

Appendices**Appendix A: Probability Lesson Plan:**

Student-teacher:	Caitlin Jones	Class / Group:	Year 6 / Progression Step 3
AoLE or Subject:	Mathematics and Numeracy (M&N)	Date (please note that this may be a continuous session):	16/04/24
Meaningful links to Curriculum (What Matters Statements, Descriptions of learning, 'previous' curriculum...)	<u>M&N WMS4:</u> Statistics represent data, probability models chance, and both support informed inferences and decisions. <u>M&N DoL (WMS4):</u> I can explore outcomes and chance, using appropriate language to represent probability.		
Meaningful links across the curriculum <i>Links to other AoLEs or the Cross-curricular skills frameworks)</i>	<u>LLC DoL (WMS 3):</u> I can recognise the appropriate language for different audiences and purposes. <u>Numeracy Framework:</u> I can explain and express concepts.		
Personal Targets (targets and consequent impact on learning - refer to any targets that have been identified in learning journal or weekly reflection meeting and describe the desired impact on learning).			
• To further develop behaviour management strategies, particularly challenging pupils in the class. • To develop lesson introduction prior to setting the pupils off to complete learning tasks			
Learning Intention <i>'This should focus on the pupils' learning during the lesson, rather than what they will be doing, and should be short, achievable and measurable.'</i> (Crichton, H., and Mcdaid, A. 2016 p. 196)			
For pupils to understand what probability means by explaining it in their own words and be able to use language such 'certain', 'likely', 'even chance', 'unlikely', and 'impossible' to describe the probability of a scenario.			

Success Criteria <i>What the pupils need to demonstrate to successfully meet the Learning Intention.</i>
I can understand what probability means and explain it in my own words. I can use language such as 'certain', 'likely', 'unlikely', and 'impossible' to describe the probability of a scenario.
Planning for misconceptions: <i>Use this section to anticipate pupil errors and misunderstandings and your planned responses to them.</i>
Pupils think that something is unlikely, it won't happen at all or certain, it will happen: Explain to pupils that probability is about chance, not certainty and provide them with examples where unlikely events still happen and certain events may not occur.

Appendix A: Continued:

SEQUENCE OF TEACHING & LEARNING (Add or remove rows below as appropriate)				
Timing: Break down timings into groups if appropriate. ensure pupils are 'doing' quickly and that transitions are taken into <u>account</u> .	Role of the teacher & support staff: e.g., key questions, retrieval of prior learning, modelling and explanations, checking understanding, planned use of additional adults. Choice of pedagogical model or of the 12 pedagogical principles	Pupils' learning and activities: What will the pupils be learning to do and what activities / resources will facilitate this? Please refer to Foundation Learning planning document for details of continuous provision.	Inclusive Strategies (including differentiation): Reasons for and details of scaffolding. Types of representation in tasks.	Check what pupils know, understand, and can do: Key questions, types of retrieval practices, self and peer assessment opportunities, purposeful AFL strategies, live marking opportunities, planned feedback.
10 mins	CJ: Introduce the lesson by explaining the meaning of probability and introduce the language used to discuss the chance of a scenario by using the dice and spinner resource on Mathigon PolyPad. Teacher Assistants (RM): Supervise the pupils during the introduction/discussion of lesson.	Pupils will learn about the meaning of probability and the language used to discuss the chances/probability of an scenario. <u>Resources:</u> - Laptop - Interactive Whiteboard - Mathigon PolyPad: https://polypad.amplify.com/p#random	Use of discussion and visuals can help to introduce probability to the pupils, helping them to prepare for the lessons task.	
60 mins	Pupils will be placed into groups (8/9) and engage in a series of manipulative coordinate tasks and will rotate after 20 mins. <u>Task 1 Dice Investigation:</u> Pupils will roll two dice and discuss the probability of each number coming up.	Pupils will be placed into groups and take part in a series of practical task that provides them with the opportunity to learn and practice their knowledge/skills related to probability. <u>Resources</u> <u>Task 1:</u>	Use of practical activities provides pupils with a hands-on experience to further consolidate their learning and gain a deeper understanding of probability.	Live feedback will be given during the tasks to challenge their current level of learning and help them progress to the next stage of learning.

	They will roll the dice 36 times and record their results and gather the data in the table they have drawn in their M&N book. <u>Task 2: Practical Probability Game:</u> Pupils will engage in a practical task involving coins, dice and linking cubes and discuss the chances/probability of each resource (set of questions will be provided to support discussion). <u>Task 3: Probability Mathematics digital task:</u> Pupils will complete a series of probability tasks set on Mathletics related to probability. Teacher (CJ): Work and support pupils who are completing task 1. TA (RM): Work and support pupils who are completing task 2. Pupils completing task 3 (Digital task) will work independently.	Dice – Normal or Digital: https://www.online-stopwatch.com/chance-games/roll-a-dice/ Dice Investigation Sheet M&N Books <u>Task 2:</u> Probability Questions Coins Links/Cubes Dice <u>Task 3:</u> Mathletics digital games Laptop		<u>AFL Questioning:</u> Pupils will be questioned during the tasks to assess their knowledge and understanding of coordinates (e.g. are pupils able to explain probability and use the correct language during the tasks).
5 mins	Do a roundup of the lesson before encouraging the pupils to tidy up the classroom to prepare for the next session/routine. Teacher and TAs: will supervise and encourage all the pupils to tidy up.	Pupils will be encouraged to tidy up the classroom to prepare for the next routine of the school day.		

Appendix B: Observational tool/Leuven scale used for the study:

Checklist Observer:

Time scale:

Context:

Tick if observed:	Child A:	Child B:	Child C:	Child D:	Child E:
1) Low Activity					
2) A Frequently Interrupted Activity					
3) Mainly Continuous Activity					
4) Continuous Activity with Intense Moments					
5) Sustained Intense Activity					

1) Low Activity

Activity at this level can be simple, stereotypic, repetitive, and passive. The child is absent and displays no energy. There is an absence of cognitive demand. The child characteristically may stare into space. NB. This may be a sign of inner concentration.

2) A Frequently Interrupted Activity

The child is engaged in an activity, but half of the observed period includes moments of non-activity, in which the child is not concentrating and is staring into space. There may be frequent interruptions.

in the child's concentration, but his/her Involvement is not enough to return to the activity.

3) Mainly Continuous Activity

The child is busy at an activity, but it is at a routine level and the real signals for Involvement are missing. There is some progress, but energy is lacking, and concentration is at a routine level.

The child can be easily distracted.

4) Continuous Activity with Intense Moments

The child's activity has intense moments during which activities at Level 3 can come to have special meaning. Level 4 is reserved for the kind of activity seen in those intense moments and can be deduced from the 'Involvement signals'. This level of activity is resumed after interruptions. Stimuli, from the surrounding environment, however attractive cannot seduce the child away from the activity.

5) Sustained Intense Activity

The child shows continuous and intense activity revealing the greatest Involvement. In the observed period not all the signals for Involvement need be there, but the essential ones must be present: concentration, creativity, energy, and persistence. This intensity must be present for almost all the observation period.

Appendix C: Interview Questions used during the group interview and how the participants responses were recorded:

Interview Questions

1. What did you think of the maths lesson?

Child A	Child B	Child C	Child D	Child E

2. What did you think about the games that was included into the maths lesson?

Child A	Child B	Child C	Child D	Child E

Appendix C Continued:**3. What do you think of when having these opportunities?**

Child A	Child B	Child C	Child D	Child E

4. Would you like to see more interactive games included in future math lessons? What type of games?

Child A	Child B	Child C	Child D	Child E

Appendix D: Ethics Form

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APPLICATION FOR ETHICAL APPROVAL**RESEARCH STUDENTS**

This form is to be completed by the student within **SIX** months for full-time students and **TWELVE** months for part time students, after the commencement of the research degree or following progression to Part Two of your course.

Once complete, submit this form via the **MyTSD Doctoral College Portal** at (<https://mytsd.uwtsd.ac.uk>).

This document is also available in Welsh.

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:	Caitlin Jones			
2	Tick all boxes that apply:	Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☐	Taught Postgraduate Student	☒	Postgraduate Research Student
3	Institute/Academic Discipline/Centre:	University of Wales Trinity Saint David			
4	Campus:	Swansea			
5	E-mail address:	1500793@student.uwtsd.ac.uk			
6	Contact Telephone Number:				

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For students:		
7	Student Number:	1500793
8	Programme of Study:	PGCE Primary with QTS
9	Director of Studies/Supervisor:	Lillian Martin

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☒	NO	☐
					Date
2	If Yes, please indicate source of approval (and date where known): Approval in principle must be obtained from the relevant source prior to seeking ethical approval	Research Degrees Committee	☐		
Institute Research Committee		☐			
Lillian Martin		☒	14/03/24		

SECTION C: Internal and External Ethical Guidance Materials

Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	UWTSD Research Ethics & Integrity Code of Practice ☒
2	UWTSD Research Data Management Policy ☒
3	BERA Ethical Guidelines for Educational Research (2018) ☒

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution					
2	Contact person name					
3	Contact person e-mail address					
4	Is your research externally funded?	YES	☐	NO	☐	
5	Are you in receipt of a KESS scholarship?	YES	☐	NO	☐	
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	YES	☐	NO	☐
7		Employed	YES	☐	NO	☐
8	Is the research being undertaken within an existing UWTSD Athrofa	If YES then the permission question	YES	☐	NO	☐



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	Professional Learning Partnership (APLP)?	below does not need to be answered.				
9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue	YES	☐	NO	☐

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	YES	☐	NO	☐
	If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).				

SECTION E: Details of Research Activity

1	Indicative title:	What are the perceptions and engagement of year 6 pupils on the use of game-based learning in mathematics.		
2	Proposed start date:	08/04/24	Proposed end date:	31/07/24
	Introduction to the Research (maximum 300 words per section) Ensure that you write for a <u>Non-Specialist Audience</u> when outlining your response to the points below: <i>Purpose of Research Activity</i> <i>Proposed Research Question</i> <i>Aims of Research Activity</i> <i>Objectives of Research Activity</i> Demonstrate, briefly, how Existing Research has informed the proposed activity and explain <i>What the research activity will add to the body of knowledge</i> <i>How it addresses an area of importance.</i>			
3	Purpose of Research Activity The purpose of this research is to find out how the use of game-based learning in mathematics to support year 6 pupils' engagement. This will help to understand and gain pupils perspectives on how this learning strategy can support their motivation and engagement towards learning mathematics and improve their overall learning experience within the subject. Also, this can help to inform future professional teaching practice, as it provides the opportunity to implement a new teaching strategy and evaluate the impact of change within the classroom and expand my repertoires of teaching approaches.			
4	Research Question What are the perceptions and engagement of year 6 pupils on the use of game-based learning in mathematics?			
5	Aims of Research Activity The aim of this research is to develop a better understanding and explore the perceptions and engagement of year 6 pupils on the use of game-based learning in mathematics.			

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6	Objectives of Research Activity To investigate the use of game-based learning on year 6 engagement during mathematic learning, the following steps will involve reviewing existing literature and research related to pupils' engagement towards mathematics, the game-based learning approach and how this could be implemented within practice. This will help to gaining a better understanding of the theoretical frameworks, teaching strategies, and practices used in education. This research will also involve using qualitative research methods through conducting group interviews and observing pupils to gather research data. Parental consent and pupils' assent prior to data collection process, all participants will be informed about their involvement during the research process and their right to withdraw at any time. Through a Mathematics lesson observation and conducting group interviews with a small sample of pupils (4-5) this will help to explore how the influence of game-based learning on pupils' perspectives and engagement when learning Mathematics.
	Proposed methods (maximum 600 words) Provide a brief summary of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. You do not need to justify the methods here, but should instead describe how you intend to collect the data necessary for you to complete your project.
7	<u>Observation of pupils:</u> Observe a mathematics lesson which involves the use of game-based learning such as practical or interactive mathematical games. The observation focus will study the pupil's engagement levels and implement an observation using the Leuven's scale of involvement in learning to monitor and evaluate their engagement during the lesson. Information regarding the levels of involvement in learning of Leuven's scale will be on the observation form, this can help to refer to relevant information about the involvement levels and identify the pupil's involvement level during the mathematics lesson. 4-5 pupils will be observed during the lesson, they will engage in a mathematics lesson that involves the use of practical or interactive mathematical games (planning and games used in the lesson will be relevant and follow the school's mathematic scheme of work). Pupils will be observed to see their involvement within the lesson and their involvement will be recorded on the Leuven scale observation form. <u>Group Interview:</u> Pupils from the established group will be asked 3-4 questions which will relate to their perspectives, opinions and thoughts towards the lesson and how they thought it helped to keep them focused during the mathematics lesson. Pupil's responses will be recorded by taking written notes which will be done during or straight after the interview takes place.
	Location of research activity Identify all locations where research activity will take place.
8	This research will take place in a local primary school within the local Swansea authority. Observations and group interview will take place in the primary school within the year 6 classroom.
	Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the research then please state this.
9	



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10	Use of documentation not in the public domain: Are any documents NOT publicly available?	NO	☒
		YES	☐
11	If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales.		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	YES	NO
12	A prosperous Wales	☐	☐
13	A resilient Wales	☐	☐
14	A healthier Wales	☐	☐
15	A more equal Wales	☒	☐
16	A Wales of cohesive communities	☐	☐
17	A Wales of vibrant culture and thriving Welsh language	☐	☐
18	A globally responsible Wales	☐	☐
19	If YES to any of the above, please give details:		
	A more equal Wales emphasises educational settings providing a whole school approach which focuses on supporting all aspects of a pupil's development including their learning and academic achievements. This aim recognises the importance of providing pupils with a variety of educational opportunities to support their knowledge, skills, and development, enabling them to reach their full potential.		

SECTION F: Scope of Research Activity

	Will the research activity include:	YES	NO
1	Use of a questionnaire or similar research instrument?	☐	☒
2	Use of interviews?	☒	☐
3	Use of focus groups?	☐	☒
4	Use of participant diaries?	☐	☒
5	Use of video or audio recording?	☐	☒
6	Use of computer-generated log files?	☐	☒
7	Participant observation with their knowledge?	☒	☐
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒



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12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☐	☒
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.		
	Details of any other primary data collection method:	☐	☒
	(this box should expand as you type)		

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

Who are the intended participants:		YES	NO
1	Students or staff at the University?	☐	☒
2	Adults (over the age of 18 and competent to give consent)?	☐	☒
3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☒	☐
5	Prisoners?	☐	☒
6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.	☐	☒
	Details of any other participant groups:		

Participant numbers and source	
Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?	
10	How many participants are expected?
11	Who will the participants be?

There will be a maximum of 5 pupils to form one group.

Current participants are pupils within the year 6 classroom in the local Swansea primary school.



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12	How will you identify the participants?	After sending the consent forms to the parents of the pupils, I will await their response. Once parental consent is obtained, a group will be formed consisting of a random sample of 4-5 pupils, selected from the classroom register. Once the group is established, pupils will be told what they will be doing, asked for their assent, and given guidelines on how to conduct themselves during the observation and group interview. For example, participants will be reminded to be respectful to each other and allow each other to speak in turn.
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	Information for participants:	YES	NO	N/A
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☒	☐	☐
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
17	If the research is observational, will you ask participants for their consent to being observed?	☒	☐	☐
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☐	☐	☒
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
22	If NO to any of above questions, please give an explanation			

	Information for participants:	YES	NO	N/A
24	Will participants be paid?	☐	☒	☐
25	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
28	If YES to any question, please provide full details			

Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.						
1	Full risk assessment completed and appended?	<table border="1"> <tr> <td>Yes</td> <td>☐</td> </tr> <tr> <td>No</td> <td>☒</td> </tr> </table>	Yes	☐	No	☒
Yes	☐					
No	☒					
2	Risks to participants For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information					
	Risk to participants: <u>Physical, psychological, or emotional distress:</u> Pupils may feel the need to participate and give biased answers because of the researcher's influence and need to please them. Peer pressure and concerns about how their responses will be viewed may also affect their participation. They may also worry about how their information will be stored and handled. <u>Potential for discomfort or disagreement:</u> Pupils may worry about sharing their answers honestly because they do not want to offend or upset their peers. Pupils may share different perspectives or answer questions that other peers may not agree with which could lead to disagreements. <u>Disturbance to relationships with staff:</u> Research activities could affect the day to day running of the educational setting. This could cause potential problems or tension which can affect the relationship between the researchers, staff and pupils involved in the study. <u>Risk that participants may feel coerced into positive or biased responses:</u> Pupils may feel the need to provide positive and biased answers to the researcher to please them which may lead to them not sharing their honest answers or opinions. - There may be other potential issues that arise during the research process which cannot be unidentified by the researcher due to the unknown context and circumstances of the participants participation.	<i>How you will mitigate the risk to participants:</i> - I will follow regulations for child protection and safeguarding by maintaining a clear and comprehensive consent process. I will openly discuss the research's purpose, benefits, and risks with pupils and their parents. They will be informed of their right to withdraw consent at any point. To encourage honest responses, I will reassure participants at the start of the interview that they can speak freely without feeling pressured to please others or conform to peer influence. I will uphold confidentiality and anonymity of all participant information, in compliance with university and ethical standards. - To prevent any discomfort or disagreement during the group interview, pupils will receive information highlighting the purpose of research, and the group interview, consent information, specific topics covered and a summary of how the data will be gathered and used. I will moderate the discussion and if any pupils say anything negative or harmful to others during the discussion, I will remind everyone of its purpose to maintain positive and respectful to other peer's responses while following UWTSD rules. - I will ensure that all individual involved in the study are fully informed about the focus of the research. I will also take steps to avoid disrupting day-to-day activities during the research project and keep the participants information private and secure. All interviews will take place in a confidential and private place. I will collaborate with all educational staff to ensure they understand the research's purpose and that pupil's participation is supported and will not lead to negative consequences. - Before the interview, pupils will receive information about the purpose of the interview and asked for their informed assent. To prevent pupils from feeling pressured, a summary of the pupil's responses will be provided to them after the interview. - For any unknown risks or factors that take place during the research process, I will work with my class mentor and research university supervisor at the time the issue arises and seek advice for				



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		5. For any unknown risks or factors that take place during the research process, I will work with my class mentor and research university supervisor at the time the issue arises and seek advice for how to proceed with the situation to prevent harm to the participants.
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities	
	If any information in the research process arises that may involve sensitive, embarrassing, upsetting topics or may reveal information regarding criminal behaviour. I will handle the information with sensitivity, remain confidential and always respect the privacy of the participants. The consent procedures will clearly state the researcher has a responsibility to follow the school policies in relations to child protection and safeguarding. I will inform participants about the focus of the research and potential issues that may arise during the process. I will signpost pupils to the appropriate staff who can support them with their health and wellbeing, or I will follow the schools safeguarding and child protection policy by seeking advice from the safeguarding officer regarding to reporting disclosures. Any disclosure will be handled in accordance with school policy, legal requirement, and ethical considerations, ensuring the safety and well-being of all pupils involved in the research. By implementing these procedures and providing necessary support to participants, this ensures the research conducted in a responsible and ethical matter.	
4	Risks to the investigator For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest	
	Risk to the investigator: <u>Allegations while conducting interviews:</u> The researcher may be at risk of facing complaints from participants regarding malpractice. <u>Accusations of fabrication or falsification of data:</u> The researcher may face accusations of dishonestly manipulating their research or data. <u>Concerns of coercion:</u> There may be some speculation about the researcher's strategies for engaging participants. <u>Participants may wish to withdraw:</u> If participants decide to withdraw the research due to discomfort or loss of interest. It may compromise the researcher's sample group and influence the collected data. <u>A possible conflict of interests between the researcher and participants:</u> There are many factors that can affect objectivity from the researcher or participants. <u>A confidentiality breach due to data being released accidentally:</u> The loss of data or accidental disclosure can pose a risk to confidentiality. <u>Unforeseen negative emotions that interviewees may experience during the</u>	How you will mitigate the risk to the investigator: - I will make sure the space allows for privacy while still being visible to other educational staff and colleagues. - I will inform participants about their access to interview notes, conduct a reflective session to review and clarify their responses, and collaborate with all educational staff to ensure a clear understanding of the research project's purpose. - I will make sure that all participants are clearly informed that they have the option to disengage, and their decision will not affect the research study. - If a pupil decides to withdraw, I will speak to the remaining members and if necessary, bring in new pupil to participate in the study. The pupil will be fully informed, and their assent will be obtained. - If there is a conflict of interest between myself as a researcher and the participants, I will not assess the work of those participants. - Any research will be saved securely on the university's encrypted 365 Office System. Also, any paper form data will be locked in a filing cabinet that only the researcher can access. All data, recordings, and transcripts



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	<u>interview process</u>: There is a risk of unexpected negative emotions from interviewees, as personal factors unknown to the researcher could impact their emotional well-being during or after the research process.	will be kept in secure place to follow GDPR requirements. I have completed GDPR training and will ensure all records are stored securely. 7. When selecting interview locations, I will pick a quiet and public space. Participants will be assured that their personal data is stored in a safe location such as a locked filing cabinet or personal device that is password protected. I will also research and follow relevant regulations and laws before conducting any research to prevent any unintentional misconduct.
5	University/institutional risks For example: adverse publicity, financial loss, data protection	
	1. <u>Reputational damage</u>: If the researcher behaves improperly or carries out the research in a questionable manner, it could potentially damage the reputation of the university. This could lead to financial repercussions and negatively impact the perceptions of both the university and the research department.	1. I will create clear procedures for reporting disclosures in educational research. I collaborate with the university staff in the research department to clarify the nature of the research and prevent misunderstandings. I will follow to the university and research codes of practice, as well as data storage regulations and security procedures. I will also comply with the UWTSD and EWC codes of practice to ensure ethical research practice is always conducted throughout the research process.
6	Environmental risks For example: accidental spillage of pollutants, damage to local ecosystems	
	1. <u>Use of paper</u>: Paper production frequently requires the harvesting of trees which is harmful to the environment.	1. I will try to limit my use of paper during this research and record any data electronically on a password protected document on the cloud which is password protected.

Disclosure and Barring Service				
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
7	Does your research require you to hold a current DBS Certificate?	☒	☐	☐
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.	001628477826		



PG2 / E1 FORM

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when?
	<u>Observation of pupils:</u> Pupils will be reminded of the question's purpose, informed about where the data will go, who will handle it, and how it will be processed. They will be thanked for their time and encouraged to ask questions or share their thoughts and feelings with the researcher. Also, I will provide the research headlines upon request to ensure that all participants (pupils or parents/guardians) are informed about the research. <u>Group Interview:</u> At the end of the interview, pupils will be thanked for their involvement during the interview and given time to share their perceptions, thoughts and opinions and ask any question they may have. Also, a discussion will take place which enables the researcher and pupils to reflect and debrief the information and responses mentioned during the interview. This provides the researcher and pupils with the opportunity to clarify any information and check they are happy with the information and response shared/collected. In addition, on request I will share the headlines from the research which enables to keep all participants (pupils or parents/guardians) to be informed about the research.
2	Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.
	Parents will be sent information about the research and asked to complete a consent form if they give permission for their child to participate in the study. Once parental consent is obtained, the researcher will then have a discussion with the pupils to gain their assent. This will provide them with information about the study, their involvement, and their right to withdraw at any time. Pupils will also be asked to complete an assent form which shows they received and understood the information about their involvement during the study, had any question answered in a way they understand and they were happy to participate in the study.
3	Confidentiality / Anonymity Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.
	Participants will be assigned a unique identifier to maintain anonymity. Any identifying information will be removed from all aspects of the research. All data will be deleted in accordance with the university's GDPR policy after the research period concludes.

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.	X	☐
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	Parental responses on the consent form will include the names of students, showing that they have permission to participate. This helps the researcher get assent from the pupil before starting the research.		
	Does it involve special category data (as defined by the GDPR)?	YES	NO

	Does it involve special category data (as defined by the GDPR)?	YES	NO
3	“Special category data” means sensitive personal data consisting of information as to the data subjects’ – (a) racial or ethnic origin, (b) political opinions, (c) religious beliefs or other beliefs of a similar nature, (d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) physical or mental health or condition, (f) sexual life, (g) genetics, (h) biometric data (as used for ID purposes),	☐	☒
	If YES, provide a description of the special category data and explain why this data needs to be collected:		
4	(this box should expand as you type)		

	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	YES	NO
5	Manual files (i.e. in paper form)?	☒	☐
6	University computers?	☐	☒
7	Private company computers?	☐	☒
8	Home or other personal computers?	☐	☒
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☐	☒
10	“Cloud” storage or websites?	☒	☐
11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:		
	Data in a paper form will be locked in a filing cabinet which only the researcher can access. Data in a digital form will be kept on the University Office 365 system which will be encrypted. Each participant will receive a distinctive identifier to maintain confidentiality, and this information will be stored securely in a locked filing cabinet or encrypted University Office 365 system. The research information and data will be kept on file until the assessment results are received and then deleted. Participants can ask to see their data and have it deleted if requested. If this happens, their data will not be used for the project.		

Data Protection			
	Will the research activity involve any of the following activities:	YES	NO
13	Electronic transfer of data in any form?	☐	☒
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☐	☒
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☐	☒
18	Publication of data that might allow identification of individuals?	☐	☒



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20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
22	List all who will have access to the data generated by the research activity:		
	Only I, as the researcher will have control and access to the data produced from the research study.		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	I as the researcher will be the only person who has control and access over the data developed from the research study.		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	Data in paper form will be kept in a locked filing cabinet only accessible to the researcher. Digital data will be stored on a personal password-protected digital device. Each participant will get a special code to protect their identity, stored securely. The data will be saved until the study is completed, then deleted. Participants can ask to see their data or have it removed.		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. (<i>Most relevant to academic staff</i>)		
	N/A		
26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	YES	☒
27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒



PG2 / E1 FORM

SECTION K: Declaration

	The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants.	
	In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/	
1	Signature of applicant:	C Jones
		Date: 14/03/24

For STUDENT Submissions:

2	Director of Studies/Supervisor:	Lillian Martin	Date:
3	Signature:	<i>LYL Martin</i>	18.3.24

For STAFF Submissions:

4	Academic Director/ Assistant Dean:		Date:
5	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☐	I have attached a copy of final/interim approval from external organisation (where appropriate)
☐	I have attached a full risk assessment (where appropriate) ONLY TICK IF YOU HAVE ATTACHED A FULL RISK ASSESSMENT
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.

RESEARCH STUDENTS ONLY

Once complete, submit this form via the **MyTSD Doctoral College Portal** at (<https://mytsd.uwtsd.ac.uk>).

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

Appendix E: Parental Consent Form:

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Parental Permission for Children Participation in Research

08th April 2024

Dear Parent / Guardian,

My name is Caitlin Jones, and I am studying for a PGCE qualification at Yr Athrofa, University of Wales Trinity Saint David. I am currently a student teacher within Townhill Primary School and I am teaching in your child's class.

I would like to invite your child to participate in my research project. The title of the project is **'What are the perceptions and engagement of year 6 learners on the use of game-based learning in mathematics'** and I aim to find out how including interactive games in your child's mathematics lessons can help to keep them motivated to learn and develop their mathematical skills.

Through your child's participation, I hope to carry out a lesson observation to see and record their reactions, I also hope to interview your child after the lesson and ask 3/4 questions about what they thought of the lesson, their answers will also be recorded.

All names will be kept strictly confidential and will only be known by myself and my research partner. Your child's participation in this study is completely voluntary so you or your child can withdraw from the study at any stage. Your child will also be asked to give their assent before the beginning of the study.

After careful and precise analysis of the data obtained from the lesson observation and group interview, I would be happy to provide you with a copy of the findings at your request. The results of the research will be discussed in a university assignment that will contribute to my PGCE course. The results of this study will be stored on the University's encrypted 365 Office System or in a locked cabinet and all raw data will be destroyed once the assessment has been marked.

I thank you in advance for your time. If any questions do arise, feel free to contact me at your convenience.

Yours sincerely,

Caitlin Jones.

Appendix E Continued:

Research Project Title: 'What are the perceptions and engagement of year 6 pupils on the use of game-based learning in mathematics?'

Parental Consent for Children Participation in Research

If you give permission for your child to participate in the research project.

Please complete and return this form to your child's class teacher by the **12/04/24.**

Name of Researcher: Caitlin Jones

Please tick initial box

1. I confirm that I have read and understand the information sheet dated 08th April 2024 for the above study.

☐

2. I understand that my child's participation is voluntary and that I am free to withdraw my child from the study at any time, without giving any reason.

☐

3. I understand that my child can choose to withdraw at any time, without giving a reason.

☐

4. I understand that the information given by my child will be used in a university assignment.

☐

5. I understand that my child's name will not appear at any time.

☐

6. I agree for my child to take part in the above study.

☐

Child's name

Parent signature

Date

Thank you.

Appendix F: Pupil Assent Form:**Child Assent Form (6-11 years)**

I have been told that my parent or guardian have given permission for me to participate if I want to, in a project about learning maths through interactive games.

I know that I can stop at any time I want to, and it will be okay if I want to stop.

<u>Please circle questions you agree with:</u>	YES	NO
Has somebody explained the study to you?		
Do you understand what the study is about?		
Have you asked all the questions you want?		
Have you had your questions answered in a way you understand?		
Do you understand it's OK to stop taking part at any time?		
Are you happy to take part?		

Please don't sign your name if you don't want to take part or if you answered 'NO' () to any one question!

Please write your name and today's date if you want to take part.

Your name:	
Today's date:	

The researcher who explained the study to you must also complete this form:

Researcher's Name:	
Today's date:	