

Project Title: Coding and wonder in mathematics education

Principal Investigator: George Gadanidis, PhD

Letter of Information (online tutoring research): Grades 6-10 Parent

1. Invitation to Participate

Your child is being invited to participate in this research study on coding and wonder in mathematics education because they are a grades 6-10 student and our study focuses on grades 6-10 teaching and learning.

2. Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. Purpose of this Study

Our society has grown in complexity due to technology and today computer programming is used to make scientific progress and to succeed economically in many professional and scholarly fields.

The research examines the integration of computer programming in grades 6-10 mathematics education in ways that may elicit mathematical play, conceptual understanding and wonder. The research is interested in conducting case studies of how students' and teachers' experience and understanding of mathematics may develop when computer programming is used in mathematics teaching and learning.

The research questions include:

1. How may the integration of computer programming in mathematics education interact with (a) concepts of mathematics; (b) the role of the teacher, (c) the role of students; and (d) the learning environment?
2. How may students' and teachers' experience and understanding of mathematics develop differently when computer programming is used to dynamically model important concepts and relationships in mathematics?

4. Inclusion Criteria

Students in grades 6-10 mathematics are eligible to participate in this study.

5. Exclusion Criteria

None.

6. Study Procedures

We start by asking students what topics they may need help with. We then offer tutoring and enrichment (during 50-minute sessions via Zoom) based on the curriculum students are learning ("content"), adding conceptual connections to more sophisticated mathematics

("context"). Where appropriate, we incorporate computer programming activities, to dynamically model and bring mathematics concepts and relationships to life.

Data is collected using field notes as we observe/participate in the online tutoring sessions, annotated with photo images of student work (we do not photograph students). In the sessions, we ask such questions as: What are you working on? What have you learned? How do you know this is correct? Do you have any questions? Did anything surprise you? In what way? What else would you like to know?

Participation in the research is optional, and we only collect data from students who have assented along with their parent's consent.

Students may participate in the Tutoring and Enrichment Program even if they don't want to be part of the research.

7. Possible Risks and Harms

There are no known or anticipated risks or discomforts associated with participating in this study.

8. Possible Benefits

The possible benefits of participation are: (1) students may experience new ways of doing and learning mathematics; and (2) the study may help other teachers and future research.

9. Compensation

You will not be compensated for your participation in this research.

10. Voluntary Participation

Participation in this study is voluntary. Your child may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your child's education. If your child withdraws from the study, you also have the right to request that your child's data compiled up to that point, not be used and destroyed. To withdraw from the study please inform any member of the research team. You and your child do not waive any legal rights by signing this consent form.

Allowing us to take pictures of student work is optional. Students may participate in the research without us taking any pictures of their work.

Students may participate in the Tutoring and Enrichment Program even if they don't want to be part of the research.

11. Confidentiality

Notes and digital images of students' work products (on the Zoom whiteboard or by taking screenshots of work shared by students) that we take in the online sessions will use pseudonyms to maintain anonymity. No images of the student will be taken, and the Zoom sessions will not be video- or audio-recorded. Student work products that we use in the study will be anonymized. Digital research data will be stored on password-protected devices. Written records will be kept in a locked cabinet in the principal investigator's or co-investigator's office. All data collected will remain confidential and accessible only to the investigators of this study. The researcher will keep any personal information about your

child in a secure and confidential location for 7 years. Only the PI will be retaining the study records after project has been completed (e.g., no other researcher or a data repository).

During data collection, a master list linking your child's study number with your child's name will be kept by the researcher in a secure place, separate from your child's study file. Representatives of Western University Non-Medical Research Ethics Board may require access to study-related records to monitor the conduct of the research. While we do our best to protect your information there is no guarantee that we will be able to do so. If data is collected during the project which may be required to report by law, we have a duty to report.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact George Gadanidis at (519) 661-2111 x88682, email: ggadanid@uwo.ca.

If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Office of Research Ethics; phone: (519) 661-3036 or toll- free: 1-844-720-9816, email: ethics@uwo.ca.

13. Publication

If the results of the study are published, your child's name will not be used. If you would like to receive a copy of any potential study results, please include your name and contact information on a separate sheet, along with your consent form.

This letter is yours to keep for future reference.

Consent Form (online tutoring research): Grades 6-10 Parent

Project Title: Coding and wonder in mathematics education

Study Investigator Name: George Gadanidis, PhD

To give Parent Consent and Student Assent, please complete the Online Form at
https://uwo.eu.qualtrics.com/jfe/form/SV_cxaPAggXzPuyTjg

COPY of QUALTRICS FORM



PROJECT TITLE: Coding and wonder in mathematics education

STUDY INVESTIGATOR NAME: George Gadanidis, PhD

SURVEY PURPOSE: Parent Consent

A copy of this completed form, as well as a copy of the completed student assent form, will be emailed to the parent.

PARENT CONSENT: I have read the Letter of Information, have had the nature of the study explained to me and I agree for my child to participate. All questions have been answered to my satisfaction.

Yes

No

PARENT CONSENT: I agree for my child's work products (such as on a Zoom whiteboard) to be copied.

Yes

No

PARENT CONSENT: I agree for images of my child's work products to be used anonymously in academic publications.

Yes

No

Parent Name

Parent email address

Child Name

Parent signature

× **SIGN HERE**

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