

University of Missouri-Columbia  
Science and Mathematics Academy for the Recruitment and Retention of Teachers (SMAR<sup>2</sup>T)

### **Action Research Project Requirements**

#### **Purpose**

The action research project will serve as the final comprehensive exam for the Master's Degree in the SMAR<sup>2</sup>T Program. The research on action research demonstrates that teachers who engage in inquiry into their own classrooms are participating in a form of professional development that helps them become better teachers.

#### **Text**

Hubbard, R. S., & Power, B. M. (2003). *The art of classroom inquiry: A handbook for teacher-researchers* (Rev. Ed.). Portsmouth, NH: Heinemann. (order from your favorite online store)

#### **Procedures**

The list below and the **Action Research Plan** (attached) contain the components of the research process, the relevant chapters in Hubbard & Power that you can use as a resource, and due dates for individual components. Your research buddy is another SMAR<sup>2</sup>T student with whom you can share the developing pieces of your work and get feedback. You will work closely with your faculty advisor at several key points in the process to ensure that you have a viable research project (see **Timeline**).

1. Refine your research question(s) by changing your wonderings into a researchable question (H&P, Chap. 1-2). Get feedback from AR advisor and research buddy before turning in your first draft.
2. Make your **Action Research Plan**. For this you will need to decide on data collection and analysis strategies that fit your research question(s) (H&P, Chap. 3-4, Appendix A, B, C).
3. Design your data collection instruments (surveys, interviews, sociograms, etc.). Get feedback from your research buddy and AR advisor. Revise your plan as needed. Create appendices for your final paper with your instruments included.
4. APB interns share your plan with your mentor teacher. Revise plan as needed.
5. Secure the necessary school permissions (e.g., district, school, teacher, parents, students). Begin to write paper (Introduction, Research Questions, Data Collection).
6. Collect your data.
7. Begin data analysis. Meet with your research buddy and AR advisor to help you think about your data. Continue writing your paper. (see H&P, Chap. 6; Appendix D).
8. Do a literature review that includes at least 5 references from the educational research literature. Think about how your findings relate to what the literature says. (see H&P, Chap. 5). Continue writing your paper (Analysis, Findings, Literature Review)
9. Think about the implications of your findings for your own teaching. What **ACTIONS** do you plan to take based on these findings? Write an Actions section of your paper that connects your findings to planned actions.
10. Finish your paper (see **Guidelines for Write Up**). Your advisor will apply the **Scoring Rubric** to the paper and ask you to make revisions as needed.
11. Prepare and give your research presentation (see **Guidelines for Presentation**).

## Ethical Issues

According to the MU Institutional Review Board (IRB), “when a “research project” is conducted solely for pedagogical purposes (example: as part of a class assignment) the project is NOT subject to review by the MU Campus IRB. In such cases, however, the individual data that will be collected and the project product MUST NOT BE DISSEMINATED OUTSIDE THE INSTITUTION. The course instructor is responsible for ensuring that ethical guidelines are followed and that such projects involve minimal risk and would have otherwise qualified for Exempt status or an Expedited Review. Also, in such cases, any consent form should clearly state that the data are collected solely for pedagogical reasons and not for actual research purposes.”

Your action research project is being conducted as part of SMAR2T requirements for the following pedagogical reasons: 1) to help you learn how to inquire into your teaching and your students’ learning; 2) to help you synthesize what you have learned about mathematics or science instruction in the SMAR2T program; and 3) to inform and improve your own teaching. We do not plan to disseminate your projects beyond the mathematics or science education programs at MU. Thus, you will not need MU IRB approval. However, ethical standards of doing research demand that you seek approval from your school (and/or district), the teacher in whose classroom you are working, the students, and their parents. Hubbard & Power, Chapter 2 provide examples. Work with your mentor teacher on the accepted permission process in your school. Be sure to state that the data you will collect are for your own learning purposes.

In addition to obtaining the necessary permissions to conduct your research, as a researcher you are held to other ethical principles. In a nutshell, you are responsible for presenting accurate information and you must not plagiarize the work of others. For more information on the ethics of educational research, see [www.apastyle.org](http://www.apastyle.org).

## Final Products

You will create 2 products from your action research, a written paper and a Power Point presentation (see **Guidelines for Write-up and Presentation**). The written paper should conform to APA style format (see [www.apastyle.org](http://www.apastyle.org) for information). The paper should contain information about the research question, data collection methods, analysis strategies, findings, relations to the existing literature, plans to take action on your own teaching, and plans for future action research. Chapters 5 and 6 in Hubbard & Power will help you think more about how to connect your research to the literature and how to write up your work. See handout on writing up your project for assistance.

The PowerPoint presentation should include the same components as your paper, but in abridged and outline form. You should limit yourself to 10-15 slides for a 20 minute presentation. Your 20-minute presentation will be followed by 20 minutes of questions and answers from the audience and the Faculty Advisory Committee.

## Evaluation

Your final products will be evaluated by your Faculty Advisory Committee on a pass/fail basis using a **Scoring Rubric** (attached). We will require revisions as needed to improve your paper. A passing score is needed for graduation.

## Timeline

The **Timeline** (attached) includes suggestions for completing various phases of the AR project as well as due dates for written drafts and final products.

## APA Format

All assignments should be written in accordance with APA style. A full explanation of APA style can be found online at <http://www.apastyle.org/styletips.html> or in:

American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5<sup>th</sup> Edition). Washington, DC: Author.

Some APA highlights that you should particularly pay close attention to:

- Verb tense (APA style recommends using past tense to describe actions that took place in the past, such as Abell (1998) reported....)
- Levels of headings
- Running head and page numbers
- Quotation citations
- Reference citations in text
- Reference list requirements

APA style recommends that writing in third person may at times be ambiguous. Like APA, we prefer that you write your papers in first person when appropriate.

APA style recommends using an “active voice” in writing rather than a “passive voice.” Again, we concur and prefer that you write your papers in “active voice.” In other words, avoid constructions where the subject is not present (the test was administered), and replace with an active subject (the professor administered the test). The give away for passive voice is the explicit or implicit “by” (e.g., in the example above, “by the professor” is implicit).

#### Notes about format

- Double space and use 12 point font.
- Use headings to organize your paper. The headings should form an outline of your paper, serving to organize your thoughts in a more coherent manner.

#### Notes about citations:

- You must read something to be able to cite it in the text. If you read about Abell (1998) in the text of Arbaugh (2000), you cannot cite Abell unless you read that piece. Otherwise the citation would be (Abell in Arbaugh, 2000).
- If you cite a number of publications in the same parentheses, they should appear in the same order as in the references (Abell, 1998; Arbaugh, 2000; Lannin, 1996; Volkmann, 2001).
- If you use a direct quote in your paper, you must indicate that through using quotation marks, or for longer quotes, indenting (without quotation marks). Direct quotes must be accompanied by page number citations.
- If you cite something in text, as a direct quote or as a reference, it must appear in the reference list.

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**Action Research Timeline  
SMAR<sup>2</sup>T APB Cohort 6**

<b>Research Activity</b>	<b>Suggested Time Frame</b>	<b>Product Due Date</b>
1. Refine your research question(s).	November, 2008	<b>Research Questions:</b> First draft, December 5, 2008 <b>Final Draft</b> —in Action Plan.
2. Complete your Action Research Planning Sheet.	November- December, 2008	<b>Action Research Plan</b> – First draft, December 19, 2008 <b>Revised Plan</b> — Email revised and final draft by January 9, 2009
3. Design data collection instruments listed on Action Research Planning Sheet.	December, 2008 - February 13, 2009	<b>Data Collection Instruments:</b> February 13, 2009
4. Share your REVISED and approved Action Research Plan with your mentor teacher.	January, 2009	By January 31, 2009
5. Get necessary permissions. ( <i>See Appendix for Sample Parent Permission.</i> )	January - February, 2009	Permissions – February 6, 2009 <i>Hint: you could write the first 3 sections of your paper now (Intro, Research Questions, Data Collection)at this time!</i>
6. Collect data (after you get permissions).	February - March, 2009	Data collected by March 20, 2009
7. Analyze data.	March - May, 2009	<b>Meeting with Advisor, First Draft of Findings Section:</b> April 24, 2009
8. Do a literature review.	April - May, 2009	<i>Hint: you could write the Analysis and Lit Review sections of your paper now)</i>
9. Write Actions section of paper.	May, 2009	May 1- May 15, 2009
10. Complete and revise all sections and turn in your final paper.	Write: February - May, 2009  Revise: May, 2009	<b>Action Research Paper First Draft:</b> May 15, 2009 <b>Feedback from Advisor</b> — May 22, 2009 <b>Final Paper with Revisions</b> May 29, 2009
11. Present project to your faculty advisory committee and your cohort.	June, 2009	<b>Final Project Presentation</b> June 4, 2009

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**Action Research Timeline  
SMAR<sup>2</sup>T ALT Cohort 5**

<b>Research Activity</b>	<b>Suggested Time Frame</b>	<b>Product Due Date</b>
12. Refine your research question(s).	November, 2008	<b>Research Questions:</b> First draft, December 5, 2008 <b>Final Draft</b> —in Action Plan.
13. Complete your Action Research Planning Sheet.	November- December, 2008	<b>Action Research Plan</b> – First draft, December 19, 2008 <b>Revised Plan</b> — Email revised and final draft by January 9, 2009
14. Design data collection instruments listed on Action Research Planning Sheet.	December, 2008 - January, 2009	<b>Data Collection Instruments:</b> January 16, 2009
15. Get necessary permissions. ( <i>See Appendix for Sample Parent Permission.</i> )	January, 2009	Permissions – January 23, 2009 <i>Hint: you could write the first 3 sections of your paper now (Intro, Research Questions, Data Collection)at this time!</i>
16. Collect data (after you get permissions).	January - February, 2009	Data collected by February 13, 2009
17. Analyze data.	February - March, 2009	<b>Meeting with Advisor, First Draft of Findings Section:</b> March 13, 2009
18. Do a literature review.	March, 2009	<i>Hint: you could write the Analysis and Lit Review sections of your paper now)</i>
19. Write Actions section of paper.	March - April, 2009	March – April 3, 2009
20. Complete and revise all sections and turn in your final paper.	Write: February - April, 2009  Revise: April, 2009	<b>Action Research Paper First Draft:</b> April 3, 2009 <b>Feedback from Advisor</b> — April 10, 2009 <b>Final Paper with Revisions</b> April 17, 2009
21. Present project to your faculty advisory committee and your cohort.	April, 2009	<b>Final Project Presentation</b> April 25, 2009

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**Action Research Plan**  
**DUE: December 19, 2008 to your AR Advisor**

Name \_\_\_\_\_

1. What is your research question? Subquestions? (see H&P, Chapters 1-2, Appendix A).
2. What wonderings, tensions, issues prompted your research question(s)? (see H&P, Chapter 1).
3. What is your plan for data collection? (*NOTE: Remember to FOCUS your data collection efforts. Whatever you collect will need to be organized, perhaps transcribed, and analyzed.*) (See H&P, Chapters 2 & 3, Appendices A, B, and C).

Research Question	Data Sources	When? How often? How long?	From whom?

4. How do you plan to analyze your data? (see H&P, Chapter 4).
5. What do you need to learn more about to be able to carry out your project? How will you learn this?

### Guidelines for Write-Up of Your Action Research Project

Start with a title that is catchy but also reflects the main purpose of your AR project. Write your paper using the following sections, using subheadings to set off the sections. See **AR Scoring Rubric** for the characteristics of an exemplary paper.

1. Introduction in which you:
  - Provide some background on yourself and your teaching that led to your wondering;
  - Give the context for your study (NOTE: Be sure to use pseudonyms for students, teachers, and the school throughout);
  - Present the purpose of the study and the organization of the paper.
2. Research questions: lay out the questions and why you think they are interesting and important to you.
3. Data sources and data collection methods. (Include questionnaires, interviews, etc. in appendix).
4. Data analysis techniques. (Give some examples of how you analyzed your data.)
5. Findings. You can use narrative, quotes from the data sources, samples of student work, tables, and/or charts to display your data and provide evidence for your findings. You should relate these findings back to your research questions.
6. Discuss the relation of your findings to the existing literature, citing at least 5 external sources from the educational research literature.
7. Actions. This section tells what actions you will take based on your findings. The following chart might be helpful.

Summary of Research Questions/Findings	Recommended Action	Who is responsible? Who needs to be informed?	Timeline	Resources

8. Conclusions. Include a final section in which you reflect on your project and think about future action research projects.
9. Reference list (APA style).

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**Action Research Scoring Rubric**

	<b>Exemplary</b> No Revision Required	<b>Satisfactory</b> May Need Minor Revisions	<b>Unsatisfactory</b> Needs Major Revisions
<b>Introduction</b>	Provides background for the study based in ‘wonderings’ that engages the reader’s interest; The context of the study is described well; The purpose of the study is articulated clearly; The organization of the paper is described clearly.	An introduction exists, but is lacking in engaging the reader’s interest. OR The context and/or purpose of the study is not articulated well. OR The organization of the paper is not articulated well.	No or very little introduction is provided. OR Introduction is written in such a way that it is not engaging or helpful in setting up the study.
<b>Research Questions</b>	Research questions are focused and appropriate. Significance explained	Research questions may be too broad or poorly written. Significance may be lacking.	Research questions are too broad or are not appropriate for action research. No statement of significance.
<b>Data Sources and Collection</b>	Data sources are appropriate and justified by a connection to research questions; Data collection instruments are provided in an appendix. (Example: Interview Protocol)	Data sources are not appropriate for research questions; OR Data collection instruments are described in the text but not included as an appendix; .	No or very limited information is provided about data sources. OR No or very limited information about the data collection instruments is provided in the text although the instruments may be included as an appendix.
<b>Data Analysis Techniques</b>	Analysis techniques are clearly explained so that reader understands the path of the analysis; Analysis description includes all data sources; Analysis methods are appropriate for data collected.	Analysis techniques are vaguely explained. OR Analysis description includes all data sources. OR Analysis techniques are appropriate, but better techniques could have revealed deeper findings.	Analysis techniques are not explained. OR Analysis description does not include all data sources. OR Analysis methods are incorrect or not appropriate for data collected.
<b>Findings</b>	Findings are presented as a synthesis of data; Findings are organized around the research questions; Evidence is provided from data sources to support findings.	Findings are presented organized around the research questions but are not complete based on analysis.	Findings are presented in an unorganized manner. OR Raw data are presented as results with no interpretation provided by the student.

	<b>Exemplary</b> No Revision Required	<b>Satisfactory</b> May Need Minor Revisions	<b>Unsatisfactory</b> Needs Major Revisions
<b>Review of Related Literature</b>	Sources chosen are appropriate with regard to the focus of the research questions; Review contains at least 5 research-based sources; A comparison of the findings of the action research project is made to the related literature.	Review contains at least 5 outside sources but is quite limited in a description of those sources. OR Discussion of comparison of the findings of the AR project to the related literature is weak. OR Not all sources chosen are appropriate with regard to the focus of the AR.	Review does not contain at least 5 outside sources. OR No comparison of the findings of the AR project is made to the related literature. OR Sources chosen are not appropriate with regard to the focus of the action research.
<b>Actions</b>	The actions student will take are clearly described; The actions student will take are a direct result of the AR findings	The actions student will take are unclear. OR The actions students will take have a weak link to the AR findings.	No discussion of the actions student will take is included.
<b>Conclusion</b>	A thoughtful reflection on the AR process is provided; Examples of future AR projects are included.	A reflection on the AR process is provided, but may be limited in its reflective nature. OR Examples of future AR projects are provided but only in a cursory manner.	No reflection on the AR process is provided. OR No examples of future AR projects are provided.
<b>Clarity of Writing</b>	The paper reads well. The paper is polished and grammatically error free. Reference list is consistent in APA style and error free.	The paper reads adequately; Problems with mechanics and grammar exist; AND/OR Reference list is inconsistent with regard to APA style.	Surface errors disrupt the meaning of the paper and make the paper difficult to read. OR Reference list is missing or incomplete. OR Reference list is not consistent with APA style.

Comments:

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**Guidelines for Presentation of Your Action Research Project**

- The final presentation of your AR project will serve as a final oral exam for your Master's program. Your faculty advisory committee will attend and ask questions to help clarify your study and push your thinking.
- The presentation is open to all SMAR<sup>2</sup>T students and all mathematics and science education faculty.
- Each presentation will be allotted 40 minutes—20 minutes for a formal presentation, and 20 minutes for discussion.
- You should have a PowerPoint presentation that highlights your project. Use about 10-15 slides in all. Rather than telling everything about your project, highlight the major points. Spend the most time in your presentation on the Findings and Actions sections.
- Submit your PowerPoint via email to your advisor the day before the scheduled presentation.

The exemplary presentation will have the following characteristics:

**Style & Format**

Pace your discussion, speaking slowly and clearly to the audience. All visual displays should be easy to read for everyone that attends your presentation. The introduction should attract the attention of those attending.

**Content**

Provide a brief discussion of the Introduction, Research Questions, Methods, and Analysis. Spend the majority of the time discussing the Findings and "Actions" that you will take. Provide evidence to support your findings through the use of specific examples.

**Organization**

Keep the presentation to 20 minutes. Make clear connections among the ideas in your presentation (Research Questions, Methods, and Results). Your presentation should be rehearsed so that it flows smoothly.

**Question/Answer**

Exhibit confidence in fielding in responding questions. Answer all questions directly.

# APPENDIX

## Parent Permission

### [Title of Your Action Research Project]

**[Introductory paragraph that explains who you are and what your action research project entails]**

Example: My name is Jackie Smith and I am enrolled in the SMAR<sup>2</sup>T Program, a post-baccalaureate teacher-certification program at the University of Missouri. I am an intern with your child's mathematics teacher, Mr. Jones. One requirement of the SMAR<sup>2</sup>T Program is to design a project so that I can learn more information on how students learn and how better to instruct. For my project, I would like to see how student understanding is improved when reflecting on their understanding of three-dimensional objects. I will ask students to write a journal entry about their understanding of three-dimensional figures. I will also ask students to complete a questionnaire that contains questions about their perceptions of journaling.

**[Statement about how you will use students' contributions and that the students will not be identifiable in the final product]**

Example: I will use student work in completing the written report of what I have learned. I will present this work to my professors and fellow students in the SMAR<sup>2</sup>T program. Your child and your child's work will not be identifiable in any way. This work will not be disseminated outside of the program.

**[Statement that gives the time-span of data collection]**

Example: I will collect necessary data in your child's class in Spring, 2008 and will complete my project by August, 2008.

**[Statement that specifies exactly what you are asking students to do]**

Example: If you sign yes on this form, you give permission for me to:

1. Read and analyze your child's journal entries.
2. Ask your child to complete a short questionnaire.

**[Include the following section for parent/student consent]**

**Consent:** I have received and read a copy of this form. I understand the above information.

\_\_\_\_\_ Yes, my child has my permission to participate in this project.

\_\_\_\_\_ No, my child does not have my permission to participate in this project.

Student Signature \_\_\_\_\_ Date \_\_\_\_\_

Child's Name \_\_\_\_\_  
*Please Print.*

Parent Signature \_\_\_\_\_ Date \_\_\_\_\_

**[Include the following statement with appropriate information]**

Thank you. If you have questions at any time, please contact me, [Fill in your name here] at [Fill in your contact information here] or my mentor teacher [Fill in name and contact information here].