

Three Types of Educational Research: Comparison and Contrast

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Abstract

Academic Research covers studies pertaining to specific populations at the national or international level. Institutional research is a type of research with a narrower scope that studies and researches for data, information, and body of knowledge for educational administrators to use as bases in making decisions. Classroom Action Research (CAR) is a research that is not used to refer to wider society. This type of research is referred to as Routine to Research (R to R). It is directly conducted with a specific population that aims to solve the problem at the classroom level.

Keywords: Routine to Research, Institute Research, Classroom Action Research

1. Introduction

There are three (3) types of educational research by scope which are Academic Research, Routine to Research(R to R), or Institutional Research and Classroom Action Research (CAR) which focused on teachers' researches. An academic research paper consists of 5 chapters which are: Chapter 1 which is Introduction; Chapter 2 on Review of Related Literature and Studies; Chapter 3 includes the Research Methodology; Chapter 4 presents the Data Analysis results; and Chapter 5 covers the Summary, Conclusions, and Suggestions/Recommendations. It also includes the studies being conducted by professional researchers or by postgraduate students (thesis) or doctoral dissertation that cover populations at the national or international levels.

Institutional Research is a type of research with a narrower scope that studies and researches for data, information, and body of knowledge for institutional administrators for effective decision-making(Srisa-an.2011). Institutional Research is classified as Routine to Research(R to R) for teachers to develop teaching and learning processes and/or improve certain systems and mechanisms for the institution. Institutional research leads to continuous improvements in an organization (Panich,2008).

Classroom Action Research (CAR) is a kind of research paper that is not used to generalize a wider scope (Wongwanich, 2010). This type of research is Routine to Research (R to R). It is directly conducted at a classroom level wherein the teacher seeks to find solutions to problems encountered. This is considered as action research by using a variety of methods of applying research and research and development (Jiraro,2013). Teachers can do many topics each semester. According to the problems encountered while teaching certain topics for one or two weeks (or not over 1 term) can be completed.

2. Research Procedure

There may be various types of procedures or methods that are commonly used in research. These include defining steps according to scientific processes, for example, problem determination, hypothesis formulation, data collection, data analysis, and presentation, in which there are many different details in each step. These may not be suitable for those who are considered to be new researchers. The definition of a wide step may be easy to remember, the new researchers agree that the details of each step are complicated. Then, to specify the steps of the research in detail, the new researchers can easily do the following steps:

- 1) Determining research problems
- 2) Naming of research topics or topics
- 3) Formulating research questions
- 4) Specifying research objectives
- 5) Formulating hypothesis (if any)
- 6) Identifying the expected benefits
- 7) Defining the scope of the research
- 8) Clarifying operational definition of terms
- 9) Studying concepts, theories and related studies
- 10) Writing a research conceptual framework
- 11) Specifying research design
- 12) Collecting and analyzing data
- 13) Presenting the data analysis results
- 14) Summarizing research results
- 15) Discussing the results
- 16) Giving suggestions
- 17) Writing the abstract
- 18) Writing the research report

19) Disseminating research results

20) Writing bibliography and appendices

For details on each step, the principles and methods of conducting research for new researchers are discussed below:

2.1 Step 1: Defining Research Problems

Research Problem refers to the difference between the current condition with the objectives that teachers, researchers or project owners want to achieve their goals or expectations, such as the student still lacking certain skills or in academic research, research problems tend to lack knowledge in some areas if it is a Research and Development(R&D), research problems are often the lack of innovation. The research problems will appear in chapter 1. It's found that writing the first chapter, the title of the chapter is an introduction. The first topic of chapter 1 is the history and importance of the problem. A clear problem determination is shown in this first section. In 3 types of educational research, writing the history and importance of the problem it is the ability of the researcher to show the general researcher or the research reader the reason why they do it. How necessary is it, as for the writing guidelines, should clearly show at least 3 main points which are:

First, what should be the expectations or the completeness of that matter be on this point, should refer to the high level, wide level, chased down in order and should include reliable empirical information.

Second, the current condition that is being experienced is a condition that is still lacking and not yet complete. In this regard, there should be empirical data or research results that are credible to refer to.

Last issue, the history of the research should address what the researcher will do, and is doing. It also shows the readers the process of how things will help solve the given problem.

2.2 Step 2: Setting up Research Topic

Research Topic is a very important beginning of research, because researchers who have a clear concept of their own research will be able to give meaningful titles. Make the research procedures clear by means of the following:

- 1) The title should tell the research methodology, or with key words of that type of research.
- 2) The title should tell the variables in that research may be an early variable or variable according or both the beginning variable and the dependent variable.
- 3) The title should be told target group groups that are interested in studying or population.

2.3 Step 3: Research Questions

After writing the background of the research, what should appear next is the research question, which will lead the research to not be lost in many issues. In many textbooks, these are called as research problems. Clear questioning or having a clear research problem will lead to the determination of objectives that correspond to the actual research needs. The important research questions are written in question forms, and the variables and target groups are covered. These must be in accordance with the research topic.

2.4 Step 4: Research Objectives

From a clear research problem and clear research questions, setting research objectives will be easier. A good research objective will enable the research to answer all research questions. A good research objective should say what the purpose is to do in order to answer the research question. The purpose of the research should cover all

research questions. Each objective leads to the result of the research (output) and benefit (outcome).

2.5 Step 5: Research Hypothesis

Hypothesis is a prediction of the rationale for the research results. Many researches that require research hypothesis especially for comparison purposes to study relationships must have hypothesis. However, it is not necessary to have hypothesis for every research such as Research and Development (R&D), Descriptive research, survey research or future research papers. The research hypothesis must be consistent with the research question and consistent with the research objectives.

2.6 Step 6: Identify the Expected Benefits

Writing out the benefits you will identify is helpful after doing the research, and it is often written with the words "make it make it known" to get guidelines writing a research project or research schemes, often written as expected but if it is a research report. After completing the research, it's often written that the benefits however, there are many researches with research results. But the research result is only a guideline to do in some matters should still be expected to receive as well As for the research work done in the classroom when writing the report. After the research is completed, the result will be a benefit as it is a research development. The result is a benefit that has already been received. Writing this topic in the research outline is therefore expected to be received, but in this research paper, the topic is the benefits some institutions or departments have found there writing benefits that are important to the research. This can cause confusion because the importance has been written in the history and importance. In this section, you should

really write down the benefits of the research, which emphasize the outcome that corresponds to the output or the objective.

2.7 Step 7: Defining Scope of the Research

Defining the scope of the research should be written in at least 2 topics:

- 1) **Scope of content:** May tell the framework of the content used to measure variables or variables studied, variables means keyword in this research, variable something that has more than one value. The value of the variable is the value from the measurement, which the measurement results are both measurable and quantitative and qualitative as for the measurement of variables, some variables are just nominal scale only, such as describing the nature of how it is etc., cannot be measured as numeric values which this variable is measured by using qualitative data but some variables can be used to measure the matter, such as knowledge variable measured by test or examination, skill variables can be measured by the skill test that can be measured by scores or percentage.
- 2) **Population scope:** It is a reference to all groups interested in studying what it consists of. If it is written in chapters 1, 2, 3 it may not be necessary to state the number and details. The randomness in this section will cause duplication (which in chapter 3 Must write in detail), but if writing a research outline that does not specify a chapter, random details may be written in this section, or may be written according to the institution's form, which can be found in two forms, the three-chapter outline or not as the aforementioned chapter.

2.8 Step 8: Writing Operational Definitions

The definition of each term is an operational definition as to how it is used in the study. Things that need to be written in the definition are to define all variables. The definition of a word is not a normal definition or the definition found in the dictionary, but it is the definition of the operation. At the end of each definition, the process of measuring the variables must be specified.

2.9 Step 9: Study of Literature, Concepts, Theories and Related Research

Review literature is part of the second chapter, consisting of concepts theories and research related to the study of concepts and theories related to variables and the study of research related to variables with important educational objectives which are:

- 1) To know when anyone has done this or not
- 2) To synthesize relevant theoretical concepts as a research frame work
- 3) To be a guideline for constructing variable measuring tools
- 4) To be a body of knowledge for research discussion

2.10 Step 10: Writing a Research Framework

It is the result of studying the theories from one theory, or many theories to be written as a research framework. It is often stated that the variable, the dependent variable, or the model of the relationship between the variables used in the research are clearly stated. In a research framework, a theory may consist of many theoretical concepts.

2.11 Step 11: Determine the research methodology

Writing research methods or research methods should clearly specify the plan, such as Research and Development (R&D), descriptive research or other research methods. These will form the research design.

3. Research design

- 1) Sampling design refers to the population and sample groups.
- 2) Measurement design defines how variables are measured. What tools are used, such as in the case of quantitative research, are often used on exams various skills test or may be a qualitative measurement, it will be an observation form, a record and mention the quality of tools.
- 3) Analysis design means the use of statistics in various parts of the research which are in line with the objectives. Corresponding to the variable type variable measurement level.

3.1 Sampling Design

3.1.1 Population

It describes all groups interested in studying that it consists of: In this section, specify the details, there is a confirmation number, clearly how many groups and how many people, if the groups are complex, they may need to be presented in a table and for more meaning, they may be written in numbers and percentage values, which makes it easier to understand. However, in some research, some situations may have a large population and cannot know the number.

3.1.2 Sample

Writing the sample to give the most representative sample to consider and should mention 2 topics, starting with the sample size determination. In this section, tell the number of samples that come with the sizing method. By specifying the this number is derived from anyone's formula, such as the Taro yamane formula or the Taro yamane table, or given the size by the Krejzie & Morgan table or by any method. The method of determination should be rational. Is reliable and accepted For the sample, the following issues should be described as random methods as appropriate for the research. There are many random methods, may use probabilities or not rely on probabilities.

4. Measurement Design

4.1 Research Instrument

The instruments used in the research are the tools used to measure variables and the innovative tools developed. Therefore, it is necessary to create tools in accordance with the level of measurement of each variable. The measurement level consists of 4 levels which are 1. Nominal scale, 2. Ordinal scale, 3. Interval scale, 4. Ratio scale, to descriptive details of the tool, tool characteristics meaning of scores Interpreting mean as for research variables, innovative variables such as activity sets, process exercises, media teaching methods, games were measured by descriptive characteristics, because it is a qualitative variable. For variables that are skills, knowledge, and abilities, need to create a test. Or measuring equipment tool types include test or other tests, questionnaires, interview forms, observation forms, data records one questionnaire May consist of multiple measurements in the same version.

4.2 Quality of Tools

The study of the quality of tools should include tests of validity and reliability. In the case of a test or knowledge test, the difficulty (P) and the power of classification (r) must be determined.

Validity means the ability of a measurement tool to match what you want to measure has comprehensive content and can be measured accurately and truthfully here are divided into 4 types of validity: Content Validity, Construct Validity, Concurrent Validity, Predictive Validity. The most common is Content Validity. Content validity means the ability to measure content extensively, and represent the content or experience that needs to be measured.

4.3 Content Validity Method

- 1) Experts check the suitability of the definition and scope of the content to be measured.
- 2) Examine the sample of content or behavior used in the test that does it cover content or behavior that needs to be measured.
- 3) Compare the proportion of the test that corresponds to the weight of importance of each content that needs to be measured.

How to find the content validity by having the expert approve the question, select the questions that are consistent and comprehensive of the content. Check how well the questions are in harmony with the content and various elements of the content that need to be measured. There are various methods of determining consistency which are IOC (Index of Item Objective Congruence), CVI (content validity index) and CVR (Content Validity Ratio).

4.4 Index of Item Objective Congruence : IOC

The consistency between the question (item) and the objective means the nature of the question. Defined research objectives.

4.5 Methods of studying IOC

The experts determine the consistency of the test with the aim of the measurement. Check using the evaluation form. 1 = Conformance, 0 = Not sure, -1 = Conformity. The criteria that means passed .50 or more conformity.

4.6 Analysis of Reliability

The reliability of the tool means consistency or consistency of the tool scores. Finding the reliability quality of the tool consists of 4 types as follows: 1) Constant Reliability or Test-Retest, 2) Equivalent precision, 3) Equivalent test-retest, 4) Internal consistency.

The most common are Measure of internal consistency. It means consistency of individual scores or the consistency of each item's content representing the characteristics to be measured. By using the exam results from one exam one group of test takers then analyzed by various methods.

5. Analysis Design

5.1 Data analysis

In each research, the data is divided into 2 types which are qualitative and quantitative. If the data is qualitative data using analytical methods by content analysis or summarized in groups and then explain the frequency also known groups

classification for quantitative data use basic statistics such as frequency, percentage, mode and range, mean and standard deviation, median and inter quartiles range (IQR) or quartile deviations. Data studies, if required by sampling from the population, may need to use reference statistics such as t-test, analysis of variance (ANOVA), or may use advanced statistics analysis of multivariate.

5.1.1 Step 1: Data Collection

Collecting data, the researcher should specify what information is collected and when. Tell the purpose data sources, techniques for collecting data. Data collection procedure examining the accuracy of the data, who collected, where, how and how long. Data collecting techniques consist of examination of event logs, study documents, inquiries, interviews, image record observations.

5.1.2 Step 2: Presentation of Data Analysis Results

The presentation of the data analysis is to present the table of various types of charts with descriptions. The analysis result may be one time exam or Pre test - Post test or development studies, Needs Assessment or table presentation based on each statistic used which can have a specific format, In which the objectives were written and in accordance with the questionnaire form.

5.1.3 Step 3: Conclusions

The conclusion of the research must take into consideration research questions and the research objectives that the conclusions must be consistent with the research objectives able to answer all research questions. The conclusion of the research does not need to be copied Chapter 1, 2, 3, 4, again.

5.1.4 Step 4: Discussion

The first things that need to be considered are the significant issues. These issues are the research results that must be answered according to the hypothesis. For other issues with knowledge arising from non-objective research outside the hypothesis may or may not be discussed. The results of the discussions are discussed in three (3) ways which are:

- 1) What results are consistent or contradictory with the theories?
- 2) What results are consistent or inconsistent with the research?
- 3) What is the result? What is the opinion of the researcher?

Discussion of one issue may do in any way or two characteristics or all three characteristics; nevertheless the final one combines all three. There must always be references to the documents found in the second chapter and in the bibliography.

5.1.5 Step 5: Recommendations

Writing suggestions in principle, it must consist of two parts:

5.1.5.1 Part 1: Suggestion from the research results.

Recommendations for this part must be obtained from research, such as the lack of research findings, weaknesses, failing to pass, problems, suggestions for improvement, preparation by taking external reasons that are obstacles into consideration. It must also be reliable and feasible. For research results that have prominent issues, strong points, good points, high research results, they often suggest ways to see the future. The progress of that issue by considering together with external factors that are opportunities leads to a good direction for that issue. In the case of open-

ended questions, it includes the suggestion of the respondents to analyze and synthesize it before integrating them to the research findings.

5.1.5.2 Part 2: Suggestion for further research.

For this section, suggestions for further study often requires a wider cope and in another context or locale.

- 1) Broad proposals include those for increasing demographic groups, and scope of referrals for a broader summary of references. It can be a research upgrade which may adjust issues and/or variables.
- 2) It is suggested to extend in the way that should be more complicated, use higher statistics to get deeper answers. However, both types can be proposed in the same subject according to the context of the research.

5.1.6 Step 6: Making abstracts

The abstract summarizes the entirety of the research paper. It can only occur after completing the research. The details of the abstract gives an idea of what research is done, who did it and what was the purpose of the research. Data collection methods, timeframe, quantity, statistical tools, and research findings are clearly presented in this section.

It is stipulated often in one page. Some institutions may not specify sometime in front of the book, some departments leave behind the book, for evaluation research, it will be written as an executive summary instead of abstracts.

5.1.7 Step 7: Writing research reports

Report writing is often written in scripts, and should be written in full according to the aforementioned issues, therefore, it is considered formally proposed as:

1. Cover page, Introduction, Background, objectives, and expected benefits
2. Literature review and related research
3. Methodology
4. Data analysis results
5. Summary of research findings, discussion of results and recommendations
6. Appendices, bibliography/references

5.1.8 Step 8: Research Publication

If the work is published, it may be shown to increase credibility of the research. Channels of research presentations, such as presentations in academic conferences in foreign countries, may be presented as poster presentation, oral presentation or posted on the websites of various agencies. In addition, it can also be published in an international journal both locally and internationally. Writing research articles in journals must consider the conditions of the journals. There are generally two types: only the abstract is about 1 page or 200 words, and a short version of the complete document approximately 15 pages in length (including abstracts and selected bibliographies).

5.1.9 Step 9: Writing a Bibliography and Appending

5.1.9.1 Bibliography

The important principles in writing the bibliography are as follows:

- 1) Must have all the references in the book from Chapters 1-5.

- 2) References in the discussion for chapter 5 must appear in Chapter 2.
- 3) Writing in references in accordance with the reference principles of that institution or organization or internationally.
- 4) Writing the same reference for the whole book.

5.1.9.2 Appendix presentation

Attachments in the appendix are extensions for details such as a list of experts, sample research tool, sub-table on details of finding quality tools. It also includes proof of instruction book, various permission letters, and followed by the last part which is the researcher profile.

6. Conclusions

The research in all 20 steps is a full process of research. But the 3 types of educational research have variations in some steps. In order to make it clearer, the types of research papers were summarized in the table below.

Topic Consider	Academic research	Routine to research (R to R)	
		Institute Research	Classroom Action Research (CAR)
Research problem	- The needs of research fund owners - Mandatory courses - National or international needs	The needs of administrators or faculties in order to apply knowledge or product of research to be used in institution management.	From instruction or behavior of learners

Topic Consider	Academic research	Routine to research (R to R)	
		Institute Research	Classroom Action Research (CAR)
Researcher	Professional Researcher Graduate Students	Executive Teachers and personnel of that institution	Teachers who have teaching hours
Research Topic	Specify a broad target group, region, national, international	Specify the target group, institution level, institution name, school name, department name	Identify specific target groups that want to solve problems in the classroom, specify class room
Repeat Research	Do not repeat (unless there is a reason to explain)	Repeat continuously according to the need to use the research results to manage the institution.	Repeat every time you want to solve the problem.
Review literature and related research	Must have cover	Must have coverage. There must be coverage when doing that first. And there is no need to re-review the same story at the same time.	Not required because of the confidence in the teachers who are able to teach most of the goals have been achieved before.

Topic Consider	Academic research	Routine to research (R to R)	
		Institute Research	Classroom Action Research (CAR)
Sampling Design	Using a random design that is suitable for the best agent.	Random but some time if institutions or departments are small collect data from all no random.	To collect data from all or random
Methodology	Can use every methodology	Can use every methodology	Focus on Research & development Action research
Generalize scope	To a broader population, region, national, international	To the institutional population	Do with the target group, learners who still have problems after teaching
Measuring Design	intensive measurement design, and quality tools for experts both internal, external, complete	the measurement design, and quality tools by who are both internal and external or only within the institution	Using the design, measurement and quality tools by the experts are the specific teachers in the institution.
Analysis Design	Descriptive statistics, Inferential	Use descriptive statistics Do not use Inferential statistics or use	Descriptive statistics do not require Inferential statistics.

Topic Consider	Academic research	Routine to research (R to R)	
		Institute Research	Classroom Action Research (CAR)
	statistics, advanced statistics	Inferential statistics in case of large institution sampling	
Budget	Need to have a specific budget for research	May have a specific budget or regular budget of the institution or department.	Use regular budgets for teaching and learning according to the learning plan. No specific budget is needed.
Time	According to the context of that research May take a short time Or use for a long period of years Or more than a year	Within term or not more than one year To obtain information or knowledge to manage	Short time in weeks or no more than one semester
Research report composition	Complete according to strict regulations of 5 chapters or more	Present 5 chapters or not	Identified by topic not in chapters, about 8-10 pages (Not including appendix)

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