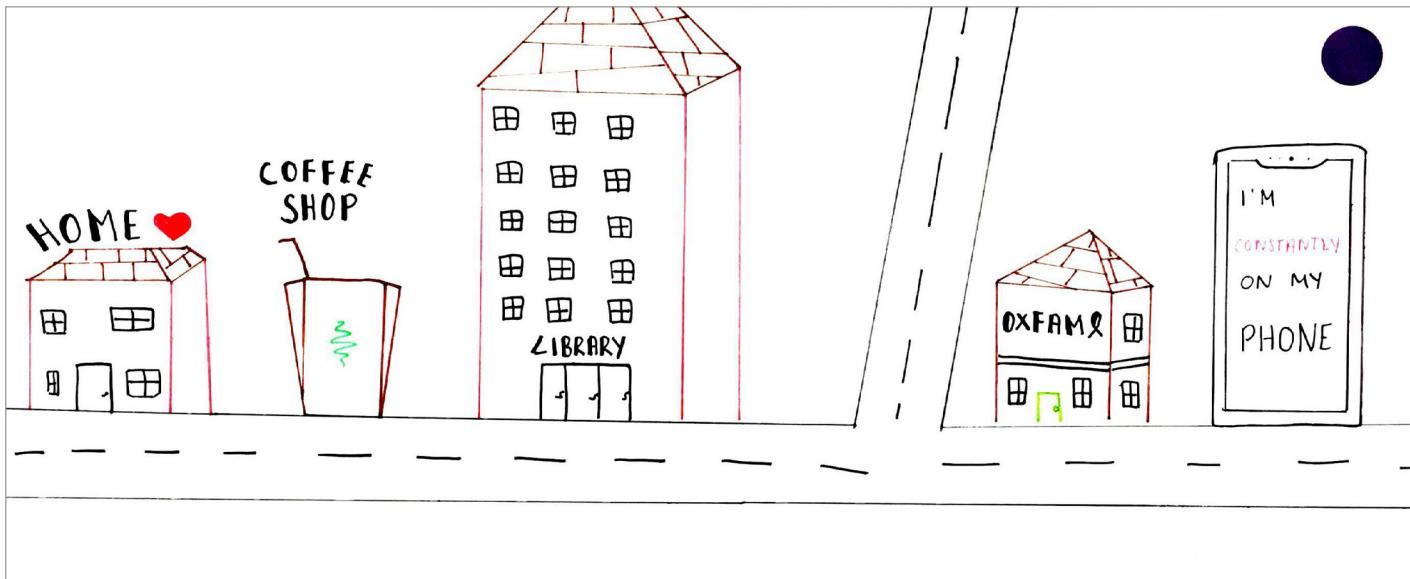
### 2.4. Developing game scenarios

This was one of the most practically and ethically challenging aspects of the research. In order to achieve the research objectives, it was important that the law-related scenarios included in the game resonated with a broad range of children, and not just those involved in the game development.

An additional challenge is that the research is predicated on the fact that children currently lack legal capability. It was therefore highly unlikely that children would volunteer a broad range of law-related scenarios if invited to do so – and when it comes to safeguarding issues, they were very unlikely to disclose these openly, if at all.

### 2.4.1. Mapping and storytelling

With these challenges in mind, the research team began by inviting children to work in groups, then individually, to map the places they go, the things they see, and things that happen there.



Map from School C participant, age 13-14 years

Individual maps were then storied by the children who created them to other members of their group in a 'gallery' exercise, where they had opportunity to ask and answer questions, and to a member of the research team in a 1-1 interview, which was audio-recorded.



Map from School A participant, age 7-8 years

*"And I also like to go like sometimes shopping with my mum... and I really enjoy going to... all the places, other places... like the park next door to school cos it's really fun"*

## 2.4.2. Identifying relatable settings for scenarios

The maps and transcripts were indexed, recording locations (e.g. home, shop, school, park), characters (e.g. family member, school staff, other child), and activities (e.g. transport, sport, play). Notable scenarios were also recorded, such as incidents involving the police, broken toys or equipment, and buying items from a shop.

Principal components analysis was then applied to the maps and stories (as two separate data sets) to establish how common different binary location, character, activity and incident variables were, and explore how they interacted with each other. The aim was to investigate what types of experience were common, with a view to building settings and scenarios to explore legal capability that would resonate with and engage children.

## 2.4.3. Scenario creation

From here, the intention was to share these findings with the research participants, and to engage them in co-creating and developing scenarios for potential inclusion in the game. For reasons already explained, it was always going to be necessary for the research team to create some hypothetical law-related scenarios for discussion and further development with children. However, these scenarios would be situated in contexts which resonated with them, and could be linked back to some of their stories.

Due to the disruptions already described, it was not possible to pursue this approach in this project. But for those who intend to draw on the framework as the basis for developing learning interventions in the future, it is recommended that the scenarios are developed with groups of children consistently over a period of time.

In preparation for working with new groups of children in new settings, the law-focused members of the research team took the socio-physical domains identified (home, park, school, being online, eating out, shops, sports and leisure, streets, using transport, and religion) and drafted approximately 10 short scenarios for each.

These were further refined through discussion among the wider team. For example, it was agreed that more sensitive scenarios would be worded in the second person ('your friend') rather than the first person ('you'). Finally, a simple illustration was created for each scenario by a member of the research team.

You're getting on a ride at a theme park and you notice that the safety bar isn't securing properly.

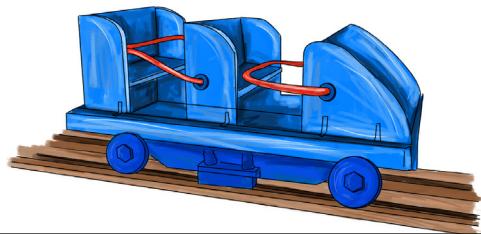


Illustration of theme park scenario

## 2.4.4. Adverse Childhood Experiences

In light of the aim to prioritise safeguarding, the research team drew on the literature on adverse childhood experiences (so-called 'ACEs') to inform the content of some of these scenarios. This literature is considered suitable because it has informed policy and practice across a range of disciplines internationally (Asmundson et al., 2019), and identifies categories of experiences (abuse, neglect and household dysfunction) which are known to be associated with significant and enduring negative consequences for children.

It is important to note that the list of so-called ACEs is not exhaustive, and they are not necessarily determinative of a child's outcomes. It has been pointed out, for example, that while parental separation is included as an ACE, an unhappy parental relationship can have a detrimental effect on children, whether the parents live separately or together (Public Health England, 2020).



Screenshot from parental separation scenario – opening scene

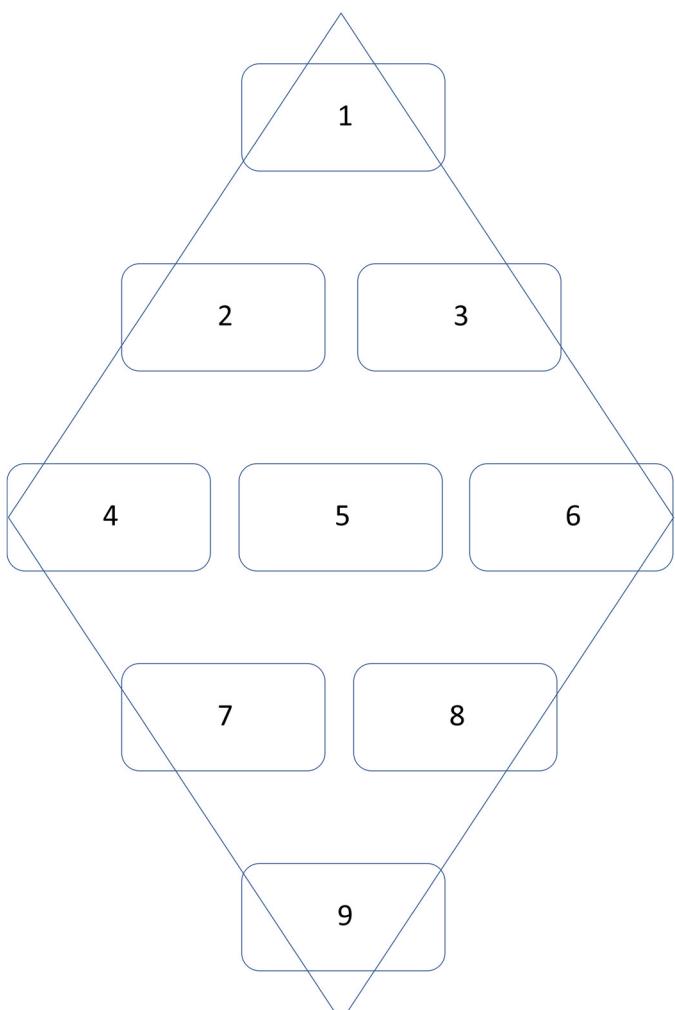
For this reason, in the *Law Yeah!* game, the focus is placed on the child's concerns about parental separation, and their right to express their views on matters that affect them (UNCRC Article 12).



*Screenshot from parental separation scenario – developing scene*

#### 2.4.5. Diamond-ranking & storyboarding

To explore which scenarios resonated with children within the domains already identified, participants in primary school J ( $n = 316$ ) secondary schools G and H ( $n = 22$  and 54) were invited to work in small groups to rank the scenarios, using a diamond ranking method.



*Diamond sorting template*

Diamond ranking or ‘Diamond 9’ is an established method for eliciting opinions and beliefs (Niemi et al., 2015) and for encouraging discussion, thinking and reflection (Clark et al., 2013).

It was explained to participants that the purpose of the exercise was to inform the learning game design, so scenarios which they considered important and/or interesting for children to learn about, should be ranked highest. They were invited to discuss the scenarios, stick them to the relevant part of the diamond, and then briefly explain or annotate the reasoning behind their ranking, using blank paper speech bubbles provided.

Scenarios which had been developed based on the ACEs literature were deliberately excluded from the diamond-ranking exercise, because this could cause upset to some participants, and there was limited opportunity for the research team to monitor and respond to this appropriately, given the scale of the activity.

The method was successful in prompting high levels of engagement among participants, and provided some insights into issues which they considered important, and why. However, analysing the populated diamonds to provide a definitive list of ‘top’ scenarios proved impossible, due to a wide variation in responses, and the disparity in cohort sizes presented significant challenges for the interpretation and generalizability of findings.

To address this challenge, responses from the secondary and primary school groups were analysed separately, and the secondary school groups were invited to choose from a reduced pool of their top-ranked scenarios, and create a storyboard. A more complex approach was taken to the analysis of the diamond-sorting data from primary schools, with a frequency analysis informing which scenarios were taken forward to story boarding.

As shown in this example, the storyboards were created on a template beginning with their chosen scenario, and ending with both fair and unfair outcomes.

The storyboarding was useful in illustrating the language used by children to describe legal issues. Through thematic analysis, it was noted that emotions, and strong emotional responses featured in many stories.

These findings informed the design of the game, and the situational judgements tests designed to measure skills (see section 3.2), for example, through the inclusion of emotional reactions in the range of response options linked to scenarios.



You're having a drink in a café. When you pour the drink into a glass, you realise there's a snail in the bottle.



I would tell my teacher, parent, head teacher and my friend. My parents and friends told me to report this issue on their website they have and to tell the manager and ask if I could have a free drink for a year to apologise. My teacher and head teacher was quite worried for me, but they said to report the situation to the manager. I did both of these things they requested to me and I, happy at the end but still really shocked, this happened. that was

FAIR

UNFAIR

AND THEN...

They gave me a set of drinks for free and they gave me a full refund on my drink I couldn't have. But I wasn't satisfied enough so I asked if they could deliver me drinks for a year for free and they approved.

The manager thought I was joking and didn't approve the free drink for a year and they banned me from the shop for putting a bad review on their website

THE END!

Example storyboard. School J Participant, age 10-11 years

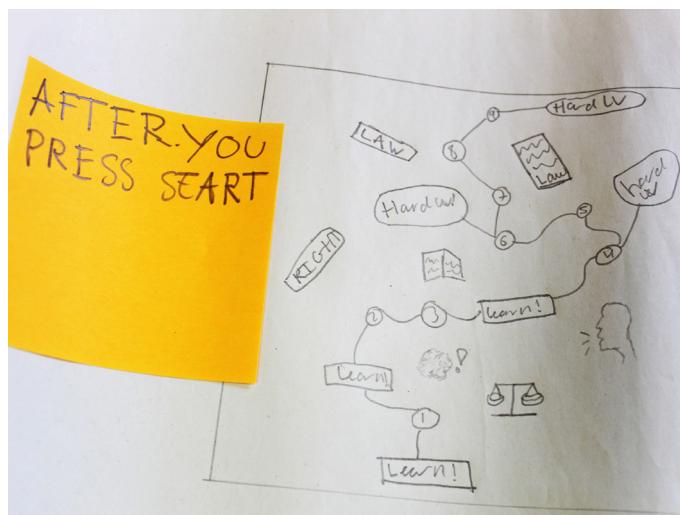
## 2.4.6. Working with a commercial developer

Four, the commercial developer engaged on the project, was appointed through a competitive tender process which took place in Summer 2023. Four worked with the research team on an agile basis, taking an iterative and collaborative approach, and incorporating ideas and feedback from children (via the research team) throughout the development process.



Game idea. School N Participant, age 8-9 years

By this stage, ideas for games and gamification, and information on the types of games they enjoyed, had already been gathered from children in primary schools J and N, secondary schools G, H and M, and from the two advisory boards in schools K and L.



Game idea. School M participant. Age 11-12 years

These were collated and provided to the developer, together with a wider summary of children's preferred gaming genres, the type of content they prefer to watch, and the most popular devices used by children to access the internet and play games, drawing on secondary sources (e.g. Clement, 2022; Ofcom, 2022). Work in progress on the legal capability framework was also shared with the developer.

Drawing on this information, the developer proposed four outline game concepts (see appendix 2), which were shared the project's child and young people advisory boards, and a group of children in school M. Based on feedback from all the groups, the option taken forward was (then called) 'The Rights' - an adventure with a detective-style narrative game, with 'portal keys' disguised as familiar everyday objects which transport the player to real world situations in familiar locations such as school, shops etc. The desk is filled with new portal keys for the players to continue to progress through the game. This formed the basis of the *Law Yeah!* digital game.

## 2.4.7. Prototype testing

A first prototype (P1) was built in Adobe XD, and tested by children at schools N (primary) and M (secondary), and by the advisory boards. As explained further in section 4.1.1 below, feedback was also gathered from younger children (3-6 years) and secondary-school aged children with additional learning needs, who had been recruited to take part in the inclusive case study evaluation of the digital game. A small number of teachers also provided feedback at this stage.

Feedback on P1 informed the design of the beta version of the digital game (P2) which was tested again with children in the same settings. Responses to P2 were positive and participants welcomed aspects of the design which had been improved based on their initial feedback (increased customisability, for example).

Some limitations were noted, however. For example, researchers observed that some participants did not explore the legal training ground at all – indicating that it may have been too well concealed in the game design. There were also a number of technical challenges, including problems with scaling and freezing. These issues were reported to the developer, so they could be resolved before the start of the evaluation.

Because this final development work was to take place over the school summer holidays, an 'ad hoc' group of children aged between 7 and 15 years was recruited (via their parents) to user-test P2, and provide feedback through questionnaires (again, via their parents).

## 2.4.8. Finalising scenarios

The P1 version of *Law Yeah!* consisted of three levels, with 9 scenarios in total. This was sufficient for testing out the functionality of the game, and for exploring its educational potential on a small scale in the inclusive case study (see section 4.1. below).

However, as anticipated, children who user-tested P1 reported that the game needed more levels, and in light of the wide range of scenarios identified by children as important and/or interesting during the diamond ranking activities, the research team was also concerned to include as many scenarios as possible in the final iteration of the game.

In practice, the number of scenarios which could be included was dependent on developer time and the available budget, and following negotiation with the developer it was agreed that the final version of the game would consist of seven levels, and 21 scenarios in total.



Screenshot from shopping scenario

It was then the task of the research team to work through the much larger pool of scenarios which had been developed in conjunction with children for possible inclusion in the game, and determine which would be included in the final iteration of the game. This was done primarily with reference to the legal capability framework which had been created in the project, and with more than one legal issue being collapsed into one scenario where possible (the t-shirt shopping scenario described in section 1.2.2. for example).

## 2.4.9. The technical build

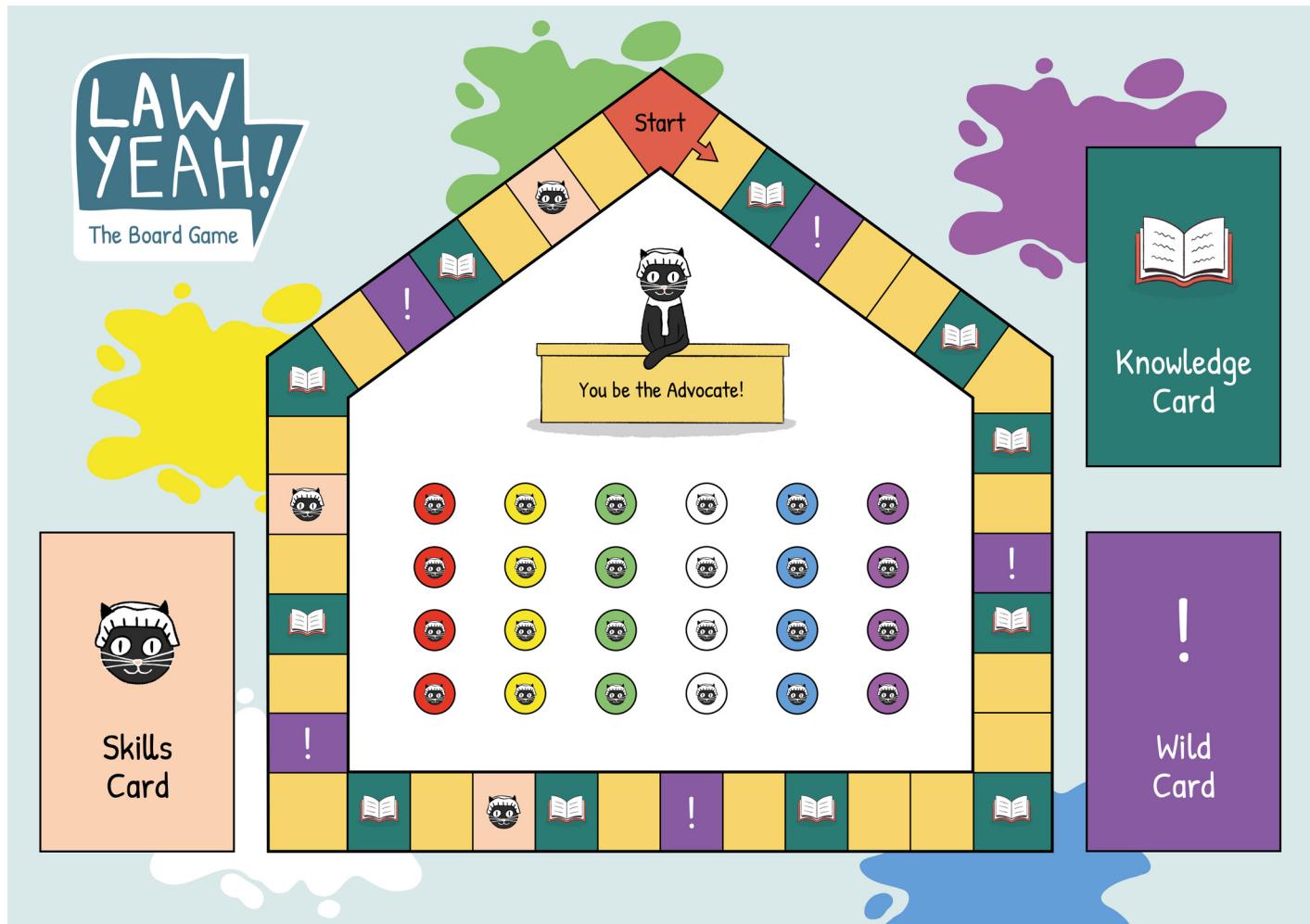
The digital *Law Yeah!* game has been developed as a web-based application. This means it can be accessed at [law-yeah.com](http://law-yeah.com) through a web browser on any device (e.g., PC, laptop, tablet and mobile phone), provided this has an internet connection. The game does not need to be downloaded or installed in order to be played, but it can be downloaded to a tablet or mobile phone as a web app.

Access to the game is free to players. However, there are costs associated with maintaining the game, and hosting it on a server. These costs were met by the ERC while the project was live. Additional funding from the University of Sheffield's ESRC Impact Acceleration Account has secured ongoing maintenance and hosting until the end of August 2026. Further funding will be needed to secure the free availability of the game after this date.

The game was created as a stand-alone JavaScript single page application, and supplemented with a local configuration file. The University of Sheffield owns the code, and has the right to grant others access to this code under a free licence. The game was created in React (which is open-source) in order to facilitate this.

## 2.5. Developing the board game

Game ideas and information gathered from children in the development stages of the project indicated that many of them enjoyed board games, and card games, as well as digital games.



*Law Yeah! game board*

The board game was designed by the commercial developer, working collaboratively with the research team, and drawing on feedback from the project's advisory board children. In addition, two new advisory boards were recruited from Rights Respecting Schools (UNICEF, 2025) to advise in the design and content of the game. These children were rights respecting ambassadors in their schools, so had particular knowledge and experience of learning about the UNCRC in school settings.

### 2.5.1. Game premise

From the research team's perspective, the board game represented an opportunity for children to practice some of the skills included as learning outcomes in the legal capability framework, especially help-seeking and escalating.

This was encouraged through the central premise of the game, which is for players to build up their knowledge and skills, and 'be the Advocate' – mirroring the character in the digital game who provides applied legal and rights advice to the players.

Players are rewarded with a token when they correctly answer a skills card question, and the first player to collect 4 tokens is the winner.

## 2.5.2. Knowledge, Skills and Wild cards

Two sets of knowledge and skills cards were created, Trainee and Expert. These have some over-lapping questions, intentionally designed to increase awareness of the UNCRC.

For example, two knowledge questions ask:

*The United Nations Convention on the Rights of the Child is an international document that lists all of your rights.*

**What do people call it for short?**

- A. UNCRC
- B. UN Kids

*There is an international document that sets out the rights of all children and young people.*

**What's it called?**

- A. Worldwide Treaty for Children and Young People
- B. United Nations Convention on the Rights of the Child

Skills cards reflect a continued emphasis on applied legal learning, and include many scenarios from the digital game. However, given the relatively low cost of producing the board game, it was possible to provide an extended range of scenarios in this context. Lower costs also mean that the card content can be adapted and further developed quite easily, as discussed further in section 5 of this report.

Wild cards introduce a random element into the game, which increases player engagement and enjoyment. Players who land on a wild card space and pick up a card might be required to:

- Move to the next knowledge space and answer a question.
- Miss a turn
- Go back to the start
- Have another turn

These instructions are contextualised in ways which deliberately (and unsubtly) emphasise the intended learning outcomes. For example:

Someone keeps sending you horrible messages online, which makes you upset. You block them and report them, and they stop contacting you.

**Have another turn**

You can't do your online homework because you don't have access to the internet at home. You don't tell your teacher because you think there's no point.

**Go back to the start**

Six additional ‘all play’ wild cards are included to encourage discussion and advocacy skills. For example:

### ALL be the Advocate!

Imagine you are all at the park. A police officer stops you and asks to look in your bags. They don’t explain why.

You know that the law says the police can search your bags if they have ‘reasonable grounds’ to do this. They must tell you their name and police station, and the reason they want to search your bag.

With the player next to you, or as a group, decide what you would politely say when you ask them for this information.

Carry on playing when everyone is ready.

### ALL be the Advocate!

Imagine you find out your local park might be shut down to build new houses. You will have nowhere else to go, and you know you have a right to play.

The Council is having a meeting about it, and everyone is invited. You decide to go to the meeting together and say why the park should not be closed.

With the player next to you, or as a group, decide what you would say at the meeting.

Carry on playing when everyone is ready.

### 2.5.3. Reading requirements

As demonstrated in the example content provided above, playing the board game involves a substantial amount of reading. This is a limitation of this format of the *Law Yeah!* game, when compared to the digital game, which includes audio descriptions of text.

However, in development sessions, groups of players have sometimes nominated one player to act as a question master for the entire game, and members of the research team and/or teachers have also joined in the game as question masters, to minimise the amount of reading required.



## Section 3

### Measuring legal capability

### 3. Measuring legal capability

Professors Pascoe Pleasence and Nigel Balmer (UCL) have pioneered the development of measures of legal capability in adults (Pleasence and Balmer, 2019). They were senior research collaborators on the Fortitude project when it started in May 2019, and led the measures development work until the project was suspended in December 2020.

Due to other commitments, Profs Pleasence and Balmer were unable to continue their work on the project following the period of suspension. So from January 2022, this element of the research was then taken up by a team at NTU Psychology, led by Professor Clare Wood who was already a senior research collaborator on the project.

Originally it was envisaged that a single scale would be developed to measure the three elements of legal capability (knowledge, skills and confidence). However, the research team's ongoing work on the

development of a new legal capability framework for children (the extent of which was unanticipated at the start of the project) led to a change of direction. Consequently, separate measures were created for each of the three elements, as follows:

- Knowledge – multiple choice questions
- Skills – situational judgement test
- Confidence – psychometric scale

#### 3.1. Measuring knowledge

Two knowledge tests, each consisting of 12 multiple choice questions were created for use in the project: one for primary schools and one for secondary schools (see appendix 3). Learning outcomes from the legal capability framework informed the drafting of the question content, and they were designed as single-best answer (SBA) questions.

There is an international document that sets out the rights of all children and young people.

#### What is it called?

- a) United Nations Convention on the Rights of the Child
- b) International Covenant on Young people's Rights
- c) Worldwide Treaty for Children and Young People
- d) Universal Declaration of Children's Rights

As demonstrated in the example above, SBA questions tend to consist of a stem (a short description to provide context), a specific question to follow the stem, and a list of plausible answers, from which only one is the best answer (NBME, 2016).

Drafts of questions were discussed with three adult experts: two primary school teachers and one secondary, who suggested some changes to wording and content. Iterations of the questions were also discussed and piloted informally (using turning point software) with the project's primary school advisory board, and with groups from primary school N and secondary school M, before being finalised.

The maximum score possible for each knowledge test was 12: the single best answer being awarded +1 point, and a score of zero being awarded for incorrect answers.

#### 3.2. Measuring skills

A situational judgement test (SJT) consisting of 12 scenarios was created to measure how far (if at all) children's legal and rights skills developed through engagement with the digital game (see appendix 4).

The limited research that exists on the development of SJTs for children suggests that engaging children at the design stage can help to ensure that they are relatable and understandable (Franssens et al., 2022; Murano et al., 2021; Wang et al., 2009). This was relatively easy to achieve in this project, because the scenario development work which was carried out with children to inform the game design, was equally relevant to the SJTs.

Iterations of draft questions were discussed and piloted informally with our two advisory boards (primary and secondary), and with a group from secondary school M, leading to a final set of 12 scenarios which were to be used in both primary and secondary settings in the evaluation. 9 out of 12 the scenarios included in the SJT mirrored those used in the game. 3 scenarios mirrored law-related issues which arose in the game, but in different contexts – linking to the ‘transfer of learning about rights and law to new contexts’ outcome included in the legal capability framework.

### 3.2.1. Scoring

For each scenario in the SJT, there were four possible response options as follows:

- **Score -1** Grossly inappropriate response
- **Score 0** Do nothing response
- **Score +1** Deliberate action but not the best
- **Score +2** Appropriate action



**Question 7 of 12** 

You're worried because your parents or carers have told you that they are going out and you don't know when they'll come home.

What do you do?

a)  Hide away until they come back

b)  Say nothing to anyone about it

c)  Contact a friend and tell them you're worried

d)  Tell your parents or carers that you're worried

*Screenshot from gamified skills test*

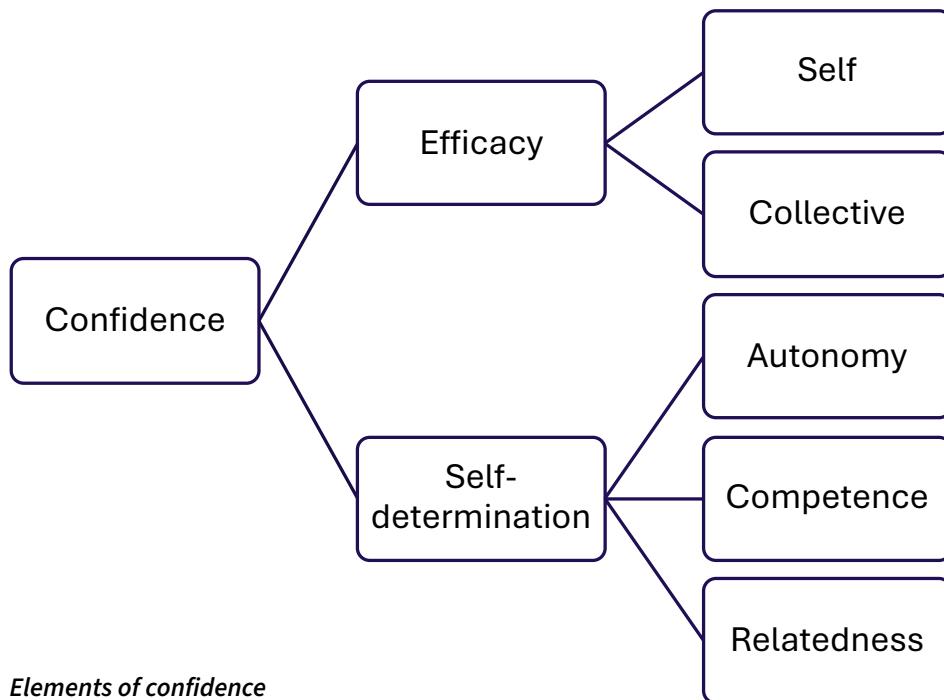
Given the project’s prioritisation of safeguarding, and its concern to develop children’s understanding of their UNCRC Article 12 right to express their views on matters that affect them, there is a deliberate emphasis on rewarding responses which involve speaking up, and help-seeking. For example, in a scenario where the child is worried because their parents or carers have said they are going out, and the child does not know when they’ll come home, the response options (and scoring) are:

- |  |            |
|--|------------|
| ● Tell your parents you are worried              | (Score +2) |
| ● Hide away until they come back                 | (Score -1) |
| ● Say nothing to anyone about it                 | (Score 0)  |
| ● Contact a friend and tell them you are worried | (Score +1) |

The minimum score possible was minus 12, and maximum score possible 24.

### 3.3. Measuring confidence

As outlined in section 1.4, and demonstrated further in the diagram below, in this project ‘confidence’ was conceptualised as comprising five discrete elements:



#### 3.3.1. Developing the scale

This process of scale development involved a number of set steps (DeVellis & Thorpe, 2021): a determination of what was to be measured, the generation of an item pool, the determination of the measurement format, expert item pool review, consideration of inclusion of validation items, administration of items to a development sample, and evaluation of items and optimisation of scale length.

In light of its relevance to the aims of the project, the UNCRC was used as a general framework for scale development – hence the research team termed it the ‘children’s rights confidence scale’ (CRCQ).

How confident are you that you would speak up in each of the following situations? Please answer each question by selecting the option that best describes how you feel. Remember there are no right or wrong answers, so please just choose the one that best describes how you feel.



Very confident



Confident



Neither confident nor not confident



Disagree



Strongly disagree

*Emoticon response options*

A two-dimensional blueprint was designed, with UNCRC Articles 1-41 being crossed with the five psychological subscales of our confidence measure. The research team generated an initial pool of 111 items from this blueprint. The format of the items required children to indicate the extent to which they would speak up in the situation (linked to efficacy) or the response option that best represented how true the item's descriptor was for them (linked to self-determination). Each item was scored on a 5-point Likert-type scale, with response options expressed in words, and emoticons.

An initial pool of 111 items was reduced to 60, following review by adult experts (including academics and practitioners in the field of children's rights, and schoolteachers). This also led to several changes in the structure, content, and phrasing of the items. Cognitive interviews were then conducted with a subset of children to further explore the suitability of the items for the wide range of ages included in the research.

This led to a scale of 54 items (12 for self-efficacy, 12 for collective efficacy, and 10 for each of the three psychological needs), which was made available as an anonymous online survey through Qualtrics software. With kind permission from Hodder Education, a set of questions from their already validated Well-being and Attitudes to Learning Survey was added to this survey, to inform the subsequent analysis of the responses. To ensure the survey was accessible to as wide a range of children as possible, audio was included for all on screen text.

Participation in the survey was invited via the project website, social media, the research team's personal and professional networks, and schools, which led to approximately 900 responses, of which 725 were complete. These responses were analysed using factor analysis and structural equation modelling, and multidimensional item response theory, to produce a 20-item scale for use in the evaluation stage of the project (see appendix 5).

Demographic information gathered in the anonymous survey showed that the mean average age of those who had completed the survey was 12.5 years, and bearing in mind that participants were going to be asked to complete not only the CRCQ but also the knowledge and skills tests as part of the evaluation, it was decided that a shorter scale would be preferable for primary school children.

Consequently, the 20 item scale, together with an additional 3 items linked to the well-being survey, was again made available as an anonymous online survey through Qualtrics, and participation invited in the same way but limited to children in this younger

age group. The response rate was considerably lower (c. 120) but further analysis was conducted on the available data, leading to a 10-item scale for use in primary schools.

As discussed further in section 4.3.3., when this 10-item scale was applied in the quantitative evaluation, baseline scores for primary school children tended to be quite high, which may have limited scope for measuring improvement.

It is therefore possible that the reduction of items in the CRCQ from 20 to 10 for this age group, may have overly-limited its measurement capabilities, and it is intended that further analyses of the data will be carried out to explore whether the CRCQ needs further refining to enhance its psychometric properties, before it is made more widely available.

### 3.4. Gamification of measures

As discussed in section 2.1 above, the Law in Children's Lives project had already demonstrated through Adventures with Lex that the incorporation of game-based design (so-called 'gamification') of surveys can enhance levels of engagement among research participants.

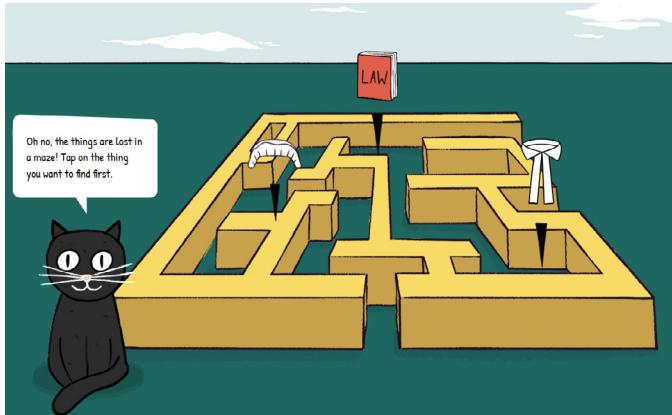
However, due to time and budget constraints, the amount of development time dedicated to the gamification of the knowledge, skills and confidence measures in the project was minimal, when compared to development of the learning game. The resulting output was much more simplistic than Adventures with Lex in terms of its range of question and response options, and its over-arching narrative less compelling.



Lex and Rex

Adventures with Lex opens with Lex saying 'Hi! My name is Lex, and I've come to find out more about your world. If you show me around, you'll get to make your own alien pet like mine!' Participants are then invited to spin a wheel to pick a place to visit, and to build their 'alien pet' as they progress through the four available 'worlds' of a shop, a school, a park, and a friend's house.

By contrast, the opening narrative for the gamified measures in this project was that Advocat (a key character in the game) had lost their law book, collar and wig, meaning that they cannot do their job in court. Images of the book, collar and wig then appear in a maze, and tapping one each of these takes the participants to one of the three measures (knowledge MCQs, the skills STJ and the CRCQ).



*Screenshot from gamified measures 'maze'*

This drew on ideas gathered from children earlier in the project to some extent, as a maze construct was among the suggestions. However, the application of this idea was at a superficial level. Once a measure is completed, the participant is returned to the maze, to choose again from the remaining options.

### 3.4.1. Sustainability

From a technical point of view, one of the significant limitations of Adventures with Lex is that it was created as a 'native app' – i.e. it was built for use on specific android tablets, purchased especially for use in the research. This means that Adventures with Lex is effectively 'trapped' on these tablets, which have operating systems which are now obsolete.

With this in mind, the gamified surveys for this project were created in an open-source content management system (Drupal), which facilitates further development and/or duplication in the future.



## Section 4

### Evaluating *Law Yeah!*

## 4. Evaluating *Law Yeah!*

The digital *Law Yeah!* game was evaluated in two different ways: through qualitative case studies undertaken with 3-6 year olds ('the inclusive case study'), and a larger scale quantitative study involving groups of primary and secondary school children aged 7-15 years.

### 4.1. The inclusive case study

The design of the inclusive case study was pre-registered on the Open Science Framework (OSF), and is available at <https://doi.org/10.17605/OSF.IO/6JVNZ>. It took place across the 2023-24 academic year, and involved a number of different stages, outlined below. Importantly, this included a familiarisation stage, which was intended to help children feel comfortable with the researcher's presence, and to support their own decision as to whether or not to participate (subject to the parent/carer consent).

#### *Summary of research activities*

Research stage	Key activities
<b>Familiarisation &amp; information</b>	Researchers supported staff in routine learning activities with children. Parents/carers and children informed about the research and invited to take part.
<b>Recruitment &amp; allocation</b>	Informed consent gathered from parents/carers. Participants divided into 2 groups: Development (D) and Evaluation (E)
<b>Development</b>	Group D participants involved in user-testing the P1 version of <i>Law Yeah!</i> and piloting draft interview activities for the evaluation. Teacher feedback gathered on P1.
<b>Evaluation Stage 1</b>	Pre-intervention interviews conducted with group E participants.
<b>Game play</b>	Group E participants invited to play P1 version of <i>Law Yeah!</i> once a week, for up to 8 weeks.
<b>Evaluation Stage 2</b>	Post-intervention interviews conducted with group E participants.
<b>Data analysis</b>	Cross-case analysis employed to test the proposition that the digital game improved the legal capability of participants.

### 4.1.1. Recruitment & participation

Participants aged 3-6 years, and participants aged 11-15 years with additional learning needs were recruited via their school headteachers, and nursery directors, who gave their consent to take part before research activities commenced.

Recruitment was initially successful, with 32 children recruited across a range of settings, including primary school N ( $n = 5$ ) which had already been involved in the game development phase of the research. However, unfortunately School Q ( $n = 16$ ) a special school educating primary and secondary school-aged children with severe and complex needs, withdrew from the research after the development phase because the teacher who had been facilitating the research visits left the school, and there was no other staff member available to take on this role.

It was therefore not possible to complete the study with this group, and its scope was limited to children aged 3-6 years. Nevertheless, School Q's participation in the development phase did at least ensure that its group D participants ( $n = 7$ ) worked with the team to evaluate and develop both the interview activities used in the evaluation, and to user-test the P1 version of the *Law Yeah!* game. The research team was also able to arrange an additional one-off visit to School Q in Summer Term 2024, when participants from both groups D and E ( $n = 11$ ) user-tested the P2 version of the game.

#### *Participants recruited for inclusive case study*

Setting	School group	Age (years)	Number of children recruited
<b>Primary School W (City)</b>	Early Years Foundation (EYF)	4-5	9
<b>Primary School N (City)</b>	Year 1	5-6	5
<b>Nursery P (Rural)</b>	Nursery	3-4	3
<b>Nursery T (Rural)</b>	Nursery	3-4	3
<b>Specialist School Q (City)</b>	Years 7 to 11	11-16	16

The final sample used in the evaluation comprised 15 children (aged three to six years). Table 4 presents the type of setting each child was at, along with their age and whether or not they complete the final assessment activities. It should be noted that all case studies were written up using pseudonyms, and consent was given by parents for the reproduction of anonymised

extracts from the interviews in resulting reports and publications. Of the 15, only 11 completed the final post evaluation activities, one, because the child moved to another setting, one because there was not enough time to complete the assessment before the end of the academic year, and two did not wish to repeat the assessment activities.

*Summary of Participant Characteristics*

Pseudonym	Age	Setting	Post Evaluation completed?
Emily	4	Nursery	No
Ewan	3	Nursery	Yes
Nathan	3	Nursery	Yes
Ben	3	Nursery	Yes
Sam	5	EYF	Yes
Ria	5	EYF	Yes
Mohammad	5	EYF	Yes
Amy	5	EYF	Yes
Noah	4	EYF	No
Emma	5	EYF	Yes
Iram	4	EYF	Yes
Nicky	5	EYF	No
Alia	5	EYF	No
Sara	6	Primary School	Yes
Chloe	6	Primary School	Yes

### 4.1.3. Research activities

In outline, the research consisted of the following stages:



The assessment activities involved each child working with a researcher on a 1-1 basis, in a series of short 10-15 minutes sessions, with breaks in between. An outline of the sessions is set out in table 4 below:

*Summary of research activities for inclusive case study*

Session description	Aiming to assess	Activity
<b>1. Who helps me?</b>	Knowledge of appropriate sources of help	Child invited to draw pictures, to show who they would go to if they were feeling in response to questions such as "If you were feeling worried, who could you go to for help?"
<b>2. The tricky situation</b>	Knowledge, skill and escalation (respectively).	Child shown three illustrations of: <ul style="list-style-type: none"> <li>• a sad-looking child holding a plate, standing next to an empty cupboard.</li> <li>• a child in a bullying situation with their arm being grabbed by another child.</li> <li>• a child who had fallen off a broken park swing and had injured their arm.</li> </ul> For each situation, child was asked: <ul style="list-style-type: none"> <li>• Who would you go to for help?</li> <li>• How easy would it be for you to talk to them?</li> <li>• If they could not help, who could you go to next?</li> </ul>
<b>3. Is it okay?</b>	Knowledge of when a problem is a problem	Researcher made a series of statements regarding behaviours that may or may not be acceptable, e.g. "You are allowed to eat sweets every day". For each statement, child invited to choose 'okay' 'not okay' or 'don't know' response card (illustrated with emoji expressions) and post it in a box.

After the first round of assessment activities, each child played the game once a week for 8 weeks (unless they decided to stop playing before then), with the researcher playing close attention to how they interacted with the game. After this, the activities were completed again. Researchers made field notes throughout each element.

## 4.1.2. Analysis and findings

A cross-case analysis was employed to analyse the data, to ‘test’ the proposition that playing the digital *Law Yeah!* game improved very young children’s legal capability. (Note: full details of the approach to analysis are available in the OSF, so are not set out in detail in this report).

*A summary of the pre-and-post ‘scores’ for each child*

Child	Who helps me (pre)	Who helps me (post)	Tricky Situation (pre)	Tricky situation (post)	Is it okay? (pre)	Is it okay? (post)	Overall (pre)	Overall (post)
<b>Ewan</b>	0	0	1	4	3	3	4	7
<b>Nathan</b>	3	2	2	1	4	2	9	5
<b>Ben</b>	0	1	1	5	3	5	4	11
<b>Sam</b>	4	2	4	3	5	7	13	12
<b>Ria</b>	4	2	3	0	6	5	13	7
<b>Mohammad</b>	4	3	6	5	7	8	17	16
<b>Amy</b>	2	3	6	6	8	10	16	19
<b>Emma</b>	2	3	4	1	5	4	11	8
<b>Iram</b>	2	2	4	2	3	6	9	10
<b>Sara</b>	9	5	6	11	6	8	21	24
<b>Chloe</b>	3	3	3	11	7	8	13	22

As the table shows, not all the children achieved an improvement across all three activities, but 9 of 11 showed some degree of improvement in at least one of them. The ‘Is it okay?’ task was most likely to be positively impacted by engagement with the game.

So there was some tentative evidence to support the idea that the initial version of the game had some potential to benefit the children’s knowledge in terms

Children’s responses in the assessment activities were ‘scored’, with one point given every time an appropriate response was given in the task, and the values for each child are summarised in Table 5 below.

of who might be able to help them (‘Who helps me?’) and knowing when a problem is a problem (‘Is it okay?’). The relative lack of positive change in the children’s responses to the ‘tricky situation’ suggests that improvements in knowing how to apply their knowledge to specific events and demonstrating confidence doing so were more challenging to establish.

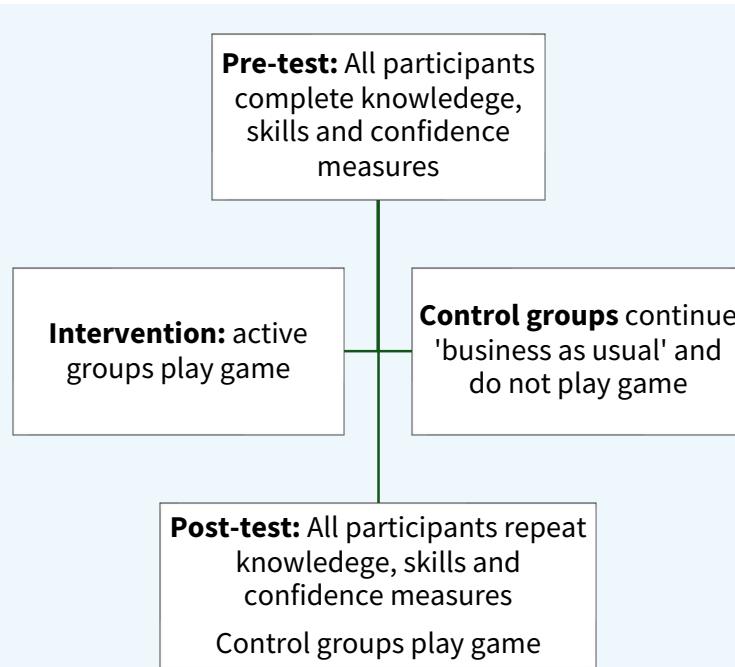
## 4.2. The quantitative study

The impact of the game on the knowledge, skills and confidence of children aged 7 – 15 years was evaluated using a randomised control trial methodology, based on a realist evaluation approach. Rather than simply asking ‘does the intervention work? a realist evaluation aims to answer the questions ‘what works best for whom in what circumstances and in what respects, and how?’ (Pawson and Tilley, 1997 and 2004).

As with any intervention, this evaluation was designed to test the underlying theory of change (Clegg, 2005). Our theoretical assumptions were made explicit and modelled by the research team as context-mechanism-outcome configurations (CMOCs). These are not repeated in detail in this report, because full details of the study design were pre-registered on the OSF, and are openly available at <https://doi.org/10.17605/OSF.IO/D3B7A>.

### 4.2.1. The study design

In outline, the approach was as follows:



### 4.2.2. Types of play

The game was played in three different ways in the study. As demonstrated below, two of these were in school, and one at home. Children allocated to ‘business as usual’ control groups completed the measures at the same time as the active groups. These children were given the opportunity to play the game after post-testing was completed.

Setting	Activity
School	Teacher-led, group play on interactive whiteboard. Independent play on school device (tablet, PC or laptop) with no adult direction or guidance.
Home	Independent play at home on own device (tablet, PC, laptop) with no adult direction or guidance.
Control	‘Business as usual’ – children engage with their normal school curriculum.

### 4.2.3. Participant and school demographics

In addition to their school year group, and age (month and year of birth), information on some of the characteristics of the children taking part in the evaluation was gathered via consent forms. These were gender (male, female, non-binary); additional needs status (educational, health and care plan (EHCP) or no EHCP); EAL status (English is an additional language or not); and 'looked after' status (is /has been part of the care system or not).

Schools which were participating in the evaluation were mapped according to the six broad geographical regions (explained further below) and state schools were ranked according to socio-economic status (low, mid and high) – based on the most recent data available on the Index of Multiple Deprivation (IMD) and Free School Meal (FSM) eligibility.

### 4.2.4. Recruitment

The original recruitment model was to recruit participants from a wide range of settings across six regions of England (South-West, South-East, East Midlands, West Midlands, North-East, North-West). The planned settings were state primary and secondary schools, private fee-paying schools, pupil referral units (PRUs) or other alternative provision units (APs).

Recruitment activities started in January 2024, and were planned to complete by July 2024, ready for the evaluation to take place during September – December 2024. However, despite extensive efforts from the research team, recruitment proved to be a significant challenge, and the original recruitment model was reduced to respond to reality. Recruitment challenges included the loss of a school which intended to participate, but had to close due to the RAAC crisis (reinforced autoclaved aerated concrete making their buildings unsafe). Schools also reported a lack of interest in taking part due to competing priorities and limited staff capacity.

The recruitment window was extended to October 2024, pushing back the evaluation period to December 2024 – February 2025. To allow for this, the planned intervention period was reduced from 8 weeks to 6 weeks, and the settings were reduced to state and private schools only, as no PRUs or APs were recruited.

As shown in table 6 below, six schools in two regions took part in the evaluation.

#### *Schools which took part in the evaluation*

Setting	Location	Socio-economic status	School group	Ages (years)	Number of consented participants
<b>Secondary School 00</b>	South-East	Low	Year 8	12-13	64
<b>Secondary School 01</b>	North-East	High	Year 7	11-12	76
<b>Primary School 02</b>	North-East	High	Years 3-6	7-11	166
<b>Primary School 03</b>	South-East	High	Year 5	9-10	43
<b>Primary School 05</b>	North-East	N/A Fee-paying school	Years 4-6	8-11	58
<b>Primary School 06</b>	South-East	Middle	Years 3-6	7-11	12

Not included in the above table are two schools which went as far as gathering in consent forms (76 and 92 respectively) but later withdrew due to issues in school, such as a key staff member being absent.

#### 4.2.5. Participation

An additional challenge for the research team was that of the six schools which took part, some could only do so under certain stipulations, and the extent to which participants completed both the pre- and post-tests varied significantly.

For example, school 06 ran the evaluation as a home play activity with all 12 participants, and it was agreed that it was not practicably possible to include have control group in this setting. Then due to staff illness, the implementation of the pre- and post- measures was disrupted, and only one child completed both.

Primary schools 03 and 05 encountered problems accessing the pre- and post- tests online. With input from the developer, these problems were fully resolved in school 03 but only partially resolved in school 05 during the evaluation period, which limited the number of completed responses.

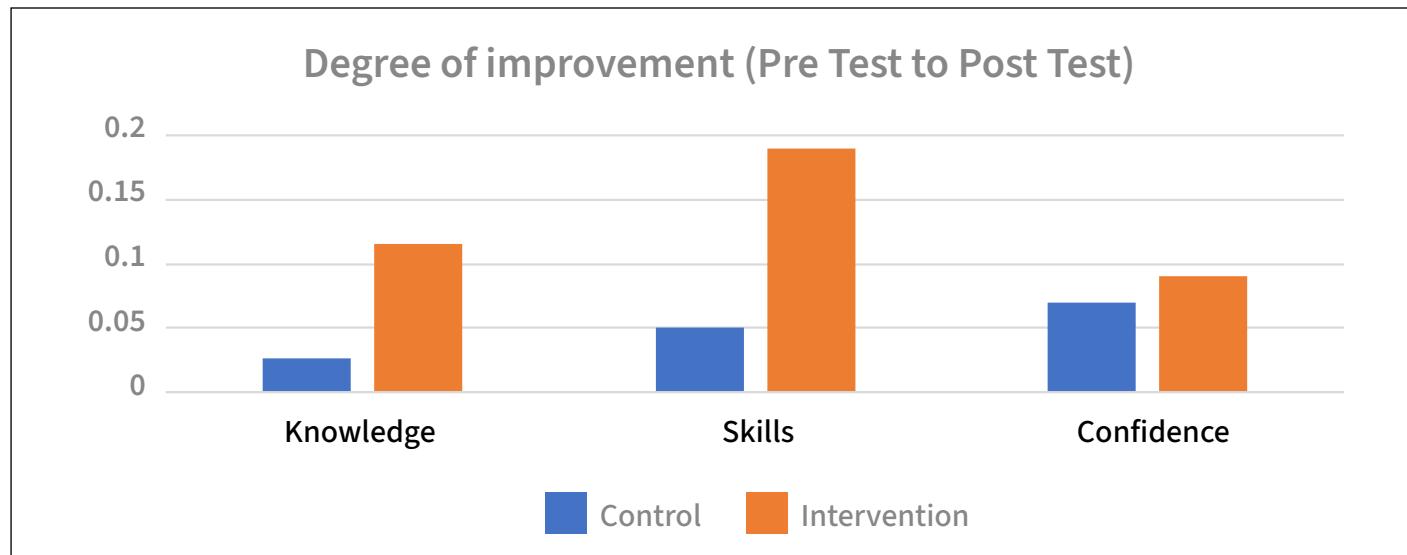
Due to limited availability of tablets and PCs in classrooms, children from secondary school 01 were unable to complete the pre- and post-tests online, and requested paper versions. These were provided by the research team, but only the pre-tests were returned, an no explanation was given for the missing post-tests. From secondary school 00, only 26 participants completed the pre- and post-tests, due to competing pressures on classroom time.

#### 4.3. Findings – primary schools

The overall impact of the game on children's knowledge, skills and confidence (regardless of where the game was played) are shown in figure 26 below. There was a significantly greater increase in knowledge<sup>1</sup> and skills<sup>2</sup> among the intervention group when compared to the control group. There was also an improvement in confidence scores, but the intervention children did not significantly outperform the control children on this measure.

There was no evidence of any significant effects of gender, EAL or socioeconomic status on knowledge or skills.

*Degree of improvement overall*



<sup>1</sup>  $F(8,115)=12.19, p<.001$

<sup>2</sup>  $F(8,121)=3.736, p=.0006$

#### 4.2.6. Approach to analysis

Challenges with recruitment and participation meant that the original approach to analysis had to be adapted to provide an appropriate analysis given the limited sample obtained. The original study design required a minimum sample size of 1800 for the multilevel modelling analysis to be completed, and this was not achieved. The approach to analysis was therefore changed and an analysis of covariance was undertaken to determine what the effect of the intervention was for the 'average child' in the sample ('average treatment effect'). We considered the impact on the knowledge, skills and confidence of the children at post-test, after controlling statistically for the influence of prior ability (pre-test scores), which school they went to and the children's age. We also looked at the impact of the game when it was played in each of the different contexts.

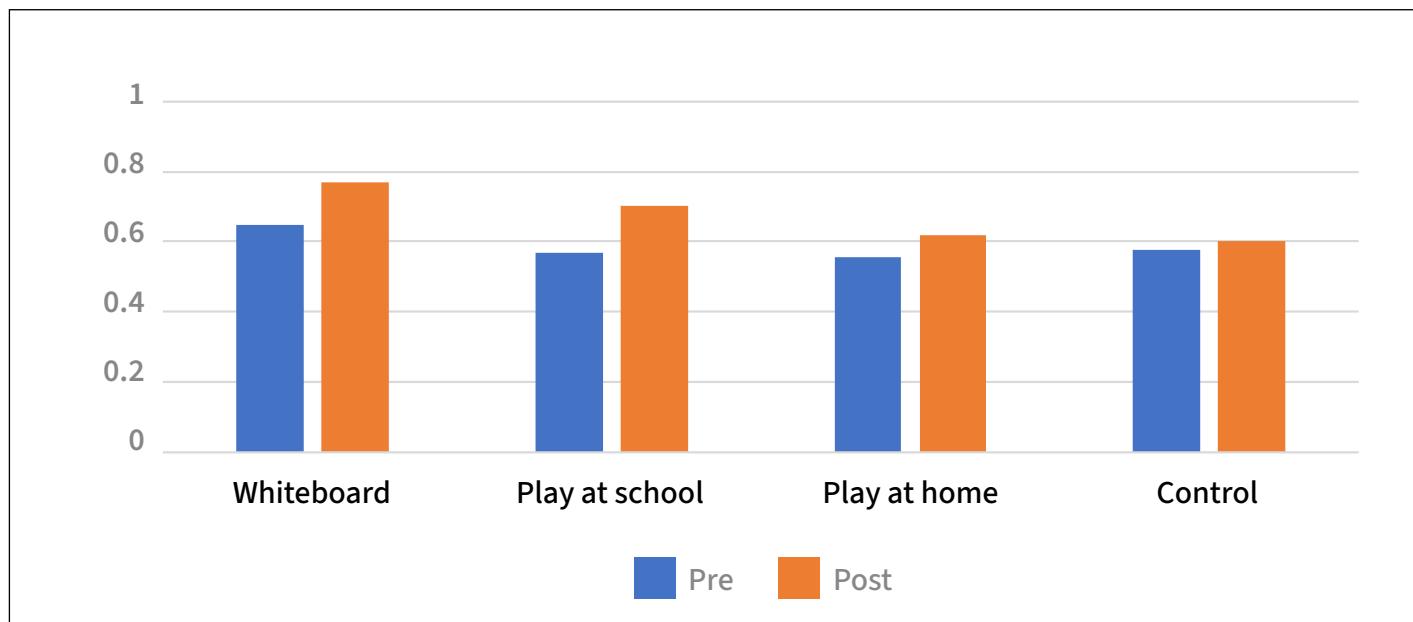
Because only 26 children in secondary schools completed both pre and post-tests, the decision was made to exclude them from the analysis using inferential statistics. Therefore the evaluation findings reported below relate only to primary school participants aged 7-11 years. Descriptive statistics for secondary schools are reported in section 4.4. below.

### 4.3.1. Context Analysis: Knowledge

As shown in figure 27 below, knowledge improved most when the game was played in teacher-led sessions on a whiteboard, but there was also significant improvement when the game was played independently in school.

There was some improvement for participants who played the game independently at home, but not one that was statistically significant.

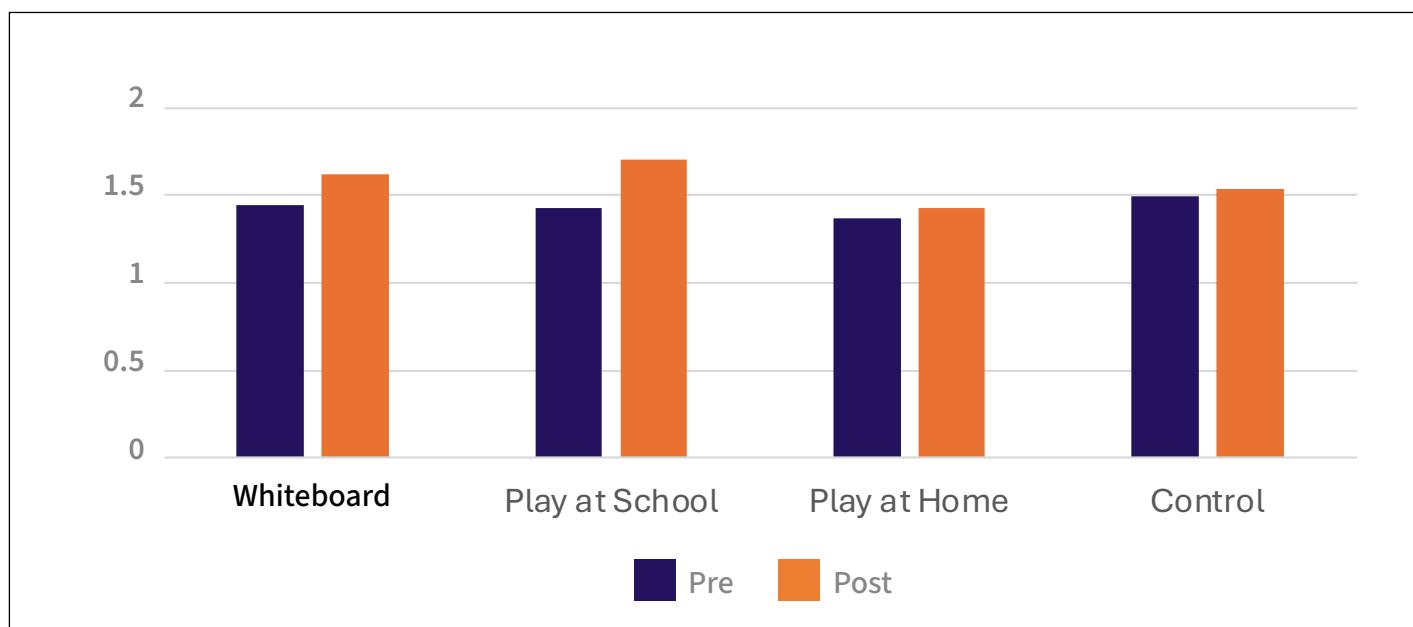
*Context Impact Analysis: Knowledge Scores*



### 4.3.2. Context Analysis: Skills

As shown in figure 28 below, play in school was again the context where participants showed improvement. Here, independent play in school (i.e. on tablets, laptops or PCs) was the most effective, with participants demonstrating a degree of improvement which was statistically significant.

*Context Impact Analysis: Skill Scores*



<sup>3</sup> B= 2.0795, SE = .5404, t=3.848, p=.000196

<sup>4</sup> B=1.3845, SE=.82522, t=2.917, p=.00422

<sup>5</sup> B=2.4068, SE = .8252, t=2.917, p=.00422

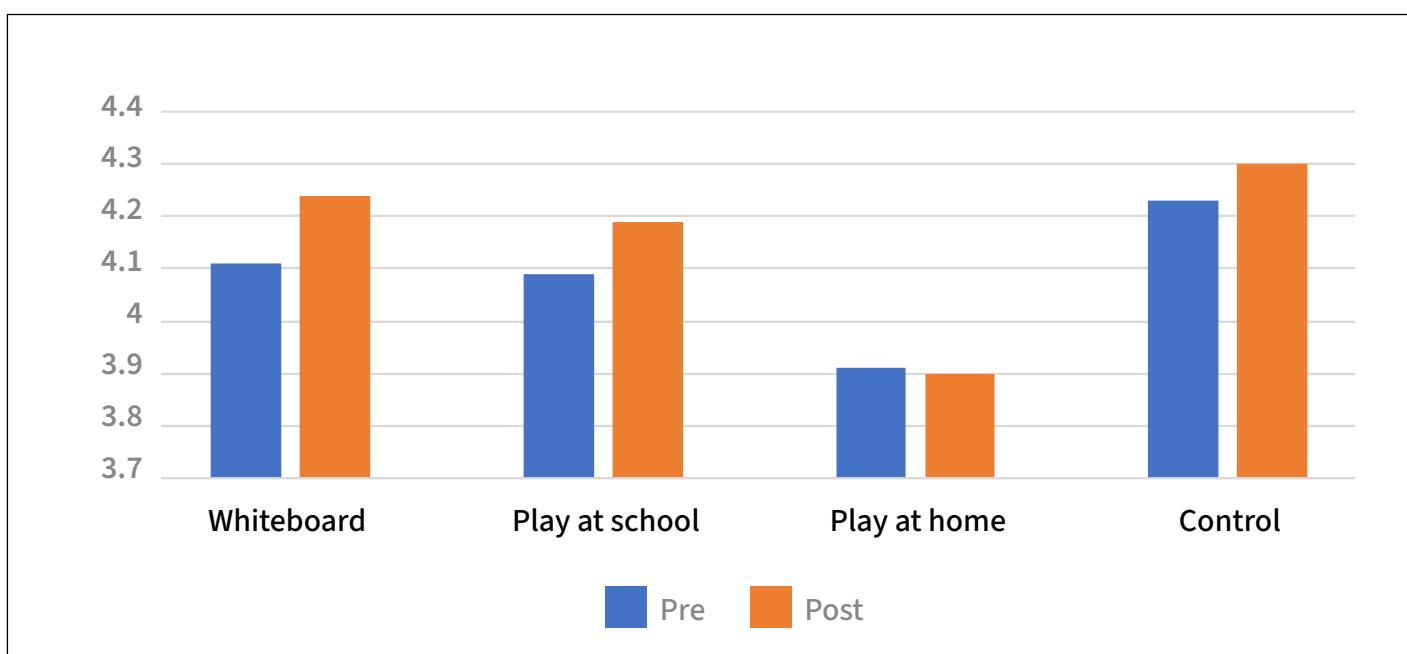
### 4.3.3. Context Analysis: Confidence

As already noted above, there was a modest increase in confidence among active participants, but not one that was statistically significant when they were compared to growth in confidence observed for the control children over the same time period. This may be partly because children's pre-test, baseline scores tended to be quite high (mean = 4.04, out of a maximum possible mean score of 5), and this limited scope for improvement. As discussed in section 3.3. of this report, it is also possible that the reduction of items in the CRCQ from 20 to 10 for this age group, may have further limited the sensitivity of this measure.

Notably, as shown in figure 29 below, the findings from context impact analysis indicated that confidence improved the least among the group of children who were playing the game at home. The reasons for this are unknown. It may be that children who were playing the game in school had adults to help them contextualise what they were learning, in ways that children who were playing the game at home did not.

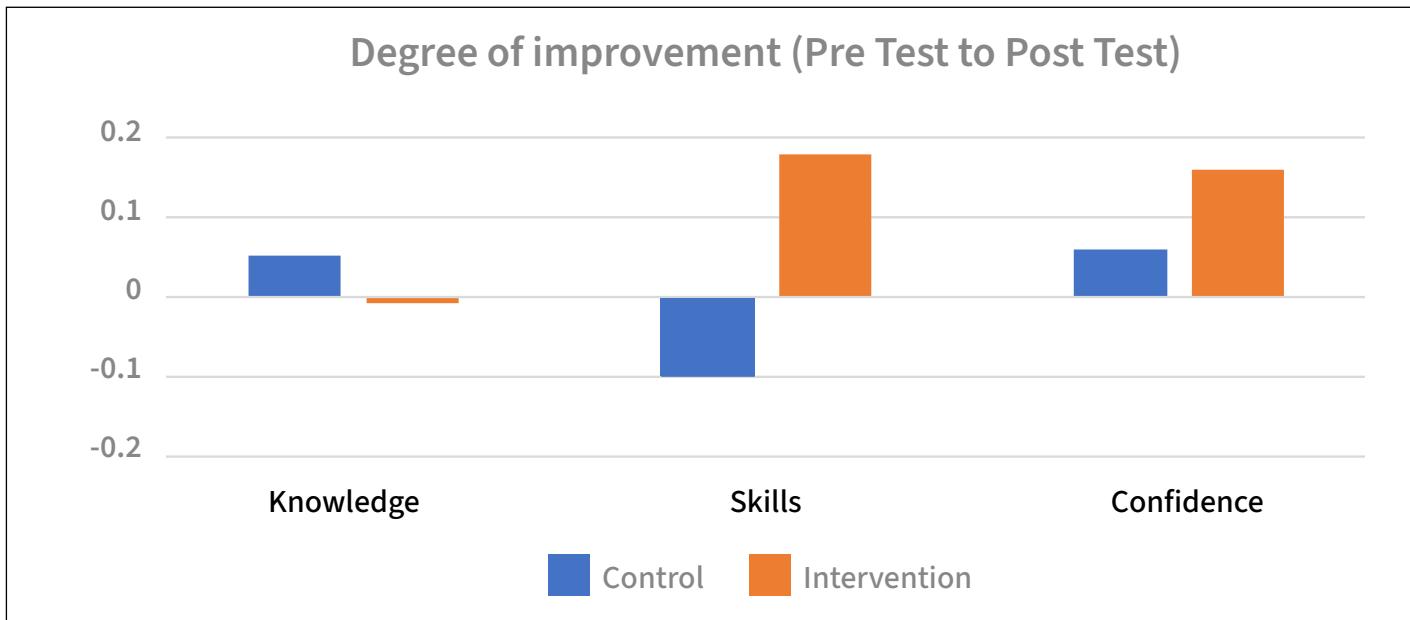
We also note that confidence scores in the control group improved very slightly among the control group, suggesting that engagement with the pre-test CRCQ might itself impact participants' responses in the post-test. More research is necessary to explore these issues further.

#### *Context Impact Analysis: Confidence Scores*



### 4.4. Secondary school findings

As previously noted, we only had a very small number of post-test responses from secondary school pupils. The degree of improvement observed on knowledge, skills and confidence for these students are illustrated overleaf. There was evidence of some improvement in skills and confidence for the children who played the game compared to controls, but no improvement on knowledge.

*Outcomes for secondary school children*

## 5. Conclusion

The project concluded on time and within budget. It has largely met its core objectives: pioneering a theoretical legal capability framework for children and creating an innovative, game-based resource *Law Yeah!* to improve children's ability to deal effectively with the law-related issues they encounter in their everyday lives.

The project's unique approach, which 'decentres' the law and places the child's lived experience at its core, provides a robust model for legal and rights-based education across wider populations and contexts.

The evaluation of the digital *Law Yeah!* game demonstrated its significant potential as an educational tool. The large-scale quantitative study with participants aged 7-11 years confirmed a significant increase in legal knowledge and skills following game play within primary school settings.

Importantly, the research identified two optimal delivery methods: teacher-led sessions on a whiteboard were most effective for building knowledge, while independent play on school devices was best suited for developing skills. This finding provides guidance for educators on how to integrate the game for maximum pedagogical impact. Furthermore, the inclusive case study provided preliminary evidence of positive knowledge outcomes for children as young as 3-6 years old.

However, this report has also highlighted areas for further work. While a modest increase in confidence was noted among primary school participants, it was not statistically significant, suggesting a need to refine the game and/or measurement methods to more effectively target self- and collective efficacy.

A further limitation was the insufficient data gathered to evaluate the digital game's effectiveness in secondary school settings, a critical gap that needs to be prioritised in future research. There is certainly scope for evaluating and further developing the board game in this context.

The digital *Law Yeah!* game is freely available for use via [www.law-yeah.com](http://www.law-yeah.com), and a limited number of board games are also available to schools. Both resources are being freely-licensed for further development by others. Much of the research summarised in this report has been, or will be published in peer-reviewed academic journal articles, contributing to the growing body of scholarship in this field.

A key feature of *Law Yeah!* is that no teacher preparation is required, because all the learning is in the game. Nevertheless, optional guidance for teachers is being developed, and will be made freely available at [sheffield.ac.uk/law/research/fortitude](http://sheffield.ac.uk/law/research/fortitude).



## References

- Anastasiadis, T., Lampropoulos, G., & Siakas, K. (2018). Digital game-based learning and serious games in education. *International Journal of Advances in Scientific Research and Engineering*, 4(12), 139.
- Asmundson, G. J., & Afifi, T. O. (eds) (2019). *Adverse childhood experiences: Using evidence to advance research, practice, policy, and prevention*. Academic Press.
- Balmer, N.J., Pleasence, P., Hagland, T. & McRae, C. (2019). *Law... What is it good for? How People see the Law, Lawyers and Courts in Australia*. Victoria Law Foundation.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science*, 9(3), 75.
- Barwick, J., Watkins, D., Kirk, E., & Law, E. (2018). Adventures with Lex: The gamification of research?. *Convergence*, 24(3), 229.
- Briggs, F. and Hawkins, R. (1993) Children's perceptions of personal safety issues and their vulnerability to molestation. *Children Australia*, 18(3), 4.
- Clark, J., Laing, K., Tiplady, L., & Woolner, P. (2013). Making connections: Theory and practice of using visual methods to aid participation in research. Research Centre for Learning and Teaching, Newcastle University.
- Clement, J. (2022) Leading gaming apps used by children in the UK. Statista.
- Coventry LSCB (Local Safeguarding Children Board) (2013) Final Overview Report of Serious Case Review re Daniel Pelka. LSCB.
- Deci, E.L. and Ryan, R.M. (eds) (2004) *Handbook of Self-determination Research*. University of Rochester Press.
- DeVellis, R. F., & Thorpe, C. T. (2021). *Scale development: Theory and applications*. 5th ed., Sage.
- Franssens, R., Abrahams, L., Van Raemdonck, L., Verbeke, L., & De Clercq, B. (2022) Capturing Within-Person Variability of Borderline Traits in Youth from a Developmentally Sensitive Situational Judgement Perspective. *Journal of Personality Assessment in Youth*, 105(4), 499-507.
- Girard, C., Ecalle, J., & Magnan, A. (2013). Serious games as new educational tools: how effective are they? A meta-analysis of recent studies. *Journal of computer assisted learning*, 29(3), 207.
- Jones, M. (2010) Legal Capability, Public Legal Education Network (Plenet)
- Law, E. L. C., Watkins, D. E., Barwick, J. P., & Kirk, E. S. (2016, June). An experiential approach to the design and evaluation of a gamified research tool for Law in Children's Lives. In *Proceedings of the 15th International Conference on Interaction Design and Children*, 322.
- Murano, D., Lipnevich, A., Walton, K., Burrus, J., Way, J., & Anguiano-Carrasco, C. (2021). Measuring Social and Emotional Skills in Elementary Students: Development of Self-Report Likert, Situational Judgement Test, and Forced Choice Items. *Personality and Individual Differences*, 169, 1-12.

National Board of Medical Examiners (NBME), (2016) *Constructing Written Test Questions For the Basic and Clinical Sciences*. NBME.

Niemi, R., Kumpulainen, K., & Lipponen, L. (2015). Pupils as active participants: Diamond ranking as a tool to investigate pupils' experiences of classroom practices. *European Educational Research Journal*, 14(2), 138.

Nucci, L. and Santiago, M. (1982) 'Children's responses to moral and social conventional transgressions in free-play settings' *Child Development* 53(2), 1137

Ofcom (Office of Communications) (2022) Children and parents: media use and attitudes report 2022. A research paper. Ofcom.

Office for National Statistics (ONS) (2020) *Statistical bulletin: Child abuse in England and Wales*. ONS.

Pawson, R. and Tilley, N. (1997) *Realistic Evaluation*. Sage

Pawson, R. and Tilley, N., (2004) *Realist Evaluation*. British Cabinet Office

Prout, A. 'Researching children as social actors' (2002) *Children and Society*, 16, 67.

Pleasence, P. and Balmer, N.J. (2019) Development of a general legal confidence scale: A first implementation of the Rasch measurement model in empirical legal studies. *Journal of Empirical Legal Studies* 16.1, 143.

Public Health England (2020) No child left behind. A public health informed approach to improving outcomes for vulnerable children.

Smetana, J. Kelly, M. and Twentyman, C. (1984) Abused, Neglected, and Nonmaltreated Children's Conceptions of Moral and Social-Conventional Transgressions. *Child Development* 55(1), 277.

UNICEF (United Nations Children's Fund) (2025) Rights Respecting Schools. Putting child rights at the heart of school life. Available at <https://www.unicef.org/rights-respecting-schools/> (accessed 3 November 2025)

UNCtRC (United Nations Committee on the Rights of the Child) (2023) Concluding observations on the combined sixth and seventh periodic reports of the United Kingdom of Great Britain and Northern Ireland. CRC/C/GBR/CO/6-7.

Wang, L., MacCann, C., Zhuang, X., Liu, O., & Roberts, R. (2009). Assessing Teamwork and Collaboration in High School Students: A Multimethod Approach. *Canadian Journal of School Psychology*, 24(2), 108.

Watkins, D., E Lai-Chong Law, J Barwick and E Kirk, (2016) 'If you are 10 you go to prison: Children's Understanding of the Age of Criminal Responsibility' *Northern Ireland Legal Quarterly*, 67(3), 311.

Watkins, D., Law, E.-C., Barwick, J., & Kirk, E. (2018). Exploring Children's Understanding of law in their everyday lives. *Legal Studies*, 38, 59.

## Appendix 1: Ethical Approvals

Institution	Approval Number	Description	Date
University of Leicester	19190	Mapping and Audio Recording	07/03/19
University of Sheffield	044791	Project FORTITUDE (Scale development)	31/01/22
	046698	Project FORTITUDE (Scale Development Survey)	10/06/22
	047535	Project FORTITUDE (Children & Young People Advisory Boards)	10/06/22
	049536	Project FORTITUDE (Resources Development)	04/09/22
	051199	Project FORTITUDE (Game development, Primary & Secondary) & Amendment	04/01/23 13/09/23
	052065	Project FORTITUDE (3-6s & SEND)	21/03/23
	056740	Project FORTITUDE (Inclusive Case Study)	15/09/23
	058188	Project FORTITUDE (Evaluation Phase) & Amendment	21/02/24 24/10/24
	058643	Project FORTITUDE Game & Measures content	22/02/24
	063939	Project FORTITUDE (Evaluation Phase Data Gathering)	30/07/24
	063948	Project FORTITUDE CYP Summer Advisory Board	23/07/24
	066187	Project FORTITUDE (Board Game Development)	12/02/25
	066648	Project FORTITUDE (Impact)	11/03/25

## Appendix 2: Outline Game Concepts

### 1: Liberty Quest

At the start of the game you create your own character, who is you in the game. You'll get to choose how they look and what they wear. You get your own 'home' area, you can style this and as you go through you'll unlock items to customise it and make it yours.

Exploring the world around you, you run into other characters, and you can talk to them. Some are people, some are animals or maybe more fantastical beasts. Some of them you already know, and others are new to you.

However they are not all happy. Can you help them?

They'll take you out to show you real world situations, where you can make the difference. These situations are in places similar to our world, such as school, the park, and the shops. In return you collect points, be given rewards and can unlock items.

Some of the situations are harder to complete than others, and you'll have to use the special book you were given, or items you've picked up to help you. Can you complete the situations and change the game world?

### 2: The Rights

You find a secret room. A doorway you've never noticed before leads you into a room which looks like a secret office with a detective's desk.

In front of you is a desk, your desk. It's a pretty plain desk, for now, just an info pad and two objects. These objects might include an apple, a plaster, some pencils, a ball, keys, a mobile phone etc. Pick an object and it's a portal key! It takes you out to show you real world situations, where you can make the difference. These situations are in places similar to our world, such as school, the park, and the shops.

Some of the situations are harder to complete than others, and you'll have to use the info pad, or items you've picked up to help you. When you complete the situation and return to the desk, you notice that the board in front of your desk has updated, a reward for completing the situation. The info pad has also been updated with new data.

Now you learn that you have joined the Rights team, you've gained access to the people who put the world right. Can you do it?

More situations appear as new portal keys arrive in your secret room, which builds up with mementoes of your adventures, and displays of your skill. Can you complete the situations and be the best member of the Rights team?

### 3: Good Egg

Meet your friendly guide. You can choose what they look like. They're there to help you. You'll spin the wheel, which will land on a particular day and challenge. You and your guide will go there.

The challenges you face at each place will help you to stop and think about what is happening in that moment and how it affects you. Your friendly guide will help you, and can offer advice on the challenge, though sometimes you have to help them!

You can watch videos, play games and level up as you complete more challenges.

### 4: The Town

You are looking down at 'The Town'. It is a familiar place, like many places in the UK, with schools, shops, homes, parks. This is your world to look after.

You can zoom down into each different area of the town ('Home', 'Your Room', 'School', 'Park', 'Shops', 'Bus', 'Restaurant', 'Streets', 'Leisure Centre'), and explore them and the people in them.

They have their problems. Maybe there's a broken ride in the playground, maybe there's people pushing someone around in the playground. Can you solve them?

Selecting a problem, you are taken out to show you real world situations, where you can make the difference. These situations are based on what you saw above, but may not directly involve the people that you saw. Complete the situation, and you start to 'claim' that area. Complete all the situations in that area to stake your claim. In return you also collect points, be given rewards and can unlock items.

That's not all though! You'll find that new problems come into an area, and you lose your claim. Can you go back and complete these harder situations to keep your claim? You'll need to use some of the power-ups you got from earlier problems. Can you claim all the areas AND keep them claimed?

## Appendix 3: Knowledge Tests

Optional audio needed for each question and response options. Correct answer for each here is a. but response options need to be randomised throughout.

Participant needs to be able to change their mind within each question, but then hit 'done' – which moves them to the next question. They cannot go back to a previous question.

### Question 1 (same for Primary and Secondary)

There is an international document that sets out the rights of all children and young people.

#### What is it called?

- a. United Nations Convention on the Rights of the Child
- b. International Covenant on Young people's Rights
- c. Worldwide Treaty for Children and Young People
- d. Universal Declaration of Children's Rights

### Question 2 (same for Primary and Secondary)

What do people call this international document for short?

- a. UNCRC
- b. ICYPR
- c. WTCYP
- d. UDCRS

### Question 3 (same for Primary and Secondary)

In England, there are rules called laws.

#### Who do these laws apply to?

- a. Everyone
- b. Adults
- c. Children
- d. Criminals

### Question 4 (same for Primary and Secondary)

In England, people can be held responsible for breaking the law from a certain age.

#### What age is this?

- a. 10
- b. 12
- c. 16
- d. 18

### Question 5 (same for Primary and Secondary)

In England, there are two main types of law. One of them is Criminal.

#### What is the other one?

- a. Civil
- b. Public
- c. Environment
- d. Private

### Question 6 (same for Primary and Secondary)

You buy headphones from a shop. When you get home and open the box you see that they are broken. You are sure you didn't break them yourself.

#### What are your legal rights here?

- a. To get my money back or new headphones
- b. To be given a voucher or a credit note
- c. I have no rights because I left the shop
- d. To get them fixed for free

### Question 7 (Primary)

A person you know keeps pushing you and being mean to you at school.

#### What are your rights here?

- a. To be protected from being hurt by this person
- b. To hurt the other person back
- c. I have no rights here
- d. To move to another class

## Question 7 (Secondary)

A person you know keeps pushing you and being mean to you at school.

### What might this behaviour be called in law?

- a. Assault
- b. Neglect
- c. Discrimination
- d. Damage

## Question 8 (same for Primary and Secondary)

You're out with your friends and one of them starts throwing stones at the cars going by and a car gets damaged.

### Who does the law say may be responsible for this?

- a. Me and my friends
- b. Just the friend who threw the stones
- c. The friend who gets caught
- d. The parents of the friend who threw the stones

## Question 9 (same for Primary and Secondary)

The UNCRC is made up of 54 statements called 'Articles' which give children rights.

### What right does Article 12 give you?

- a. To talk about things that affect me and be taken seriously.
- b. To be protected from violence, abuse, and neglect.
- c. To learn about my rights in the UNCRC.
- d. To access reliable information from the media.

## Question 10 (same for Primary and Secondary)

The new PE teacher says only boys are allowed to join the school football club.

### What sort of discrimination does the law say this is?

- a. Gender
- b. Racial
- c. Disability
- d. Religious

## Question 11 (same for Primary and Secondary)

Someone has taken a photo of you and said they are going to share it with other people without your permission.

### Which of your UNCRC rights is important here?

- a. The right to privacy, and to be protected from unlawful attacks (Article 16)
- b. The right to be protected from discrimination (Article 2)
- c. The right to an education (Article 28)
- d. The right to access reliable information from the media (Article 17)

## Question 12 (Primary)

In England there are only certain people who can make the law.

### Who are these people?

- a. Members of Parliament and Judges
- b. The Prime Minister and the King
- c. Police and Prison Officers
- d. Social Workers and Local Councillors

## Question 12 (Secondary)

In England laws are made in certain places.

### Where are they?

- a. Parliament and courts
- b. Downing Street and Buckingham Palace
- c. Police stations and prisons
- d. Government and council buildings

## Appendix 4: Situational Judgment Tests

Question number	Question text	Grossly Inappropriate Response Score -1	Do Nothing Response Score 0	Deliberate Action but not the Best Response Score +1	Appropriate Response Score +2
1	You are at school. A person you know keeps being mean to you. They keep pushing you. <b>What do you do?</b>	Push the other person back	Do nothing	Tell a friend	Tell an adult
2	You have to go to the doctor for an injection. You're worried because you think it's going to hurt. <b>What do you do?</b>	Hide away somewhere	Say nothing	Tell your parent or carer you are worried	You tell the doctor you are worried
3	You are in the park with your friends. You buy an ice cream from the ice cream van. The ice cream costs £1 and you pay with a £5 note, but the ice cream seller doesn't give you any change. <b>What do you do?</b>	Call the police	Do nothing	Ask a friend to help me speak to the ice cream seller	Ask the ice cream seller for the correct change
4	You can't play safely in your local park because there is lots of litter on the ground. <b>What do you do?</b>	Play in the park anyway	Do nothing	Ask a parent or carer to tell the council	Tell the council
5	You and your friends don't like the school dinners because they're not very healthy. <b>What do you do?</b>	Refuse to eat anything at lunch	Do nothing	Tell the people who serve the food	Tell your class teacher
6	Your parent or carer has asked you to go and buy some bread from the local shop. Some milk has been spilt on the floor in the shop. You slip and hurt yourself. <b>What do you do?</b>	Leave the bread in the shop and go home	Buy the bread and say nothing	Buy the bread and tell my parent or carer that I hurt myself	Tell the shopkeeper about the problem and then buy the bread
7	You're worried because your parents or carers have told you that they are going out and you don't know when they'll come home. <b>What do you do?</b>	Hide away until they come back	Say nothing to anyone about it	Contact a friend and tell them you're worried	Tell your parents or carers that you're worried
8	You like to play online games with people from school. When you play, someone from your class keeps sending you horrible messages, which makes you feel worried. <b>What do you do?</b>	Say mean things about the player online	Do nothing	Leave the game	Report the player

Question number	Question text	Grossly Inappropriate Response Score -1	Do Nothing Response Score 0	Deliberate Action but not the Best Response Score +1	Appropriate Response Score +2
9	You're walking home from school with a group of friends. One of your friends has a box of eggs. They start throwing eggs at people's houses. <b>What do you do?</b>	Throw eggs too	Do nothing	Tell my friend to stop	Quickly leave the situation and go home
10	You're messing around with your friends at the park. One of them films you on their mobile phone and puts it on a website. You tell them that you don't want the video online, but your friend won't take it down. <b>What do you do?</b>	Take my friend's phone to try to delete the video	Do nothing	Tell a parent or carer	Report the problem to the website
11	You're at a fun fair. When you get on a ride you notice that the safety bar will not secure properly. <b>What do you do?</b>	Stay on the ride and say nothing	Get off the ride and say nothing	Get off the ride and complain about the problem later, when you get home	Get off the ride, and wave and shout to let the staff know there's a problem
12	A police officer stops you in the park. They tell you that they want to look in your bag. <b>What do you do?</b>	Run away	Say nothing and hand the police officer your bag	Politely ask the police officer why they want to look in your bag	Politely ask the police officer for their name, and what police station they are from, and ask why they want to look in your bag

*Continued overleaf >>*

## Appendix 5: Children's Rights Confidence Questionnaire (CRCQ) 20 validated questions

Construct being measured	Discrete element	Relevant question numbers
<b>Self-determination</b>	Competence	1, 2, 3, 4
	Relatedness	5, 6, 7, 8
	Autonomy	9, 10, 11, 12
<b>Efficacy</b>	Self	13, 14, 15, 16
	Collective	17, 18, 19, 20

Below you will find some statements about your thoughts and feelings. For each statement, please choose the option that best represents how true that statement is for you. There are no right or wrong answers, so please just choose the one that best describes how you feel.



Strongly agree



Agree



Neither agree nor disagree



Disagree



Strongly disagree

### Question 1

I know what is best for me.

### Question 2

I know how to get help when I need it.

### Question 3

I know how to report bad things when they happen to me.

### Question 4

I know how to find information when I need it.



Not true  
at all



Somewhat  
untrue



Neither true  
nor untrue



Somewhat  
true



Exactly  
true

**Question 5**

I feel that people make decisions to help me.

**Question 6**

I feel that people look after me.

**Question 7**

I feel that people help me understand what is right and wrong.

**Question 8**

I feel that people want me to learn and do well at school.



Not true  
at all



Somewhat  
untrue



Neither true  
nor untrue



Somewhat  
true



Exactly  
true

**Question 9**

I feel free to make my own decisions about important things, for example my education.

**Question 10**

I feel free to keep up with my interests.

**Question 11**

I feel free to be myself.

**Question 12**

I feel free to speak about things that are important for me

How confident are you that you would speak up in each of the following situations? Please answer each question by selecting the option that best describes how you feel. Remember there are no right or wrong answers, so please just choose the one that best describes how you feel.



Very  
confident



Confident



Neither confident nor  
not confident



Disagree



Strongly  
disagree

### Question 13

How confident are you that you would speak up if you were not allowed to keep your bathroom or bedroom door closed, when you needed to (for example, when changing your clothes)?

### Question 14

How confident are you that you would speak up if someone you met either in person or through a mobile phone, tablet, or computer, asked you to do something wrong?

### Question 15

How confident are you that you would speak up if someone you met either in person or through a mobile phone, tablet, or computer, asked you about private information like your address, phone number, or photos of yourself?

### Question 16

How confident are you that you would speak up if someone asked you to do something wrong?

Now, please **think about your friends or other people your age that you know well**. How confident are you that they would speak up in each of the following situations? Please answer each question by selecting the option that best describes **how you feel about what they would do**.



Not confident  
at all



Poorly  
confident



Neither confident  
nor unconfident



Confident



Very  
confident

### Question 17

How confident are you that your friends would speak up if any one of you was treated unfairly because of who they are?

### Question 18

How confident are you that your friends would speak up if someone they met either in person or through a mobile phone, tablet, or computer asked any of you to do something wrong?

### Question 19

How confident are you that your friends would speak up if someone they met either in person or through a mobile phone, tablet, or computer asked any of you about private information like address, phone number, or photos of yourselves?

### Question 20

How confident are you that your friends would speak up if any one of you was not looked after?