Research Designs used by Undergraduate, Graduate and Post-Graduate Students in their Research Studies

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Abstract

This study aimed at determining the types of research designs used by undergraduate, graduate and post-graduate students in writing their research outputs. Research needs careful planning since sound research means making use of sound research design. One cannot neglect the importance of a well-defined method in doing research.

This study showed that more than 50% of research studies conducted by undergraduate, graduate and post-graduate students are quantitative. *Survey* (29%), *descriptive* (30%), and *descriptive correlational* (31%) methods come alongside with quantitative design. *Phenomenological* method is also usually utilized in qualitative design. Though phenomenological method supplements quantitative designs but still this study recommends to explore the use of other research designs and methods such as capstone projects in Information Technology and ethnography for acquiring local knowledge.

Keywords: *research designs, research methods, ethnography, mixed design*

Introduction

Research needs careful planning (Myers, 2010). As research is a way to pursue true knowledge, its method is as important as the true knowledge itself. *"How do we know that we know?"*, as philosophers would usually ask. This *epistemological* question implies the importance of method in the pursuit of knowledge. In a word, one cannot neglect the importance of a well-defined method in seeking for truth like in research studies.

Research –as generally known by practitioners nowadays, follows inductive reasoning. Inductive reasoning is a logical process of thinking which starts

from particular instances then infers some generalization from such instances (Hayes, 2017). At times, making generalization becomes so hasty which results in erroneous drawing of conclusions. This is one inherent weakness of conducting research that needs careful attention by researchers. Sound research means making use of sound research design.

The design of research is "the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure" (Kothari, 2004). It is a blueprint or plan specifically created to answer the research question and to control variance. The control of variance means the research must consider factors that might systematically contribute to the research results or confound the interpretation of the results, but that are not part of the research question or hypothesis (Dulock, 1993). The researcher can minimize the effects of error variance by choosing a design that permits us to calculate the contribution of one or more nuisance variables –thus, a need for a sound research design.

Kothari (2004) identifies two types of research in terms of approach or design: quantitative and qualitative. **Quantitative design** involves the generation of data in quantitative form or "the process of collecting and analysing numerical data; used to find patterns and averages, make predictions, test causal relationships, and generalize results to wider populations" (Bhandari, 2022). Bhandari (2022) further sub-classified quantitative design into: 1) **historical –**to reconstruct the past objectively and accurately, often in relation to the tenability of an hypothesis, 2) **descriptive –**to describe systematically a situation or area of interest factually and accurately, 3) **surveys –** research design that uses a series of written and verbal prompts/items to quantify the personal opinions, beliefs, and ideas from a group of respondents, 4) **correlational –**to investigate the extent to

which variations in one factor correspond with variations in one or more other factors based on correlation coefficients, 6) **causal-comparative** or **"ex post facto" –**to investigate possible cause-and-effect relationships by exposing one or more experimental groups to one or more treatment conditions and comparing the results to one or more control groups not receiving the treatment, and 7) **quasi-experimental –**to approximate the conditions of the true experiment in a setting which does not allow the control and/or manipulation of all relevant variables.

On the other hand, **qualitative design** is a process of naturalistic inquiry that seeks an in-depth understanding of social phenomena within their natural setting. Rather than by logical and statistical procedures, qualitative researchers use multiple systems of inquiry for the study of human phenomena including **biography**, **case study**, **historical analysis**, **discourse analysis**, **ethnography**, **grounded theory**, and **phenomenology** (Coghlan, 2014).

For decades, St Paul University Dumaguete has intensified its research program among students, faculty and staff. For faculty and staff, conducting research is a necessity because it is an essential part of their ranking and promotion. For the students, it is a partial fulfilment of their requirements of their courses or programs. Every student in tertiary, graduate and post-graduate levels has to undergo the rigid process of writing research. The process includes the selection of topic for research, identifying and formulating research problems, formulating of questionnaires, gathering of data, and presenting and interpreting results. If one student fails to survive this rigid process, he is not able to graduate from his course/program. So, for decades, a considerable number of research outputs have been produced by college, graduate and post-graduate students.

This study aims at determining the types of research designs used by students in research writing in tertiary, graduate and post-graduate levels. It further seeks to determine the specific methods in data gathering, analysis and interpretation that come alongside with the preferred research designs. Specifically, this study asks the following:

1. What are the research designs used by college, graduate and post-graduate students from Academic Year: 2007-2008 to 2017-2018?
2. What are the specific methods employed in gathering, analysis and interpretation of quantitative or qualitative data?

Methodology

There were no human participants involved in the study. The data utilized in this study were retrieved from the University Library, from the Office of Research and Publication, or from the different departments of the university, namely: College of Nursing, College of Business, Information and Technology, and College of Arts, Sciences and Education. A letter of permission was sent to the University President thru the Office of Research and Publication requesting access to records of research outputs of students from Academic Year: 2007-2008 to 2017-2018. Available records yielded 494 research outputs written by undergraduate, graduate and post-graduate students for a period of ten years.

The data are treated by simple frequency counts and percentages. Results are presented in tables and figures below.

Results

Table 1. Research Studies conducted by Students per Level

Levels	*Frequency*	*Percentage*
Tertiary	131	26.51%
Graduate	292	59.1%
Post-Graduate	71	14.39%
TOTAL	**494**	**100%**

Table 1 shows that majority of research studies, or about 59%, are conducted by Graduate students. As mentioned, research is a partial fulfilment of requirements in tertiary, graduate and post-graduate levels. In graduate level, research is done individually compared to the tertiary level where it is done by groups. Starke (2022) claims that research is essential in graduate school because it is often the culminating project or final paper submitted to support a candidate's complete understanding of a topic with a graduate program. Likewise, graduate school is the driving force behind academic research. And, research is an in-depth critical analysis of statistics, observations, literature, case studies, and theories closely related to a graduate school candidate's professional interests and career path (Starke, 2022).

Table 1.1. Research Studies conducted by College Students

Departments	*Frequency*	*Percentage*
CON	80	61.07%
CASE	29	22.14%
CBIT	22	16.79%
TOTAL	**131**	**100%**

As shown in *Table 1* above, 26.51% of 494 studies are conducted by college students. *Table 1.1* shows that out of 26.51%, 80 studies (61%) are conducted by students in the College of Nursing; 29 (22%) are conducted by students in College of Arts, Sciences and Education; and 22 (16%) from the College of

Business and Information Technology. In CON and CBIT departments, research writing is done by groups, whereas in CASE, research is done by individual student. *Table 1.1* implies that CON has greater population of students compared to CASE.

Table 1.2. Research Studies conducted by Graduate Studies

Departments	*Frequency*	*Percentage*
MSN/ MAN	79	27.05%
MAED	136	46.57%
MSES	2	.75%
MPA	20	6.8%
MBA	55	18.83%
TOTAL	**292**	**100%**

As shown in *Table 1* above, out of 494 studies, 59% *(N=292)* is conducted by graduate students. Out of 292 studies, 46.6% *(N=136)* is produced by students taking Master of Arts in Education *(see Table 1.2)*. This indicates that Master of Arts in Education program has a number of graduates per year compared to other programs offered in Graduate School. Coincidentally, Segismundo and Zacarias (2017) found out that majority (42%) of respondents were MAED graduates in their tracer study conducted in a certain university in the Philippines. MAED program reinforces the students' understanding of educational theories, concepts, curriculum, and instructional techniques in order to further advance in their professional careers.

Table 1.3. Research Studies conducted by Post-Graduate Students

Departments	*Frequency*	*Percentage*
ED.D.	41	57.7%
DBA	20	28.7 %
DPA	10	13.6 %
TOTAL	**71**	**100%**

As shown in *Table 1* above, out of 494 studies, 14.39% *(N=71)* is conducted by post-graduate students. *Table 1.3* shows, of the 71 studies, 41 studies (57.7%) are outputs of graduates of Doctor of Education program; 20 studies (28.7 %) are outputs of graduates of Doctor of Business Administration; and 10 (13.6 %) are outputs of graduates of Doctor of Public Administration. This implies that majority of research are conducted in the field of education. This somehow coincides with the finding of Esparrago (2022) which shows, *92.9% of graduate respondents engage in teaching after graduation*, in her tracer study of post-graduates from 2012-2020.

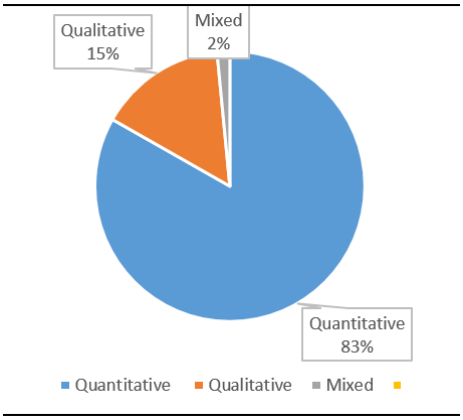

Figure 1.1. *Research Designs used by Tertiary Students (N=131)*

Figure 1.1 shows that majority (83%) of research studies conducted by tertiary students utilized the quantitative designs. Other designs like qualitative and mixed designs are rarely used. As shown above, only 15% of studies utilized qualitative designs and 2% used mixed methods. Coghlan & Brydon-Miller (2014) reports that quantitative method is the dominant research framework in the social sciences. This method gathers a range of numeric data and explores some structures implied in the data. The collection of quantitative information allows researchers to conduct simple to extremely sophisticated statistical analyses that aggregate the data (e.g. averages, percentages), show relationships among the data or compare across aggregated data (Coghlan & Brydon-Miller, 2014).

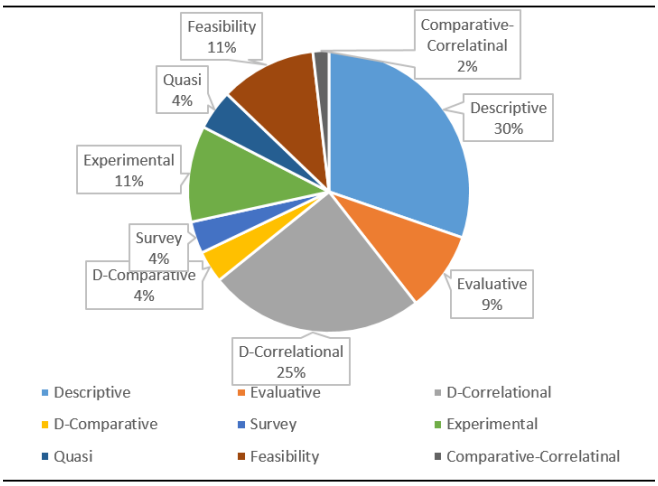

Figure 1.2. *Types of Quantitative Research used by Tertiary Students (N=109)*

Figure 1.2 shows that the most commonly used types of quantitative research are *Descriptive* (30%), *Descriptive Correlational* (25%), *Experimental* (11%) and *Feasibility* (11%). This implies that *descriptive* and *descriptive correlational* methods come alongside with quantitative design. Descriptive method aims mainly to describe phenomena, in contrast to ascertaining what causes them or what their value and significance are. It is very popular among students of education (Johnson, *n.d.*) and frequently it is the first thought when a problem or situation is to be investigated.

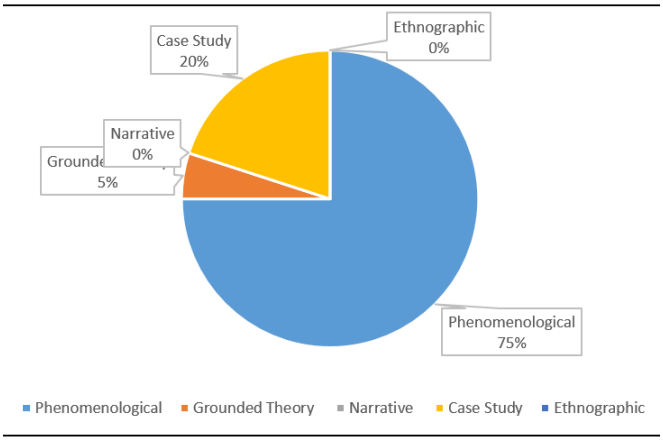

Figure 1.3 *Types of Qualitative Research used by Tertiary Students (N=20)*

Figure 1.3 shows that out of 20 studies conducted by college students, 75% *(N=15)* utilized phenomenological methods. Other methods used are *case study* (20%) and *Grounded theory* with only 5%. Beck (1994) notes, there is a growing acceptance of phenomenology as an alternative research in nursing practice and other professions. This is evidenced by the increase in publications of phenomenological research studies in nursing and social science literature. Diverse clinical specialties of nursing have already proven fertile areas for phenomenological research such as medical surgical, maternal-child, gerontological, and emergency room nursing (Beck, 1994).

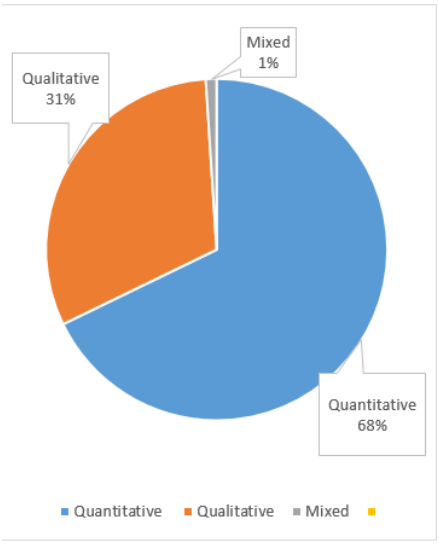

Figure 2.1. *Research Designs used by Graduate students (N=292)*

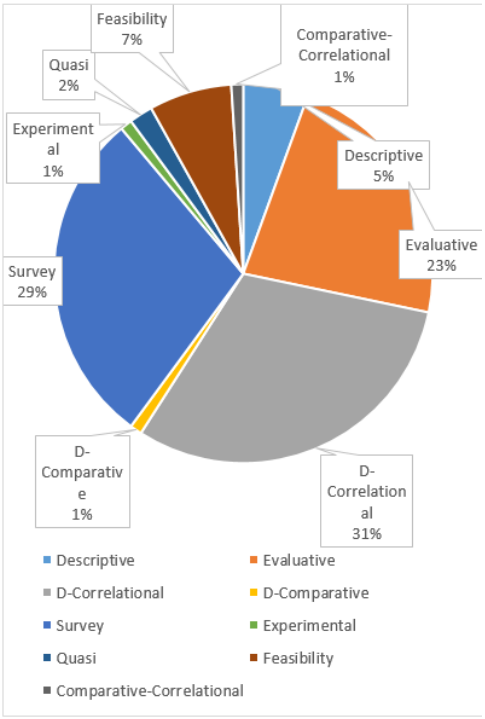

Figure 2.2. *Types of Quantitative Research Designs used by Graduate students (N=199)*

Figure 2.1 shows that out of 292 studies conducted by Graduate students, 68% *(N=199)* used quantitative designs. Other method designs used are *qualitative* (31%) and *mixed methods* (1%). Like the college students, graduate students rely heavily on the use of quantitative designs. But unlike in tertiary level, in graduate level the use of quantitative design comes alongside with *descriptive correlational* (31%), *survey* (29%), and *evaluative* (23%) methods (see *Figure 2.2* above). This implies that, in graduate level, in-depth analysis of data is deemed important through finding significant relationship or difference between or among variables and evaluate the results of the study for further improvements.

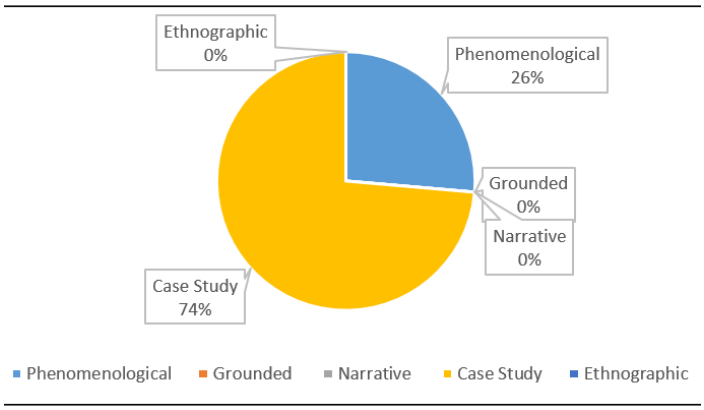

Figure 2.3. *Types of Qualitative Research used by Graduate students (N=91)*

As shown in *Figure 2.1* above, out of 292 studies conducted by Graduate students, only 31% *(N=91)* utilized qualitative designs. *Figure 2.3* shows that out of 91 qualitative studies conducted by Graduate students, 74% *(N=67)* are *case studies*, and 26% *(N=24)* of these studies utilized phenomenological methods. As shown in *Figure 1.3* above, majority (75%) of qualitative studies conducted by college students are phenomenological. By contrast, most qualitative studies conducted by Graduate students are case studies (74%). A case study is a research method used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context. It is a research design used extensively in a wide variety of disciplines, particularly in the social sciences (Crowe *et al.*, 2011).

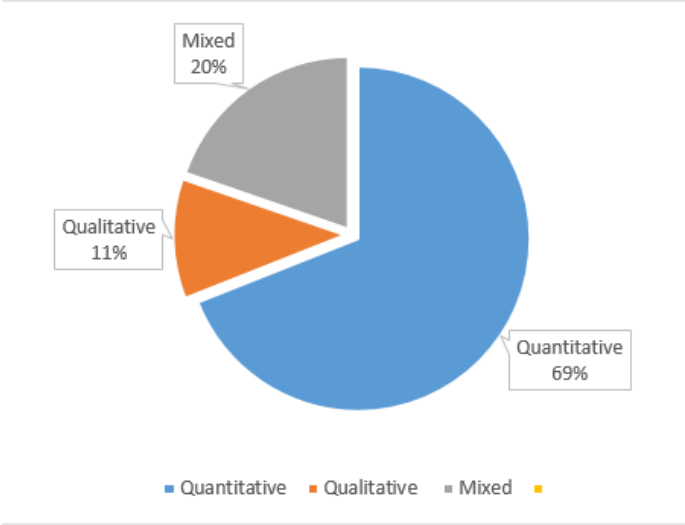

Figure 3.1. *Research designs used by Post-Graduate students (N=71)*

Figure 3.1 shows that out of 71 studies conducted by Post-graduate students, 69% *(N=49)* of these studies are quantitative designs; 11% *(N=8)* are qualitative; and 20% *(N=14)* are mixed methods. In comparison, majority of studies conducted by tertiary, graduate and post-graduate students utilized quantitative designs. The percentage is ranging from 68% to 83%. This implies that quantitative design is the most preferred research approach by students in all levels –tertiary, graduate and post-graduate levels.

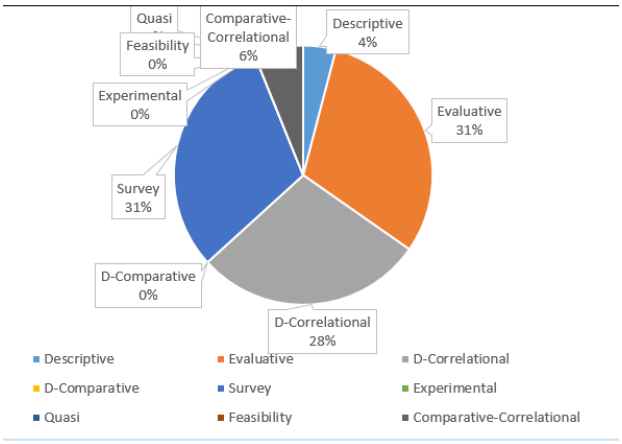

Figure 3.2. *Types of Quantitative Research used by Post-Graduate students (N=49)*

Figure 3.2 shows that out of 49 (quantitative) studies conducted by post-graduate students, 31% *(N=15)* of these studies are *surveys*, another 31% *(N=15)* are *evaluative* types, and 28% *(N=14)* uses *descriptive correlational.* As noted in *Figures 1.2*, *2.2* and *3.2* (above), quantitative research designs come alongside with *surveys*, *descriptive* and *descriptive correlational* methods.

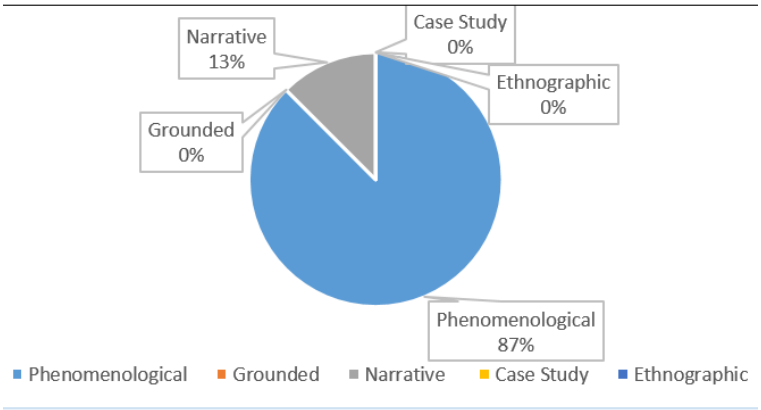

Figure 3.3. *Types of Qualitative Research used by Post-Graduate Students (N=8)*

Figure 3.1 (above) shows that out of 79 studies conducted by Post-graduate students, only 8 studies (11%) are qualitative and most of these studies are phenomenological (see *Figure 3.3*). Similarly, in tertiary and graduate levels, qualitative design comes alongside phenomenological methods.

Discussion

Based on the data presented above, there are three (3) important points to highlight for discussion: 1) in a ten-year period –from AY 2007-2008 to 2017-2018, research outputs of college, graduate and post-graduate students are quantitative designs, 2) quantitative design goes alongside with *survey*, *descriptive* and *descriptive correlation* methods of data gathering and interpretation, and 3) phenomenological method is also commonly used for qualitative design. Further discussions of each highlight will be done below.

Firstly, from Academic Year 2007-2008 to 2017-2018, majority of research studies conducted by college, graduates and post-graduate students are quantitative designs. As shown in *Figure 1.1*, out of 131 studies written by college students, 83% is quantitative. In *Figure 2.1*, out of 292 studies written by graduate students, 68% is quantitative. In *Figure 3.1*, out of 71 studies written by post-graduate students, 69% is quantitative. The data has consistently shown that more than 50% of research studies are quantitative. This finding suggests that the research practice of the university has reached a certain level of mastery of the craft –in the application of quantitative techniques, in particular. As a result, for a decade of conducting research, student researchers –research teachers/advisers as well, have gained greater insights on asking the right questions, collecting the valid data, and presenting and interpreting results in systematic and objective way (Black, 2005). Time and experience have shaped student researchers the mastery in the application

of quantitative techniques. Yet a considerable part of creativity of researchers is lost in the process at the expense of the mastery of techniques, adds Black (2005).

Secondly, quantitative design comes alongside with *survey, descriptive* and *descriptive correlational* methods in data gathering and interpretation (*see Figures 2.1, 3.1, & 4.1*). Survey refers to systematic data collection about a sample drawn from a specified larger population. The final product of surveys are survey statistics, that is, percentages, means, measures of association and the like (Schwartz *et al.*, 1998). Like the descriptive method, survey has become a dominant or popular method among students in Social Sciences but it is shrouded with the problem or possibility of "error" –a sort of deviations or departures from the true values applicable to the population studied. Which questions are asked, how answers are collected, and which people answer the questions can affect the quality (or error properties) of survey results (Groves *et al.*, 2009). On the other hand, descriptive method aims to describe phenomena, in contrast to ascertaining what causes them or what their value and significance are (Johnson, *n.d.*). It is fact-finding with interpretation (Whitney in Krishnarao, 2022.). As a method of science, it aims at having a generalization concerning the behavior of the objects studied so that the stable beliefs can be imposed on the flux of change in which objects originally exist. The generalization has thus a probability value assigned to it. To be useful it has of course to be incorporated into a body of knowledge accumulated by such generalizations (Krishnarao, 2022). However, descriptive method will never attempt to explain why a person or object studied behaves as such. As explained above, both survey and descriptive methods have limitations. One inherent limitation of these methods is that it describes fact but will never explain why such fact occurs or has occurred.

Lastly, phenomenological method is commonly used for qualitative designs. As mentioned above, there is a growing acceptance of phenomenology as an alternative research in nursing practice (Beck, 1994) and other professions. Phenomenology

helps one understand the meaning of people's lived experience. A phenomenological study explores what people experienced and focuses on their experience of a phenomenon as *lived* (Duquesne University, 2023). Additionally, there is also a growing acceptance that phenomenology could best supplement the limitations of quantitative design. If quantitative design simply describes a phenomenon, phenomenology attempts to explore its depths and meaning. It is generally known as the "mixed method" –the mixture of quantitative and qualitative methods.

Conclusions and Recommendations

There are three conclusions drawn from this study, as follows: 1) more than 50% of studies conducted by college, graduate and post-graduate students are quantitative; 2) *Survey* and *descriptive* methods are the usual types of quantitative designs used in these studies; and 3) *phenomenological* method is commonly used for qualitative design.

Based on these conclusions, this study recommends the following: 1) research subjects shall be handled or taught by experienced faculty in conducting research; 2) research teachers/advisers shall make some sort of re-skilling of other types of research; 3) student researchers shall explore other types of research designs and methods of data gathering and interpretation; 4) student researchers shall be given enough time to write quality research, and 5) student researchers shall make use of other designs and methods in conducting research such as historical, capstone projects, or ethnography.

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