

2012

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Publisher Citation

Jenny, G. & Jenny, S. (2012). Embedding action research in teacher candidate elementary classroom and physical education settings. National Social Science Association Proceedings: National Professional Development Conference, 51, 105-114. Retrieved from http://www.nssa.us/journals/pdf/NSS_Proceedings_2012_Albuquerque.pdf

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Embedding Action Research in Elementary Classroom
and Physical Education Settings

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Introduction

This article is primarily designed to assist teacher candidates and classroom teachers in conducting action research. Where the authors ask teacher candidates to discuss or share their research drafts with cooperating teachers or university faculty, the in-service teacher should share their classroom research with colleagues and administrators for constructive feedback.

Action research has become a popular format for teachers who desire to improve their own teaching. The systematic process allows practicing teachers to focus on what is important for them to examine regarding teaching and learning in their own classrooms. Action research also allows teachers a time saving way to stay current with research and improve their teaching while enhancing student learning amongst the busyness of the typical teaching year. Indeed, teachers have very little time to spare! Action research not only provides a teacher with an efficient way to improve teaching and expand self-learning, but it also positions teachers to share the knowledge they gain from their classrooms with other teachers at professional conferences while learning from other colleagues as well.

Furthermore, many school districts are turning to action research as a way to develop novice teachers within the mentor program process that is often required for the first three years of teaching (Zambo&Zambo, 2004). Numerous administrators are implementing action research as a plan for a half year or full year professional development option in their school districts. This is the era of *No Child Left Behind*, and stricter accountability has come to the forefront in American education. Action research has become an effective way for teachers to examine their own teaching success in the classroom and has prompted them to find approaches that have proven even more successful at enhancing student learning through data based decision making.

Since most teachers are not familiar with action research, this article provides an ideal starting point for in-service teachers who wish to improve their own teaching in a non-intimidating, fruitful format which will have positive results. The step-by-step process described here can fit any teacher's self-paced time table and will prove well worth the effort as teachers and their students alike reap the benefits.

Now is the time to focus on what is important to examine regarding teaching and learning in the classroom. Action research allows teachers a time saving way to stay current with research and improve their teaching while enhancing student learning during the busy schedule of the typical teaching year. This process will provide one with an efficient way to improve teaching and expand reflection, while positioning a teacher to share the knowledge gained from classroom research with colleagues and in professional arenas such as faculty meetings, conferences and other professional development events.

In the approach presented, teachers select an area of emphasis in one of the major subject areas of the elementary curriculum that will be the focus of their study. A physical educator may choose to concentrate on a particular skill or National Association for Sport and Physical Education (NASPE, 2004) student learning objective. Teachers assess students in that content area, plan and teach lessons that target this focus, and then collect follow-up data related to student growth. Candidates will develop an action research proposal and lesson plans, and will gather assessment data and student work samples that will demonstrate student learning in this academic area.

Although action research can be used to focus on almost anything you choose in the teaching and learning environment, it is recommended to focus research on teaching strategies that impact student learning.

Developing a Research Question

A first priority is to make sure a question is sufficiently open ended to allow several possibilities to emerge (Hubbard & Powell, 1999). This means that questions cannot have a simple yes or no answer. Deciding upon a question is one of the hardest tasks of action research. How this question is written will impact the way a topic is approached, the type of data to collect, how data is analyzed, and the ways the results of a study are reported. There are many approaches to developing a good research question. This process may be a bit “messy” at first as revision and refinement are part of the process. It is not unusual to revise a question many times throughout the process of initial question formulation, review of related literature, and during the planning and procedural phases.

When identifying a possible topic, one approach is to use question stems. These are thought starters that allow focus on topics of interest related to teaching and learning. Below are common questions stems adapted from Hubbard and Powell (1999) that will help one to get started in thinking and developing a topic of interest:

- What classroom procedures or activities promote.....?
- How does.....?
- What issues do students encounter when.....?
- What happens when.....?
- How can.....?
- What is the difference between.....?
- How do students.....?
- What strategies do students use to.....?

In addition, the open-ended statements below, adapted from http://www.sitesupport.org/actionresearch/ses3_act2_pag2.shtml, may also aid in focusing on an area of interest.

- Something I am particularly interested in learning about teaching is.....?
- An academic area that I am particularly interested in learning about in classrooms is.....?
- In my classroom teaching, I am bothered by.....?
- I am very curious about.....?
- I desire to.....?
- I would like to make a difference in the classroom by.....?
- If I could change something about teaching or student learning it would be.....?
- I am passionate in wanting to learn about.....?

Moreover, it is advisable to keep a journal and brainstorm a list of things that cause wonder in your classroom. What surprises, concerns, intrigues, or delights are there (Hubbard & Powell, 1999)? Other strategies to assist in finding research questions are to consider the following approaches (Johnson, 2003):

- Study or evaluate a teaching method in order to determine the effectiveness of the teaching method or technique.

- Identify and investigate a problem to understand what is happening and the possible causes of a problem.
- Examine an area of interest. What in particular about teaching is of interest?

Please note, an effective action research question...

- ...include key starting words which are usually “what or “how” that focus on explanations, reasons, and relationships.
- ...is meaningful, possible to do in the classroom, manageable, written in everyday language, and has not already been answered.
- ...is concise, but is not a yes-no question.
- ...is one in which one feels commitment and passion.
- ...should provide an opportunity to stretch and grow as a professional while providing a deeper understanding of the topic and may lead to other questions.

A final suggestion to aid in refining a research question and to frame it is to develop a problem statement. As seen in figure 1, the question development chart may aid in developing a problem statement. A problem statement consists of a brief statement that answers the following critical queries that are affected by the question selected (Sagor, 1993).

1. Who is affected?
2. Who or what is suspected of causing the problem?
3. What kind of problem has been identified? Is it a problem with student learning, meeting curriculum goals, etc.?
4. What is the goal for improvement? What would the outcome be if the action had an ideal impact?

After developing a question, be sure to consider the big picture. A simple plan to organize your study can be seen in figure 2. Organize a study so that it flows smoothly and avoids potential roadblocks along the way. Consider the following areas for the action research study:

- Where was the research conducted?
- What setting and characteristics can be shared regarding a school and students? This should include: the grade level or age ranges, the socio-economic-status (SES) reported as the percentage of free & reduced lunch rates, ethnic composition reported as the percentage of each group represented, gender composition reported as the number of boys and girls, and location reported as urban, rural, suburban. Most of this information can be located with online school databases such as <http://nces.ed.gov/ccd/schoolsearch> or <http://www.schoolmatters.com>.
- What was the reasoning that ultimately led to selection of this particular question?
- Why is it important?
- How will the results impact your teaching?
- How may your study help provide insight into the teaching practices of others?

Literature Review: Background Topical Research

A literature review should synthesize themes or commonalities found in similar research studies. A thorough review of the literature related to a research question may open up new ways of looking at a problem. This may show gaps in the research that a study may help to answer. A study will become more focused once other investigators'

examples of research questions, classroom research strategies, data collection procedures, and data analysis methods are reviewed. In brief, reviewing other studies allows one to make the connection between theory and classroom practice (Johnson, 2003). Remember these key points to assist you in your literature review:

- Be clear in your thinking by knowing what you are doing in your study.
- Plan and organize your research well.
- Emphasize connections between the information in the articles or books to the question of your study to ensure relevancy.

Methodology: Procedures for Data Collection

One should reflect on what data to collect, when it will be collected, from what sources it will be collected, and how to analyze it. Consider the artifacts, tools, or sources that are going to help find answers and insights regarding a research question. Think of a variety of possible data sources. Sagor (1992) organizes many of these sources according to research goals. The following is a brief list of possible data sources:

- Individual student tests or quizzes
- Student interviews (audio tapes)
- Student writing samples
- Student homework
- Student attendance records
- Student journals or portfolios
- Small group conferences
- Teacher journals/logs
- Teacher field notes
- Teacher interviews
- Classroom observations
- Lesson plans
- Student or teacher checklists
- Videotapes of class activities
- Student surveys/attitude/rating scales
- Graphic organizers
- Student projects, artwork, or performance assessments
- Motor skill performance critical element skill rubrics or task sheets
- Sport skill performance results

It is also beneficial to keep a data log and record when all information is collected, the time, place, and the data itself. Consider the types of data to collect. Triangulation means collecting three different sources of information so that you can determine if they corroborate. It will bolster the credibility of final conclusions. For example, several students may be interviewed regarding their opinion of how Social Studies is taught in the classroom. The conclusion drawn is that they dislike it. Basing results on interviews could be flawed because students may be trying to influence what happens in their classrooms. Perhaps they believe that by saying that they do not like Social Studies they might gain more recess time or have a teacher fired. However, if the teacher is interviewed and the teacher concurs that the students seem bored and inattentive during class, two valid points of comparison are gleaned.

If an analysis of student test scores yields that the class average is very poor in Social Studies, now three sources of evidence all point to the same conclusion. This triangulation makes statements and conclusions credible. Note that triangulation does not have to include three completely different sources. Student interviews, anecdotal notes written during observations of Social Studies lessons, accompanied by a questionnaire of what students do not like about Social Studies class would constitute triangulation. This holds true even though the data is all collected from the same students. Sagor (1992) highlights three key benefits of triangulation. Namely, that it allows for: imperfections or flaws in one of the data sources or collection instruments; increased confidence in the results when all three sources corroborate; development of important questions or insights when sources don't support the same results.

Another feature to consider while in the planning stage of research is whether data collection methods will be valid. In other words, consider what you plan to collect and then align your artifacts with your question. Will the artifacts aid in answering a research question? Reliability is the accuracy of measurement or assessment and validity is whether it measures what is desired to measure (Gay & Airasian, 2000).

Another essential aspect of methodology should be the data collection timeline. In order to gather the data needed for the study, it is important to schedule what and when collection will occur. Plotting this on the school calendar will help with accomplishment of goals. Planning is everything during a short window of opportunity!

Data Analysis: Examination of the Data

Data analysis should be meaningful. In order to accomplish this:

- Record observations systematically, carefully and precisely.
- Describe exactly what was done during the data collection and throughout the analysis.
- Record and report everything of importance.
- Describe and interpret data objectively.
- Use data sources that can answer specific questions.
- Look at data from multiple angles/perspectives.

Sagor (1992) also provides two insightful questions to ask when analyzing data:

1. What are the important themes observed that will help answer the research question?
2. How much of the data supports each of the themes?

Since every research project is unique, there is no one single approach that is best for each study. Become immersed in the information in order to deduce important findings and results

Conclusions: Results Drawn from the Study

Now is the time to draw conclusions. Remember, the *process* of doing research is as significant as the findings in a study. A teacher should grow in confidence that the tools to solve future classroom problems are available. Remember that research is not going to “prove” anything, but rather it is going to help “improve” one’s teaching.

Deep connections and valuable reflection occur by linking findings to what other researchers have discovered about the topic. Drawing conclusions about work strengthens your credibility when you make recommendations for your plan of action and for other teachers interested in a topic. Research that finds what *doesn't* work is

just as important as research that finds what *does* work. Gaining insight into why study results were not optimal is what is most important. Acting on what has been learned is a vital component of action research.

Consider the facts and results of a study. Conclusions are merely a description based on the data that collected. What students learned and what was learned about teaching is vital. What strengths and weaknesses can be concluded about the research? This is the point where everything comes together. It is essential that study conclusions relate to research questions. Did findings answer research questions in full or do results leave only partial answers and other new questions? How do results differ from previous assumptions? It helps bring action research full circle, from the question to the answer. Making connections as a reflective practitioner is key to growing as a professional!

When reflecting on conclusions, think about what was learned from the project by reflecting about the following topics:

- Teaching in general
- Teaching in the targeted academic area
- Your students
- Your teaching style and procedures
- Your assessment strategies

Most importantly, what impact did you have on the students' learning in the targeted area? How do you know? Support your answers with assessment data and with observations.

Implications and Recommendations: Reflections Regarding How the Study May Assist Other Teachers

Action research is one avenue for bringing teachers together to share their concerns and figure out a way to find answers for them(Caro-Bruce, 2000). Doing this is quite important, but it is often the most neglected part of the action research process.This is called “action” research, so it is where one considers what actions did or did not work in a classroom and what actions will be tried or recommended for the future. Specific details should be taken into consideration in recommendations so that others can easily implement them in their own environments.

What actions might be taken based on study results? A plan of action is a description of intentions or a list of steps to take to improve classroom practice in the topic under study. A plan may result in one of five outcomes: a greater understanding of the topic/problem, the discovery of a new or underlying problem, a plan or method that may be effective in the classroom, a plan or method that may need to be revised or modified or a plan or method that may be ineffective in the classroom. The bottom line is that action research is a mechanism for professional growth for teachers who are willing to devote the necessary time and energy to it. It is an excellent way to link personal professional growth with school change aimed at improved student learning (Caro-Bruce, 2000).In conclusion, one of the purposes of doing an action research study is so findings can be used to enlighten other teachers by sharing specific implications and recommendations which may be of great assistance in enhancing student learning with their own students.

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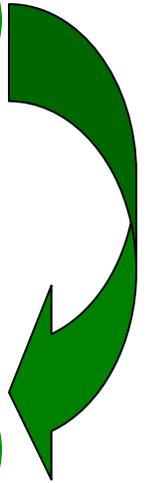
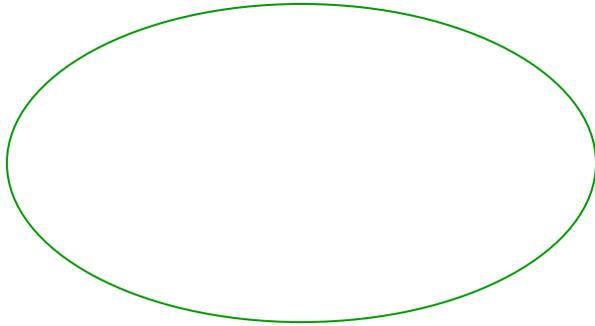
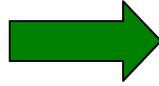
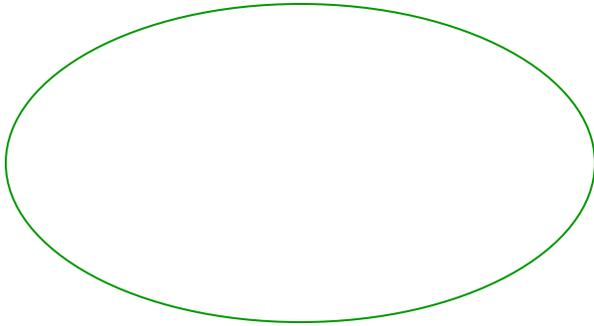
Figure 1. Question Development Chart

	Possibility #1	Possibility #2	Possibility #3
List general areas of interest (e.g., math; locomotor movements)			
List specific topics under each area (e.g. fractions; skipping)			
List factors that impact the topic listed (e.g. use of manipulatives; use of “step” and “hop” as cue words)			
Write a potential question here (e.g. How does the use of manipulatives impact student understanding of equivalent fractions?; How does the use of the cue words “step” and “hop” impact student learning of skipping?)			

Figure 2. Organizing Your Study

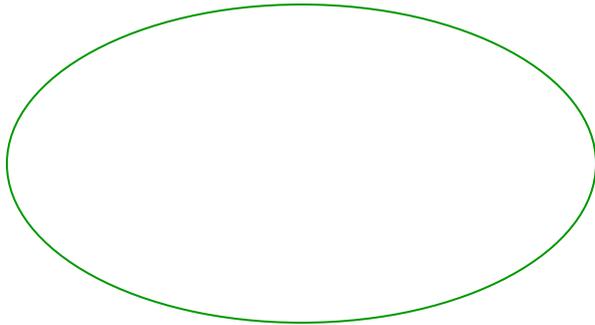
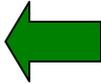
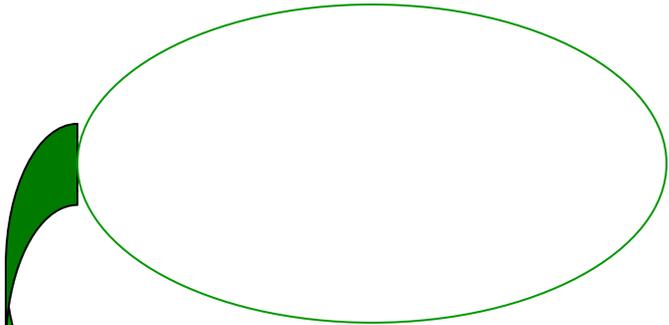
1. State your research question.

2. Identify descriptive information about the students and classroom setting. Include age, gender, grade, socio-economic status, urban/rural, etc...



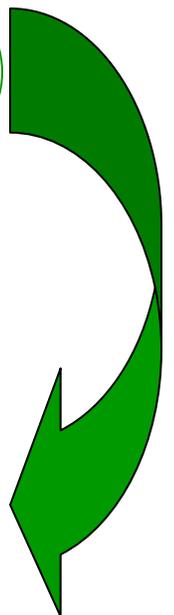
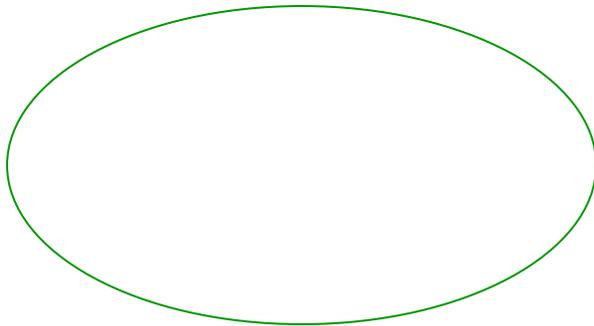
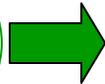
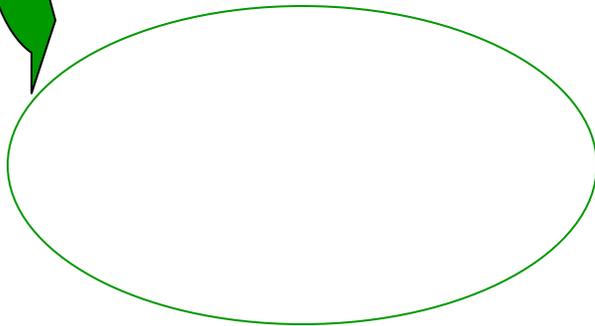
4. Explain why your question is important to students and other teachers.

3. Describe what it was about your students' learning that prompted a



5. List the key themes identified in your literature review that impact your study.

6. Share what type data you will collect, how you will collect it, and the time frame for collecting it.



7. Describe how you will analyze the data you collect. List the type of graph, table, chart, or student anecdote will best answer your question.

