Bootstrap Evaluation Study

Dear teacher,

Thanks for your interest in helping us with our evaluation! We take teacher feedback and student data seriously, and your participation will help us continue to improve our lessons and materials. Please read this page carefully, as it outlines the steps for participating in the study.

1. **Sign the Teacher Consent Form** (page 2), and send it to the Program Director (address at the bottom of the page).

2. **Send home the Parental Permission Letter** (page 3) with each of your students. These forms allow parents to opt into the study, by signing and returning the form. You **must** save these forms until the end of the Bootstrap class.

3. Give your students both components of the **pre-**test:
   - A 15min survey about attitudes towards math (bit.ly/BootstrapAttitudePre)
   - A 30min battery of math questions: bootstrapworld.org/materials/Fall2014/courses/bs1/resources/teachers/Pretest.pdf

4. **Teach the class**, using the lessons, software and workbooks located at BootstrapWorld.org.

5. Give your students both components of the **post-**test:
   - A 15min survey about attitudes towards math (bit.ly/bootstrapAttitudePost)
   - A 30min battery of math questions: bootstrapworld.org/materials/Fall2014/courses/bs1/resources/teachers/Posttest.pdf

6. **Remove** all pre- and post-tests for students whose parents have not returned the form, **match** the remaining pre- and post-tests for each student, and **mail them** to:

Emmanuel Schanzer
Bootstrap Program Director
3575 Larkspur Dr
Longmont, CO 80503

The survey can be assigned for homework, or done in a flexible amount of time. *However, please be sure to keep a firm, 30min limit on the math instrument for all students*

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Teacher Consent Agreement

Thank you for volunteering to be part of our pilot study for Bootstrap this year! Your participation will help us improve and refine the curriculum, and help us learn the impact of functional programming on students' understanding of algebraic concepts.

Procedures for Participants

Participants will teach Bootstrap as part of their normal classroom practice this year, devoting the recommended 20-25 hours of time to the material with at least a 90min of in-class instruction per week, and with class periods lasting a minimum of 45min each.

Participants must the same lessons and techniques covered in the curriculum and PD workshops: Circles of Evaluation, Contracts, workbooks, Design Recipes, and consistent vocabulary for key terms.

Participants will also be responsible for:

1) Distributing and collecting opt-in forms to the legal guardians of students
2) Using the pre- and post- diagnostics that are part of the Bootstrap curriculum, de-identifying them (e.g. - replacing names with numbers) and sharing these results with the researcher.
3) Participating in an exit interview, and consenting to being observed during class.

Participants are free to withdraw from the study at any time.

Potential Benefits and Risks to Students

All students will learn to program a game of their own design, but they may learn a great deal more: the choice of curriculum and pedagogy is designed explicitly to help their understanding of algebra.

While the Pre- and Post-tests may cause some anxiety for students, we do not foresee any undue strain or harm to children who participate.

Confidentiality

To protect students' privacy, participants must redact student names from the Pre-and Post-tests (replacing them with numbers so we can match them). This way, the only identifying information collected will be the parental consent forms for them to participate. *All test data will be completely anonymous*.

Compensation

You may receive compensation for complete participation in this study. Be sure to contact the researcher beforehand to see if you qualify.

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Signatures

The nature and purpose of this research have been satisfactorily explained to me and I agree to become a participant in the study as described above. I understand that I am free to refuse to participate or discontinue participation at any time if I so choose without penalty or loss of benefits to which I am otherwise entitled, and that the investigator will gladly answer any questions that arise during the course of the research.

_____ _____ _____

(date) (subject's signature) (print name)

To Contact the Researcher, write to Emmanuel Schanzer at ets272@mail.harvard.edu or Jon Star (faculty advisor) at Jon_Star@harvard.edu.

Whom to contact about your rights in this research, for questions, concerns, suggestions, or complaints that are not being addressed by the researcher, or research-related harm: Committee on the Use of Human Subjects in Research at Harvard University, 1414 Massachusetts Avenue, Second Floor, Cambridge, MA 02138. Phone: 617-496-CUHS (2847). Email: cuhs@fas.harvard.edu.

Parental Permission Letter

Study Title: Algebra, Programming and Transfer
Investigator: Emmanuel Schanzer

This year, your child will learn computer programming as part of their normal math or technology class. During the programming portion of the class, s/he will design and write a videogame, as part of the Bootstrap curriculum (you can find more information at http:// www.BootstrapWorld.org). As part of the class, each child will take a short math diagnostic at the beginning and end of the, and answer questions about how they feel about mathematics. Additionally, the researcher may visit the class to take an audio recording of the teacher. These diagnostics will not affect your child's grade in the course, and the audio recording will *only* be used to document the actions of the teacher.

In addition, a researcher may visit your child's class to observe the program.

Your child's teacher would like to share these scores with a researcher at Harvard University who is studying the impact of the program.

What is the purpose of this research?

The purpose of this research is to evaluate the program's ability to help students learn Algebra using a novel and engaging approach to computer programming. These results will help improve the curriculum, and may improve the delivery of the class to your child or other children.

Participation is voluntary

If you choose to share these scores, you may change your mind and notify the teacher at any time. Refusal to participate or stopping participation will involve no penalty. *If you elect to share these scores with the researcher, please sign and return this form to the teacher.*

What happens to the information you collect?

The data will be used to measure the impact of the curriculum on the whole class. Your child's individual scores will *never* be used on their own, for any purpose. *Your child's name will never be shared with the researcher, used in any publication, or shared with anyone.*

If I have any questions, concerns or complaints about this research study, who can I talk to?

The researcher for this study is *Emmanuel Schanzer* who can be reached at:

ets272@mail.harvard.edu
617-792-2438

140 Pasito Terrace, #512
Sunnyvale, CA 94086

If you are comfortable with the teacher sharing this information, please *sign and return this form to your child's teacher.*

The faculty sponsor is Jon Star, who can be reached at Jon_Star@harvard.edu.

- If you have questions, concerns, or complaints,
- If you would like to talk to the research team,
- If you think the research has harmed your child, or
- If you wish to withdraw your child from the study.

Your child may with withdraw from the study at any time without penalty or loss of benefits to which you are otherwise entitled.

This research has been reviewed by the Committee on the Use of Human Subjects in Research at Harvard University. They can be reached at 617-496-2847, 1414 Massachusetts Avenue, Second Floor, Cambridge, MA 02138, or cuhs@fas.harvard.edu for any of the following:

- If your questions, concerns, or complaints are not being answered by the research team,
- If you cannot reach the research team,
- If you want to talk to someone besides the research team, or
- If you have questions about your or your child's rights as a research participant.

Yes! I would like to opt into this study

I have read the information in this consent form, and I will allow my child's math diagnostics to be a part of the research study.

SIGNATURE

Your signature below indicates you are granting permission for your child to take part in this research.

_____
Printed name of child

_____
Printed name of parent/guardian

_____ _____
Signature of parent/guardian Date