Filter Questions

☑ I confirm I have read the UWS and my School Guidelines for Ethical Practice in Research and Scholarship.
(please tick to continue)

Pre-screening Questions

Does your work involve any of the following. (please tick all that apply)

☑ Human Participants
☑ Personal Data
☐ Animals
☐ Risk to the Investigator

☐ None of the above

Based on your answers to the above questions you should complete the remainder of this form and submit it to your school ethics committee for approval **PRIOR** to commencing any work on your project. Please click Next to proceed.

Applicant Details

Position of Principal Investigator

Postgraduate

Principal Investigator

Title	First Name	Surname
POSTGIT	Rida	Khan

Email: B00928265@studentmail.uws.ac.uk

School

Computing, Engineering and Physical Sciences

Are there any co-applicants

- ○ Yes
- ◉ No

Supervisor/Director of Studies

Supervisor/Director of Studies

Title	First Name	Surname
Dr	Naeem	Ramzan

School: School of Computing, Engineering and physical Sciences

Email: Naeem.Ramzan@uws.ac.uk

Collaborators

Are there any other collaborators?

- ○ Yes
- ◉ No

Project Information

Title of Study

Serious Games for Computer Programming Education

Primary purpose of the study

Postgraduate Dissertation

Where will the proposed research take place?

The proposed research will take place in [Schools, universities]. This location may include a physical space, such as a laboratory or classroom, and/or a virtual space, such as an online learning platform or video conferencing software.

How will the costs of the study be met?

The costs of the study will be met at [own expense]. This may include research grants, institutional funding, or other sources of funding.

Previous Approvals

Has the proposed study been considered by any other ethics committee?

- ○ Yes
- ◉ No

Purpose, justification, design and methodology

Please give a full summary of the purpose, justification, design and methodology of the planned study: (word limit 1000 words)

Purpose:
The purpose of the study is to develop serious games for computer programming education that can improve the learning experience of students and enhance their engagement in programming courses. The study aims to investigate the effectiveness of these games in enhancing the learning outcomes of students and explore their attitudes toward the games.

Justification:
Computer programming education is critical in today's digital age, and serious games have emerged as a potential tool to improve the learning experience of students in this field. However, there is a need for empirical evidence to support the effectiveness of these games in enhancing the learning outcomes of students. This study aims to fill this gap in knowledge by investigating the effectiveness of serious games in enhancing the learning outcomes of students in computer programming education.

Design:
The study will use a mixed-methods approach, combining both quantitative and qualitative data collection methods. The study will be conducted in two phases. In the first phase, the serious games will be developed and tested for usability and user experience. In the second phase, the effectiveness of the games in enhancing the learning outcomes of students will be evaluated.

Methodology:
The study will involve two groups of participants: an experimental group and a control group. The experimental group will use the serious games developed in phase one, while the control group will receive traditional computer programming education. The study will be conducted in a quasi-experimental design, with pre-and post-tests administered to both groups to measure the learning outcomes. The study will also collect qualitative data through interviews with students and teachers to explore their attitudes toward the games.

The data collected from both quantitative and qualitative methods will be analyzed using statistical analysis and thematic analysis, respectively. The results of the study will provide evidence of the effectiveness of serious games in enhancing the learning outcomes of students in computer programming education and inform the development of future serious games for educational purposes.

How has the scientific quality of the proposed research project been assessed?

- [x] Independent external review
- [x] Review within a company
- [ ] Review within a multi-centre research group
- [ ] Review within the principal investigator's institution
- [ ] Review within the research team
- [ ] Review by supervisor/director of studies
- [ ] Other

Sample Size

Please explain/justify your intended sample size:

To ensure the scientific quality of a research project, the sample size should be large enough to provide adequate statistical power to detect meaningful differences between groups or treatments.

Analysis and Presentation

Please explain how you will analyse, present/disseminate the data you intend to collect:

Analysis:
The data collected in the study will be analyzed using both quantitative and qualitative methods. The quantitative data collected through pre- and post-tests will be analyzed using statistical analysis, such as t-tests or ANOVA, to determine if there are significant differences in the learning outcomes between the experimental and control groups. The qualitative data collected through interviews will be analyzed using thematic analysis, which involves identifying patterns and themes in the data.

Presentation:
The results of the study can be presented in different ways depending on the audience and purpose. The quantitative results can be presented in tables, graphs, or figures to show the differences in the learning outcomes between the two groups. The qualitative results can be presented in the form of quotes or themes to provide a deeper understanding of the attitudes and experiences of the participants.

Dissemination:
The findings of the study can be disseminated through various channels, such as academic publications, conference presentations, and online platforms. The researchers can publish the study in academic journals to reach a wider audience of researchers and educators interested in serious games and computer programming education. The researchers can also present the study at conferences and seminars to share their findings with other researchers and educators. Finally, the researchers can disseminate the findings through online platforms, such as social media or the project website, to reach a wider audience of stakeholders, including policymakers, educators, and students.

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Interviews/Questionnaires

Does the proposed research involve the use of individual/group interviews or questionnaires?

- ○ Yes
- ◉ No

Impact on Participants

Please provide details of how you will recruit participants to your study:

Advertising
I can advertise the study through various channels, such as social media, university or college bulletin boards, or community organizations that cater to individuals interested in computer programming or game development
Recruitment through academic institutions
I can reach out to academic institutions, such as universities, colleges, or technical schools that offer courses or programs related to computer programming or game development. They can collaborate with course instructors or department chairs to send recruitment emails to students who meet the eligibility criteria.
Snowball sampling
I can ask current participants to refer their friends or colleagues who might be interested in participating in the study.

Will participants be from any of the following groups? (Please tick all that apply)

- [x] Children under 16
- [ ] Adults with learning disabilities
- [ ] Adults with a terminal illness
- [ ] Adults in emergency situations
- [ ] Adults with mental illness (particularly if detained under the mental health act)
- [ ] Adults with dementia
- [ ] Adults in Scotland who are unable to consent for themselves
- [ ] Those who could be considered to have a particularly dependent relationship with the investigator
- [ ] Other
- [ ] None of the above

Please outline how you will mitigate the risks involved with including participants from these groups

it is important to take special precautions to mitigate any potential risks. Here are some ways to do that:

Obtain informed consent from parents or guardians: Before including children under 16 in research, obtain informed consent from their parents or guardians. Make sure that they understand the purpose of the research, what their child will be asked to do, and any potential risks or benefits.

Use age-appropriate language: Use language that is appropriate for the age and cognitive level of the children. Make sure that they understand what is being asked of them and what they are expected to do.

Ensure the safety of the game: Make sure that the game is safe for children to use. Test the game thoroughly to ensure that there are no bugs, glitches, or other issues that could cause harm or frustration.

Are there any special pressures which would make it difficult for potential participants to refuse to take part in your study? (e.g., relationship to the investigator?)

There are no anticipated special pressures that would make it difficult for potential participants to refuse to take part in the study. The study is voluntary, and participants will be informed that they have the right to withdraw at any time without penalty.

In order to minimize any potential pressure or coercion, the informed consent form will clearly state that participation is voluntary and that there will be no consequences for individuals who decline to participate. Participants will also be informed that their decision to participate or not will not affect their relationship with the researchers or the institution in any way.

Will study participants be paid to take part?

- ○ Yes
- ◉ No

What is the expected duration of participation in the study for each participant?

The expected duration of participation may vary depending on the number of games and levels that participants are required to complete.

Will informed consent be obtained from study participants?

- (•) Yes
- ( ) No

Please provide details of how you will obtain this consent and the information you will provide to potential participants to allow them to make an informed choice about whether or not to participate in your research.

Informed consent will be obtained in writing from all participants who agree to participate in the study. The informed consent form will be provided to the participants, and they will be given ample time to read and understand it. The participants will be informed that their participation is voluntary, and they have the right to withdraw from the study at any time without penalty. They will also be informed that their decision to participate or not to participate will not affect their current or future relationship with the researchers or the institution.

Please upload a copy of the Participant Information Sheet(s)

Documents

Type	Document Name	File Name	Version Date	Version	Size
Default	participant-information-sheet final	participant-information-sheet final.docx	06/03/2023	participant form	4.5 KB

Please upload a copy of your Consent Form(s)

Documents

Type	Document Name	File Name	Version Date	Version	Size
Default	Informed_Consent	Informed_Consent.docx	07/03/2023	07/03/2023	4.3 KB

Is the study likely to cause any discomfort or distress, either physical or psychological (see UWS Guidelines for Ethical Practice in Research and Scholarship)?

- ( ) Yes
- (•) No

Does the proposed research involve any physically invasive procedures?

- ( ) Yes
- (•) No

Other ethical considerations

Does the proposed research involve deception regarding aims, objectives or the identity of the investigator?

- ( ) Yes
- (•) No

Will research participants be debriefed after their participation?

- ○ Yes
- ◉ No

Are there any other Ethical Considerations you wish to bring to the attention of the committee?

- ○ Yes
- ◉ No

Personal Data

What measures will you put in place to ensure the confidentiality of personal data gathered during your study?

Obtain informed consent: Before collecting any personal data from participants, the researchers should obtain informed consent from them, explaining the nature of the study, what data will be collected, and how it will be used. This helps to establish a basis of trust between the participants and the researchers.

Anonymity or pseudonymity: The researchers can adopt a strategy of anonymizing or using pseudonyms to protect the identities of participants. This means that any data collected from participants will be attributed to a unique identifier instead of their real names.

Data storage: The researchers can store personal data collected from participants in a secure location, such as a password-protected electronic database or a locked cabinet. They should ensure that only authorized personnel have access to this data.

Data sharing: If the researchers need to share personal data with other parties, they should obtain explicit consent from the participants and ensure that appropriate safeguards are in place to protect the confidentiality of the data.

Who will have access to the data collected during the study and how will you keep it confidential?

Access controls: The researchers should implement access controls to limit who has access to the data. This can be done by setting up password-protected systems and only providing access to those who have a legitimate need to access the data.

Confidentiality agreements: The researchers should require all personnel who have access to the data to sign a confidentiality agreement stating that they will not share or disclose any personal data collected during the study to unauthorized personnel.

Data encryption: Data encryption can be used to protect the data during transmission or while being stored. This can be done by using encryption software, secure file transfer protocols, or secure cloud storage.

Anonymization or pseudonymization: The researchers can use anonymization or pseudonymization techniques to protect the identities of participants. This means that personal data collected from participants will be attributed to a unique identifier instead of their real names.

Supporting Documents

Please upload any additional supporting documents you are submitting with this application

Signatures

Principal Investigator

The information supplied above is, to the best of my knowledge and belief, accurate. I have read the university ethics guidelines and clearly understand my obligations and the rights of study participants, particularly in relation to obtaining valid consent.

Signed: This form was signed by POSTGIT Rida Khan (B00928265@studentmail.uws.ac.uk) on 07/03/2023 7:18 AM

Supervisor/Director of Studies

I support the above application and I agree to supervise the work.

Signed: This form was signed by Professor Naeem Ramzan (Naeem.Ramzan@uws.ac.uk) on 07/03/2023 9:32 AM