

Classroom Research: Getting started in small-scale research projects in the classroom.

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In this paper I want to graphically introduce some of the literature and underlying background theory relating to the topic of classroom research, and suggest ways that practicing language teachers interested in research can systematically approach and carry out research projects in their own classes. This paper introduces some of the different procedures researchers use in conducting a classroom study, from formation of a research question or hypothesis, the collecting and analyzing of data, to eventual publication in an academic journal, such as those published by JALT. The presentation hopes to alleviate some of the “anxiety” for the classroom teacher conducting research, and that as long as the researcher formulates the appropriate questions, carries through with the correct procedures, and records the results of one’s research accurately, it is possible for classroom teachers to develop and carry out small scale projects in their classrooms, and publish the findings for a wider audience. It will interest teachers who want to conduct their own research to critically examine what is happening in their own classrooms. The presentation also described ways of collecting



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reliable data, and for preparing the findings for formal publication in professional academic journals.

For a language teacher normally accustomed to teaching “oral communication” classes, and gradually eased into the role of conducting “research” as part of my job description, I found it somewhat difficult initially to successfully “switch hats” from being a “classroom teacher” to a “classroom researcher”. To collect data for my study, I surveyed my students, and also recorded, collected, and analyzed what grew to be large amounts of raw data. At the completion of the study, I published the results for other teachers in a university academic journal, making it available for review by the other teachers and colleagues. In the beginning, I initially felt intimidated by the research task: not knowing what to do with the data nor being able to make sense of statistical analysis, made more confusing by technical jargon, and complicated statistical formulas. It took time to become comfortable with following and understanding and carrying out systematic and methodical research, employing procedures that could be understood, synthesized and even duplicated in other studies by other teachers. For example, when researching effectiveness of teaching methods, I am used to being in control of my own classroom and teaching, yet feel somewhat hesitant about seeking teacher feedback from colleagues, when asking them to observe and comment on my classes, teaching or progress of my research.

Speaking from my own experience as such a classroom teacher starting out in doing small-scale research, and beginning to publicize my research findings, I can appreciate and understand the apprehension and anxiety some teachers beginning a research project may experience. However, I want to show other teachers some of the simple and effective methods available that enable me to carry out my own small scale classroom studies, and show that by engaging my own students as “guinea pigs” doesn’t have to be a source of anxiety for myself *or* my students.

Why do classroom research?

Teachers conduct research to find out what is going on in their classrooms, and to establish ways of remedying problems. Lo Castro states that “action research is seen as being small scale and situational... focused on a particular problem, to try and understand and perhaps solve some concrete problem in an individual teacher’s classroom” (1994, p5). Teachers need to be able to explain what things happen and why, and seek knowledge of the learning processes as a means to increase and maximize student knowledge. The teacher goes from a position of *knowing* as a teacher to one of *inquiring*- finding out what one doesn’t know. Teachers have to prove their hypotheses and beliefs are correct for items they believe to be “a priori” true. In Freeman (1996, p.102), he states that research is a basic process

of developing and rendering viable interpretations for things in the world. Cronbach & Suppes (1969) define the conducting of research as being *disciplined* (i.e. discipline involves both how one examines something and how one reports or makes public what one has found through the investigation), if the investigator institutes control at each step of information collection and reasoning to avoid sources of error. If errors can't be eliminated they are taken into account by discussing the margin for error in the conclusions. Nunan (1992) states that (research) is a process of formulating questions, and articulating puzzles relating to practice, collecting relevant data that might have a bearing on such questions or puzzles interpreting and explaining the data and making the results of the inquiry public in some way. This opinion differs from Van Lier (1990) who suggests that applied linguistic research can be analyzed in terms of two parameters: an interventionist and a selectivity parameter. Van Lier describes four semantic spaces: - a "controlling" space, a "measuring" space, an "asking" or "doing" space and a "watching" space. Brown (1998) draws a clear distinction between primary and secondary research - the former is undertaken by researchers themselves, and secondary research is the reviewing of literature in a given area and synthesizing the research carried out by others (Nunan, 1992, p.8).

More restructuring and reorganizing of teaching environment for purpose of research

- Methods
- Surveys
- Structured questionnaires
- Systematic observation instruments/protocols
- Sociograms

Less Intervention into teaching for purposes of research

- Watching
- Participant observation; field notes
- Case studies
- Stories / narrative studies
- Diaries / journals
- Documenting student work

Less Restructuring and reorganizing of teaching environment for purposes of research

- Controlling
- Quasi-experiment
- Experiments

More intervention into teaching for purposes of research

- Asking/Doing
- Action research
- Collaborative research
- Interviews (structures and open-ended)
- Open-ended questionnaires
- Elicitation

Adapted from Van Lier, L. 1998. *The classroom and the language learner*. London; Longman.

Collection of data.

There are many different ways that a teacher may collect data for conducting research. Seliger & Shohamy (1989 pps.153-200) have a detailed chapter on each of the following data collection methods: using survey and questionnaires; oral and written interviews e.g. keeping a journal or a diary; ethnographic studies; observations; anecdotal records and observations, among others. Nunan (1992, pps. 229-233) also lists some useful terminology and vocabulary the researcher may use when conducting a study. Many specialized words commonly appear in journal articles and statistics-heavy empirical studies e.g. what are *standard deviation*, *mean*, *variance*, *item correlation*, and *construct validity*? Brown (1988) explains in “non-technical” layman’s language, some of the more common and useful vocabulary used in research studies; what many of the graphs (e.g. normal distribution curve, “scatter plot” graph etc.) mean; how tables work, and what to look for in critiquing statistical studies. Depending on the information that the researcher is looking for, the methods of data collection may vary from study to study. If, for example the teacher wants to collect speech samples of pronunciation, he or she may use audio tape recordings, but if observation of participant reaction or movement is important to the study’s aims, using video recordings are a good idea as well. Participant feedback may also be obtained from conducting written surveys or oral interviews. The

researcher can then tabulate the results and organize the data to discover patterns in the data. For example in the “bell curve” diagram (see Appendix 2), we can see the distribution of scores by students who take a test, with a smaller number of students at each high and low end of the scale, and the mean scores mostly concentrated in the middle of the curve. For such a diagram we can determine the “spread” of individual scores along the parameters of a graph. A graph like this is useful for determining where students are in relation to others in terms of proficiency, and are commonly used in norm-referenced tests such as TOEFL. (See Appendix 2)

A short chapter by Nagata (1997) describes such things as distributions, positively and negatively skewed distributions (kurtosis), standard deviation and analyses of ANOVA, MANOVA and frequency comparisons. An important consideration is the suitability of a particular data collection method, which will vary depending on the needs of the researcher. A table I used by Wallace (1998), shown below, shows whether each data collection method is qualitative or quantitative; introspective or empirical; individual or collaborative; intrusive or complementary in nature, and illuminative and heuristic, or conclusive.

Table 1

Quantitative/ qualitative	Introspective/ empirical	Individual/ collaborative	Intrusive/ complementary
Verbal reports usually qualitative	introspective	individual	usually complementary
Observation either	either	usually collaborative	usually intrusive
Interviews usually qualitative	introspective	either	either
Questionnaires either	introspective	either	either
Case studies usually qualitative	either	usually individual	either
Evaluation usually quantitative	usually empirical	either	either
Trialling usually quantitative	usually empirical	either	either

Illuminative + heuristic / conclusive	
Verbal Reports	usually illuminative / heuristic
Observation	usually illuminative / heuristic
Interviews	usually illuminative / heuristic
Questionnaires	usually illuminative / heuristic
Case Studies	usually illuminative / heuristic
Evaluation	either
Trialling	either

From: Wallace, M. 1998. *Action Research for Language Teachers*. Cambridge: Cambridge University Press.

Table 2: *A typology of Research purposes*

Patton (1990) also lists the different kinds of research (Basic, Applied, Summative & Formative Evaluation, and Action research). For an illustrated flow chart of the “process” used in conducting teacher initiated action research, see Appendix 4:

Type Of Research: Basic research

Purpose: Knowledge as an end in itself; discover truth

Focus of Research: Questions deemed important by one’s discipline or personal intellectual interest.

Desired Results: Contribution to theory

Desired Level of Generalisation:. Across time and space (ideal)

Key Assumptions: The world is patterned; those patterns are knowable and explainable

Publication Mode: Major refereed scholarly journals in one discipline, scholarly books.

Standard for Judging: Rigor of research universality and verifiability of theory.

Type Of Research: Applied Research

Purpose: Understand the nature and sources of human and societal problems

Focus of Research: Questions deemed important by society

Desired Results: Contributions to theories that can be used to formulate problem solving programs and interventions.

Desired Level of Generalisation: Within as general time and space as possible but clearly limited application context.

Key Assumptions: Human and societal problems can be understood and solved with knowledge.

Publication Mode: Specialized academic journals within disciplines interdisciplinary problem focused journals.

Standard for Judging: rigor and theoretical insight into a problem.

Type Of Research: **Summative Evaluation**

Purpose: Determine effectiveness of human interventions and actions (programs, policies, personnel, products).

Focus of Research: Goals of the intervention:

Desired Results: Judgments and generalizations about effective types of interventions an conditions under which those efforts are effective.

Desired Level of Generalisation: All intervention with similar goals.

Key Assumptions: What works one place under specified conditions should work elsewhere.

Publication Mode Evaluation reports for program funders and policy makers, specialized journals

Standard for Judging: Generalizability to future efforts and to other programs and policy issues.

Type of Research: **Formative Evaluation**

Purpose: Improving an intervention: a program policy, organization, or product

Focus of Research: Strengths and weaknesses of the specific program, policy product or personnel being studied.

Desired results: Recommendations for improvements

Desired Level of Generalisation: Limited to specific setting studied.

Key assumptions: People can and will use information to improve what they are doing.

Publication Mode: Oral briefings; conferences, internal report; limited circulation to similar programs, other evaluators.

Standard for judging: Usefulness and actual use by intended users in the setting studied.

Type of Research: **Action research**

Purpose: Solve problems in a program, organization, or community.

Focus of Research: Organisation and community problems.

Desired results: Immediate action; solving problems as quickly as possible.

Desired Level of Generalisation: Here and now.

Key assumptions: People ina setting can solve problems by studying themselves.

Publication Mode: Interpersonal interactions among research participants; informal, unpublished.

Standard for judging: Feelings about the process among research participants feasibility of the solution generated

(Also see Appendix 4)

Problems in conducting research.

As mentioned above, some teachers are initially hesitant to undertake classroom research for a variety of reasons: lack of experience, timidity with using statistics and numbers, concerns about the validity of the study; i.e. does the study answer the question(s) or hypotheses the researcher is wanting to investigate, or is it measuring something else, and/or the reliability of the study. In addition, teachers' lack of confidence in knowing the correct procedures and employing the variety of data collection methods available; lack of time to carry out proper research; affective factors such as motivation and attitude of subjects; lack of experience or confidence in preparing findings for publication; and public appraisal are also important considerations. One of the most common problems is the lack of a concrete research question, according to Hopkins (1985) and McDonough & McDonough (1990). Teachers have to know what it is they want to study, identify the problem and make sure that the question is answerable. For example, a question may be too broad or vague to

be posed as a hypothesis, e.g. Japanese students have trouble distinguishing between “r” and “l” in English.” A good question will be specific have a clearly defined question e.g. “ Japanese students using x method of instruction have more trouble with pronouncing n after controlling for t factors than those students using y method”.

Assuring the quality of the data (i.e. the proper data collection methods are used, appropriate statistical calculations employed, depending on the type of study and what one wants to find out) the study is triangulated to eliminate bias or error. The *quality* of the research is important as well. For example, results gained from the study can be generalized to other studies, suitable methods and procedures are used in collecting and analyzing the data, and the study itself is transparent and unambiguous etc. Brumfit & Mitchell mention, “There is no good argument for action research producing less care and rigor unless it is concerned with clear understanding, which it is not...” (1990:9). According to Nunan (1990) there is also often a lack of collaboration between teachers. Teachers may need to seek permission and understanding of other teachers in observing their students and/or in gaining feedback on the results of the study, or there may be administrative resistance to the research endeavor. Labov (1970) also mentioned the “Observers Paradox”, whereby subjects of a study behave differently than they would in a regular

lesson, if they are undergoing human observation in the classroom, or recorded by a video camera. It is believed that in the Observers Paradox subjects want to “give their best performance”, try to give a favorable impression, or “satisfy” the researcher, resulting in faulty or misleading findings.

Conclusion

In this paper I have introduced some of the literature that will be of use to classroom teachers interested in conducting basic research, as well as some of the techniques that researchers use for collecting and

analyzing data. The classroom teacher should follow as much as possible a systematic procedure, starting with collection of data, conduct analysis and publish the results and/or findings. Allowing and controlling for error in the process of conducting the study is also important for upholding the study validity and reliability. The teacher should seek feedback from colleagues at all stages of the process, can then publish the final results in academic journals and refereed publications, sharing the results with others and ensuring his or her valuable contribution to the wider academic community.

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Appendix 1

Figure 5.3: How, where, and when of data collection techniques

WHERE IS THE DATA?	TEACHER'S ACTIONS (First order)	TEACHER'S THOUGHTS (Second order)	STUDENTS' ACTIONS (First order)	STUDENTS' THOUGHTS (Second order)	STUDENTS' LEARNING (First or second order)
	1) <i>What you do/say</i>	2) <i>What you think about what you do/say</i>	3) <i>What student(s) do/say</i>	4) <i>What student(s) think about what they do/say</i>	5) <i>What student(s) are learning/have learned?</i>
HOW TO COLLECT IT?					
WHEN? IN THE CLASSROOM/ WHILE TEACHING	<ul style="list-style-type: none"> ▪ keeping teaching logs; lesson plans ▪ making audio/video recordings ▪ writing field notes (by observer, or teacher depending on involvement in activity) 	<p>(These depend on the activity and the teacher's involvement in it.)</p> <ul style="list-style-type: none"> ▪ keeping journal/diary ▪ making anecdotal records 	<ul style="list-style-type: none"> ▪ keeping teaching log; annotating lesson plans ▪ writing field notes ▪ making audio/video recordings ▪ conducting interviews/discussions ▪ making classroom diagrams and maps 	<ul style="list-style-type: none"> ▪ having students keep journals or do feedback cards ▪ doing surveys or questionnaires ▪ conducting interviews/discussions ▪ gathering data for sociograms 	<ul style="list-style-type: none"> ▪ having students keep journals/diaries or do feedback cards ▪ collecting documents; student work; test results ▪ doing surveys or questionnaires ▪ conducting interviews/discussions
OUTSIDE THE CLASSROOM/ AFTER TEACHING	<ul style="list-style-type: none"> ▪ listening to/transcribing audio recording; reviewing video recording 	<ul style="list-style-type: none"> ▪ keeping journal/diary ▪ doing stimulated recall with audio/video recordings 	<ul style="list-style-type: none"> ▪ conducting interviews 	<ul style="list-style-type: none"> ▪ having students keep journals ▪ doing stimulated recall with audio/video recording ▪ conducting interviews ▪ making sociograms 	<ul style="list-style-type: none"> ▪ having students keep journals ▪ conducting interviews

Appendix 2: (Nunan, 1992, p31)

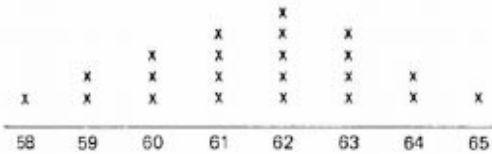


Figure 2.1 Distribution of scores from hypothetical listening test

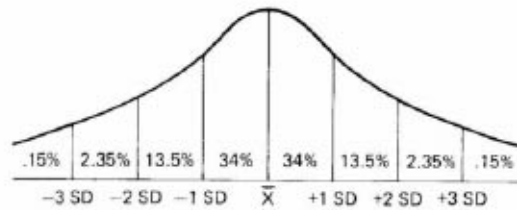


Figure 2.2 Percentage of scores falling within 1, 2, and 3 standard deviations of the mean

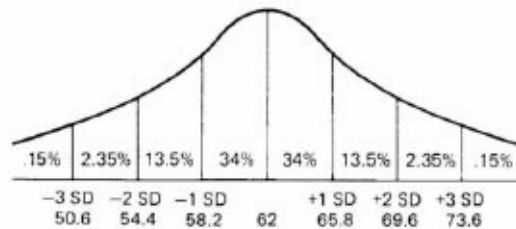


Figure 2.3 Scores falling within 1, 2, and 3 standard deviations of the mean: an example

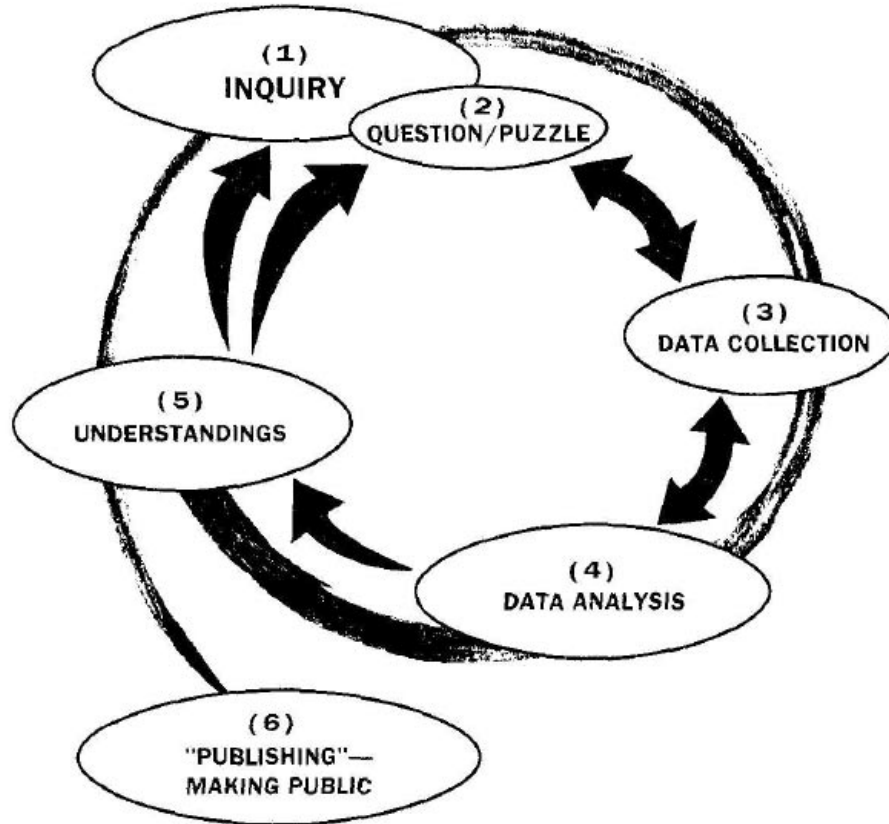
Appendix 3

Table 5.3 A Typology of Research Purposes

<i>Types of Research</i>	<i>Purpose</i>	<i>Focus of Research</i>	<i>Desired Results</i>	<i>Desired Level of Generalization</i>	<i>Key Assumptions</i>	<i>Publication Mode</i>	<i>Standard for Judging</i>
Basic research	Knowledge as an end in itself; discover truth.	Questions deemed important by one's discipline or personal intellectual interest.	Contribution to theory	Across time and space (ideal)	The world is patterned; those patterns are knowable and explainable.	Major refereed scholarly journals in one's discipline, scholarly books	Rigor of research, universality and verifiability of theory
Applied research	Understand the nature and sources of human and societal problems.	Questions deemed important by society.	Contributions to theories that can be used to formulate problem-solving programs and interventions	Within as general a time and space as possible, but clearly limited application context	Human and societal problems can be understood and solved with knowledge.	Specialized academic journals, applied research journals within disciplines, interdisciplinary problem-focused journals	Rigor and theoretical insight into the problem
Summative evaluation	Determine effectiveness of human interventions and actions (programs, policies, personnel, products).	Goals of the intervention.	Judgments and generalizations about effective types of interventions and the conditions under which those efforts are effective	All interventions with similar goals	What works one place under specified conditions should work elsewhere.	Evaluation reports for program funders and policymakers, specialized journals	Generalizability to future efforts and to other programs and policy issues
Formative evaluation	Improving an intervention: a program, policy, organization, or product.	Strengths and weaknesses of the specific program, policy, product, or personnel being studied.	Recommendations for improvements	Limited to specific setting studied	People can and will use information to improve what they're doing.	Oral briefings; conferences; internal report; limited circulation to similar programs, other evaluators	Usefulness to and actual use by intended users in the setting studied
Action research	Solve problems in a program, organization, or community.	Organization and community problems.	Immediate action; solving problems as quickly as possible	Here and now	People in a setting can solve problems by studying themselves.	Interpersonal interactions among research participants; informal, unpublished	Feelings about the process among research participants, feasibility of the solution generated

Appendix 4.

Figure 2.6: Teacher-research cycle (labeled)



Appendix 5

Checklist for conducting research

Questions to guide the design of a research project:

Checklist:

1. Is the question worth investigating? Is the question feasible?
2. Does the research imply a strong causal relationship between two or more variables?
3. What are the constructs underlying the (research) question?
4. How are these constructs to be operationalized?

Introduction:

Statement of Purpose:

Where is the study heading?

What is the purpose of the study,

What are the research questions and hypotheses posed by the study?

Design:

- a. Does the question suggest an experimental or a non-experimental design?

Method:

- a. What methods are available for investigating the question?
- b. Which of these are feasible given available resources and expertise?

- c. Is it possible to utilize more than one data collection method?
- d. Given my chosen data collection methods, what threats are there to the internal and external validity of the study?

Subjects:

- a. Is the description of the participants adequate?
- b. Is the method of selection clear?

Materials:

- a. Is there a description of the tests, questionnaires, rating scales etc?
- b. Do the variables represent reasonable operational definitions of the underlying constructs?
- c. Is there a description of any equipment?

Results:

- a. Does it answer any other questions?
- b. What are the findings of similar studies?
- c. Are there any contradictory findings?
- d. How can these be accounted for?
- e. What additional questions and suggestions for further research are thrown up by the research?

David Nunan (1990)