

Transforming Algebra Assignments Project

Short Term Study Manual

SERP-MSAN Partnership

Contents

Short-Term Study Participation Guidelines

Volunteer Information Sheet

Script for Think Aloud with Example-based Assignments

Observation Sheet for Think Aloud I

Observation Sheet for Think Aloud II

Pre-study and Pre-test Check List SAMPLE

Assignment Check List SAMPLE

Post-test Check List SAMPLE



Fall 2010

Dear Teachers:

Many of you and your colleagues participated in a study of earlier versions of this approach to strategically designed algebra assignments. Thank you for your very valuable help in making that study possible!

Thank you now for agreeing to participate in a short-term study to test the impact of assignments which have been adjusted based on feedback and analysis from prior work. The short-term studies are very important for the information they will provide about these new forms of the Algebra I Assignments. These specially designed Algebra I assignments target student's misconceptions. The targeted concepts are those that research and practice have identified as being particularly difficult for many students to learn – even when they are the focus of good teaching. These short-term studies require a commitment from you for the duration of one chapter or unit (e.g. Pre-Algebra, Graphing Linear Equations, etc...).

The materials in this guide which provide information needed to implement the short term study. Please take a moment to familiarize yourself with the Short-Term Study Folders. You will find the Pre and Post test, the Motivation Surveys, and the Assignments have all been pre-printed with student names and a Study ID. There are also blanks for students who enter your classroom after the study has begun. You do not need to return information for students who do not have materials with their names pre-printed. It is very important that you review the study assignments to determine roughly when and in what order you plan to use the assignments:

1. Narrow down the days on your syllabus that cover a similar topic as each assignment.
2. Within those days, determine when you will do problems of the sort provided in the assignment.
3. If the assignment covers more information than you would cover in one day, please assign it after all relevant information has been reviewed in class. If this happens, also let us know so that we can narrow future versions of the assignment to cover only material from one day of instruction.
4. Rearrange the assignment folders within the Study Folder to reflect this work and please write a number on the folder label to indicate the anticipated order. Making changes in the order as you go is fine.

If you have any questions about your role or about the project overall, please feel free to contact Juliana Paré-Blagoev at 202.223-8555, ext 15, jpare-blagoev@serpinstitute.org. Copies of all these materials are available at www.serpmedia.org/TAAP.

We very much appreciate your help with this important follow-up study!

Best,



Julie Booth
Assistant Professor
Temple University



Juliana Paré-Blagoev
Assistant Director
SERP Institute

Short-Term Study Participation Guidelines

One of your Algebra I sections will receive example-based assignments; the other will receive problem-based assignments according to the results of a lottery selection process. For both sections:

1. Schedule an observation with your district's study contact to take place during the last half of the study. This observation will be focused on documenting how students interact with the assignments; this will not be an evaluation of you or your teaching and will not be used by the district as such.
2. Administer the math motivation survey. Please ensure sure that students date the survey. After collecting the completed survey, black out student names on the survey.
3. Before you begin teaching the relevant material, or as soon as possible thereafter, have your students take the pre-test (approximately 20 minutes in length), there is no study-required time limit. If students are normally allowed to use calculators, they may for these tests as well although we don't encourage it. Black out student names on the pre-test.
4. Use the assignments in the most appropriate order for your syllabus. On days you don't use study assignments, use the same assignments you would normally use. Black out student names on the study assignments after collecting them.
 - a. Students *must* do the assignments *in class*; if students typically work together on assignments or other in-class activities, they may do so with these.
 - b. Please collect assignments the day students are assigned them. If you go over the assignments in class, please collect them before hand so students cannot make additional marks on the sheets.
 - c. If you wish to hand the assignments back to the students for them to take home please *keep the original for the study. If desired, you may make photocopies of the assignments for your or your students' use.*
5. At a convenient time, conduct Think Alouds with 2 of your students in the Example Based classroom. Do the Think Aloud with only one student at a time. They can, but do not need to be done on the same assignment. Instructions for the Think Aloud are in this manual. Multiple copies of the Observation Sheets are included in your Study Folder.
6. After half of the assignments are given (or about half if you have an odd number), have students complete the brief motivation survey again. Black out student names on the motivation survey – please make sure that the survey is dated.
7. After the last assignment is used and *after* students have taken your end-of-unit exam for relevant topics please administer the post-test to your students. Note the post-test is *identical* to the pre-test. Black out student names on the post-test.
8. After the post-test has been completed please ask students to complete the brief motivation survey a final time. Black out student names on the final motivation survey. Please make sure that the survey is dated.
9. After you have completed the study, notify your District's study contact and arrange for a short debriefing conversation. This can be done over the phone or in person.
10. After all Study materials have been collected and Student Names blacked out, place the assignments in a provided folder and return them to your district representative after you have completed the entire study.
 - a. Please provide a copy of your teacher-created unit test and the grade each student received.
11. We may ask you to participate in brief on-line surveys or focus group discussions as a part of this study.

Volunteer Information Sheet

Please answer the following:

Name: _____

Email: _____

Years teaching Algebra I: _____

Length of time for which your Algebra I section meets: _____

Anything unusual about the scheduling or student population for your Algebra I section?

We may need to contact you directly by email about details relevant to this Short Term study. Thank you in an advance for your prompt response to any brief question we may pose.

Script for Think Aloud with Example-based Assignments

Please conduct 2 Think Alouds with 2 different students in your Example-Based classroom.

To maximize the value of these Think Alouds, please make sure the two students are different from another in one or more of these categories: gender, ethnicity, or demonstrated math ability

“In this exercise, I am interested in finding out what you are thinking when you answer the questions on your math assignment. In order to do this I am going to ask you to think aloud as you work on it. What I mean by think aloud is that I want you to tell me everything you are thinking from the time you first see the question until you give an answer. I would like you to talk aloud constantly from the time you start each problem until you have given your final answer to the question. I don’t want you to try to plan out what you say or try to explain to me what you are saying. Just act as if you are alone in the room speaking to yourself. It is most important that you keep talking. If you are silent for any long period of time, I will ask you to talk. Do you understand what I want you to do?”

“Good, now I will give you two practice problems before you start your assignment. I want you to do the same thing for each of these problems. I want you to think aloud as you think about the question. Do you have any questions? Here is the first problem.”

“How many windows are there in your parent’s house?”

If their parents are divorced and they ask which house tell them “whichever house you spend more time at.”

“Good, now here is another practice problem. Please think aloud as you try to answer it.”

“What is the result of multiplying 24×36 ?”

“Good. Now, I want you to work on your assignment. As you know, you’ll have to solve some equations and look at some examples of how other students solved these types of problems. Some of the examples show correct ways to solve the problems, and others show incorrect ways. After you look at the examples, you will be asked to explain why the other students’ work is right or wrong. Please remember to think aloud as you solve the equations and study the examples.

Let them begin their assignment. If the participant falls silent, prompt them to keep talking by saying, “keep talking”. While students work on their assignment, use the following worksheet to take notes on what they say or do.

Observation Sheet for Think Aloud I

Assignment topic: _____

Date: _____

Student STUDY ID number from Assignment: _____

Start time: _____

End time: _____

Did the student read the directions for the assignment? Did he/she seem to understand them?

Did students attempt all of the problems on the assignment?

Did the student attempt all of the examples on the assignment?

Did the student do the problems in order, or did he/she complete all examples first and problems later, or in some other pattern? Describe.

Did the student seem to understand what he/she was supposed to do on the problems in the assignment? Describe why or why not.

Did the student seem to understand what he/she was supposed to do on the examples in the assignment? Describe why or why not.

Did the student seem to understand which examples were correct and which were incorrect?

Did the student seem to use the examples to help him/her solve the problems? Describe how.

How would you describe the students' attitude toward completing the assignment?

Any other observations about the student's comments or behaviors while completing the assignment?

Observation Sheet for Think Aloud II

Assignment topic: _____

Date: _____

Student STUDY ID number from Assignment: _____

Start time: _____

End time: _____

Did the student read the directions for the assignment? Did he/she seem to understand them?

Did students attempt all of the problems on the assignment?

Did the student attempt all of the examples on the assignment?

Did the student do the problems in order, or did he/she complete all examples first and problems later, or in some other pattern? Describe.

Did the student seem to understand what he/she was supposed to do on the problems in the assignment? Describe why or why not.

Did the student seem to understand what he/she was supposed to do on the examples in the assignment? Describe why or why not.

Did the student seem to understand which examples were correct and which were incorrect?

Did the student seem to use the examples to help him/her solve the problems? Describe how.

How would you describe the students' attitude toward completing the assignment?

Any other observations about the student's comments or behaviors while completing the assignment?

Pre-study and Pre-test Check List **SAMPLE**

_____ Pre-test administered on this date: _____

_____ Teaching on topics relevant to these assignments began on: _____

Students are aware they will/will not (circle one) get credit for this pre-test

The following students used calculators during the test (if any). Please write the study ID rather than the student's name here - you can find the study ID on each student's post-test:

_____ Students have NOT been exposed to the ideas covered in the pre-test in my classroom.

If the topics have been reviewed at all in your course, please describe below how and when they were reviewed. (e.g. students have had brief, moderate, extensive exposure to the following topics...; students have completed approximately X homework or in-class problems on the following topics...; Students have been given a test which included the following topics...)

_____ Check list is included in the envelope.

_____ Student Names were blacked out.

_____ I have completed the very brief online survey to indicate that I've begun this study. To access the survey, please visit: www.serpmedia.org/TAAP

Assignment Check List **SAMPLE**

** If you have a new student in your classroom you may give them the assignment(s) as you see fit. Please do NOT send their completed assignment if they did not take the pretest.

Assignment title: _____

Assignment done in class on this date: _____

_____ I used this assignment as a warm-up prior to teaching the material.

_____ I used this assignment at the end of the lesson after teaching the material.

_____ I used this assignment as a warm-up shortly after I taught the material.

_____ I used this assignment as a refresher several days after I taught the material.

Circle one:

Students are aware they will/will not (circle one) get credit for this assignments

Students worked on this assignment alone/in pairs/in small groups

True/False: Students actively discussed the assignment among themselves.

I did/did not review this assignment in class.

True/False: The assignment covered more than I would normally cover in one day.

If you answered "True" to the above question, which items didn't fit well with your daily lesson plan? _____

If students had questions in particular about any please indicate so on the back of this sheet.

_____ I have written the assignment name on the mailing envelope

_____ Check list is included in the envelope.

_____ Student Names Blacked Out

Yes/No: This is the halfway point of the study and I have administered the motivation survey, collected it and blacked out the Student names.

Post-test Check List **SAMPLE**

Remember - please give the post-test *after* you have given your in-class exam.

My in-class exam on the unit or chapter during which these topics were covered was given to students on: _____

Teaching on topics relevant to this post-test was completed on: _____

My in-class exam on the unit or chapter during which these topics were covered was given to students on: _____

Post-test administered on this date: _____

Students are aware they will/will not (circle one) get credit for this post-test

The following students (if any) used calculators during the test. Please write the study ID rather than the student's name here - you can find the study ID on each student's post-test:

Please return the envelope with completed post-tests to the district representative for this short-term study.

_____ Check list is included in the envelope.

_____ Student Names have been blacked out.

_____ I administered the Motivation Survey after the Post-test and blacked out the student names

_____ I have completed the very brief online survey to indicate that I've completed this study. To access the survey, please visit: www.serpmedia.org/TAAP

THANK YOU VERY MUCH FOR YOUR PARTICIPATION AND HELP!