**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 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 studying how a way of teaching called “scaffolding” can help middle-school students in algorithmic thinking. Algorithmic thinking is a basic part of computer science and is useful in many later areas of school. I want to know if thinking this way will be intrinsically valuable or internally motivating. I also want to know if this will change student’s view on succeeding in science, technology, engineering, and mathematics (STEM). I believe that students will both enjoy this kind of work and will find it useful. I’m running this study to get evidence for or against that idea. Scaffolding has been used well in other areas, such as problem solving or learning to write. It should be a good approach because the teacher guides children through a complex task that is initially beyond their own abilities. I believe this way of teaching will help me better understand how this can be useful in teaching students how to think differently about problem solving – specifically in math.

1. **Duration:**

You will be asked to fill out an initial questionnaire at home with your child, which will take approximately 10 minutes. Your child will attend an after-school session at their school which will last about an hour. The after-school class will be held onsite at that school in a natural environment. They will participate in the scaffolding learning with their peers and fill out a final questionnaire about how they felt about the session and how they feel about working in STEM subjects. There will be a closing for the students to talk about their time in the session and to receive a final certificate as “An Algorithmic Thinker”.

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

With this form you should have the initial questionnaire to fill out with your child. If you choose to have your child participate, you should fill out the questionnaire and return it to school with this signed form within a week. When I get the form and questionnaire, I will add your child to the roster for the algorithmic thinking session.

One day before the session, the teacher will send home a reminder to all the students participating.

The day of the session, the student’s will come to the after-school class. In the after-school class students will work at desks or tables either singly or in small groups as they prefer. Students will work through a given algorithm for finding 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 their work for efficiency. Finally, they will be asked to fill out another questionnaire about their expectancy for success in computer science or other STEM fields, and whether they found the class intrinsically valuable.

I will allow the students to use scratch work while working through their problems and write down what they are thinking. I would like to keep the scratch paper to use in my study. The paper may also be used for future research or displayed during an academic presentation to other teachers and faculty. There will be no personal identifiable information on them. If there is, it will be redacted

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 novel 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 does 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 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.

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 allow my child to take part in this research study.

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Signature of Participant Date

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Printed Name of Participant Date

If signed by someone other than the Participant, state your relationship to the Participant and a description of your authority to act on the Participant’s behalf: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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Signature of Principal Investigator Date

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Signature of Witness Date