**Principal Investigator’s Contact Information**: [kernsn@etsu.edu](mailto:kernsn@etsu.edu), (865)307-6746

**Organization of Principal Investigator:** East Tennessee State University

**INFORMED CONSENT**

This Informed Consent will explain about you and your child being a participant in a research study. It is important that you read this material carefully and then decide if you wish for your child to voluntarily participate.

1. **Purpose:** The purpose of this research study

My research is to explore whether a kind of thinking used in computer science would be enjoyable and interesting to middle-school students and whether working this way makes them more interested and engaged with science and math courses in school. More specifically, I want to know how enjoyable and interesting it would be for kids to work carefully through step-by-step procedures (“algorithms”) to get answers to mathematical questions. Research shows that older kids find the challenges in thinking this carefully about simple problems to be very satisfying and makes them want to learn more about these methods and their applications. Not much is known about how younger kids would react. I think that middle-school kids would also find it fun and enriching and might think differently about math, science, and computer science if given the chance. This is what I want to explore in this study.

1. **Duration:**

First, you will be asked to fill out a questionnaire at home with your child, which will take approximately 10 minutes. Second, your child will participate in an enrichment activity held during one period of his or her regular math class. Toward the end of that period, your child will be asked to fill out a questionnaire about how they felt about the session and how they feel about working in science, math, and computer science subjects, and will be given a chance to talk about how the activity went for them.

1. **Procedures:** The procedures, which as a participant in this research will involve your child, include:

The first thing you will do is to carefully read this informed consent form. If you choose to have your child participate, you should sign this form and initial each page. Then you and your child will fill out the attached questionnaire and return it and this form to the school within a week. When I get the form and questionnaire, I will add your child to the roster for the algorithmic thinking activity.

The day of the enrichment activity, students who have returned the signed consent forms will work with me during their regular math class. Students who have decided not to participate will work with their regular teacher on another mathematics lesson.

During the enrichment activity, students will work at desks or tables either singly or in small groups as they prefer. They will work through a famous, ancient algorithm for finding the greatest common divisor of two integers. The students will be asked to read and interpret an algorithm flow chart, walk through the algorithm with different inputs, describe their thinking while working out the algorithm, and evaluate the algorithm for efficiency.

Finally, students will be asked to fill out a final questionnaire about whether they found the work enjoyable and interesting and whether it made them more or less interested in science, math, and computer science classes and projects.

The students will use scratch paper to work through the problems and write down what they are thinking. I would like to keep the scratch paper to use in my study. The students’ scratch paper may also be used in future research or displayed during a presentation to other teachers and researchers. Anything on the paper that identifies your child, like their name, will be removed. However, if you do not wish for your child’s scratch work to be taken up, there is a place to opt out at the bottom of this document.

1. **Alternative Procedures/Treatments:** The alternative procedures/treatments available to your child if you elect not to participate in this research study are:

This is a mathematical enrichment activity about building skill in algorithmic thinking. If your child is interested in this but doesn’t want to participate in the study, you might find some resources online, for example, at Khan Academy.

1. **Possible Risks/Discomforts:** The possible risks and/or discomforts from your child’s participation in this research study include

The questionnaire you fill out with your child at home and the questionnaire your child will fill out after the enrichment activity do ask about his or her feelings about school, math, science, etc. and this sometimes can be uncomfortable. During the after-school session, you can expect your child to feel some frustration at working through this new type of thinking, but students will not experience any more frustrations or negative outlooks toward math than they might in a typical math classroom setting. The child will be able to leave the classroom and join their teacher if they are uncomfortable or do not wish to participate anymore.

1. **Possible Benefits:** The possible benefits of your child’s participation in this research study are

This study is designed to be a mathematical enrichment. The students will learn new skills to approach math problems that they could use in their normal everyday math classes. They could discover and develop new perspectives of math. It may help them build a good attitude toward math, science, and computer science.

1. **Compensation in the Form of Payments to Participant:** There will be no pay for participating in this study.
2. **Voluntary Participation:** Your child’s participation in this research experiment is voluntary. ***You may choose for your child not to participate.*** If you decide to allow your child to participate in this research study, you can change your mind and quit at any time. If you choose not to let your child participate, or change your mind and quit, the benefits or treatment to which you are otherwise entitled will not be affected. You may quit by calling Nikole Kerns, at (865)307-6746. You will be told immediately if any of the results of the study should reasonably be expected to make you change your mind about continuing to participate.
3. **Contact for Questions:** If you have any questions, problems, or research-related medical problems at any time, you may call Nikole Kerns, at (865)307-6746, or the faculty mentor for this study, Michael Garrett, at (423)302-0331. You may also call the Chairperson of the ETSU Institutional Review Board at 423.439.6054 for any questions you may have about your rights as a research participant. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can’t reach the study staff, you may call an IRB Coordinator at 423.439.6055 or 423.439.6002.
4. **Confidentiality:** Every attempt will be made to see that your child’s study results are kept confidential. A copy of the records from this study will be stored in an enclosed envelope in the office of the faculty mentor in Gilbreath Hall for at least 6 years after the end of this research. The results of this study may be published and/or presented at meetings without naming your child as a participant. Although your rights and privacy will be maintained, the ETSU IRB and Nikole Kerns and her research team have access to the study records. They will not be revealed unless required by law, or as described in this form.

By signing below, I confirm that I have read and understand this Informed Consent Document and that I had the opportunity to have them explained to me verbally. You will be given a signed copy of this informed consent document. I confirm that I have had the opportunity to ask questions and that all my questions have been answered. By signing below, I confirm that I freely and voluntarily choose to give my consent to be in the study and allow my child, **\_\_\_\_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, to take part in this research study.

Opt out option: Do not collect my child’s scratch-work after the enrichment activity:

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Signature of Legal Guardian Date

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Printed Name of Legal Guardian Date