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Graduate Students' Perceptions toward Research Strategies

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Abstract:

Graduate students are required to take research classes as part of the required courses for a completion of graduate degrees. This study investigates how these students view research classes particularly and what their perspectives toward research generally. The study used a mixed methods research design, a survey and an interview, in order to increase validity and reliability.

The study findings indicated that both groups had similar perceptions toward the concepts of research, challenges of the research process, the need to the instructor's support and feedback, the need to practice research process in reality. Based on the data analysis results, both groups of graduate students, who took research classes and those who did not, significantly differ in their implemented strategies of research due to previous studies and approximately share the same general perceptions toward the research process.

1. Introduction

In this study, mixing is necessary to increase validity, overcome weaknesses of quan and qual individually and draw on strengths, (Creswell, 2003). The research used a sequential explanatory design to reach better results since in such design, qual can explain quan results or vice-versa; it strengthens credibility because both approaches enhance integrity of findings-the essence of a synergistic design, argued by Nastasi, Hitchcock, & Brown (2010). While qual provides context; quan provides general. Therefore, MMR is necessary here in this study which needs more validity and reliability which are better served by mixing. Consequently, this application of an Inclusive MMR Framework, a sequential design, is necessary to achieve the research purposes which are providing better understanding of the graduate students of research process.

A case study is defined as an in-depth program or project to study a certain case or different cases to reach a required finding or in other words, to investigate a certain phenomenon existing in this case or in another. A case study research may be combined with other approaches. For instance, a case study of English teaching program can be combined with Constructivism or Post-positivism. As with several other traditions, this came to education in the late 1980s (Lichtman Marilyn, 2006). Thus, this study was done as a kind of multiple/collective case studies, an instrumental design extended to six cases in order to benefit from the concept of combined approaches on one hand, and because a case study can be a simple research which can easily mixed with another method of research on the other hand. In addition, in a case study, a researcher is able to identify the case or cases and set limits or boundaries to her study. Therefore, this study was conducted on a group of graduate students; hence, a sense of connectedness between the researcher and the informants was available to reach better results. This study tackles the graduate students' perceptions toward research classes, so, a survey was given to the subjects to examine their attitudes and views. Due to a lack of the instrument used or because of the limitedness of information extracted from that instrument, survey, an interview was done with those students to probe the phenomenon under investigation and raise validity and credibility of the study.

1.1. Rationale of the Study

Many graduate students are required to take research classes as part of the required courses for a completion of whether a Masters of Ph.D. degrees. At University of Arkansas, graduate students may have about more than one class in research and methodology. Some students probably view that number of classes as an excessive and sometimes a time-consuming requirement; some may see such number of research classes as a burden which might distract them from their concentration. Consequently, this study comes to investigate to what extent those students view these classes in particular and what their general perspectives toward research in general. However, the scope of the study was narrowed to a limited sample of graduate students just to show, on a limited scale, how those students perceive such reality. Any further information needs in-depth study to investigate the research questions in a more elaborative way.

1.2. Research Questions

- What is the effect of previous research classes on the study strategies implemented by graduate students to understand research content?
- What are the graduate students' perceptions toward research classes?

1.3. Sample

Due to the limited time of the study, a group of six graduate students was selected randomly from students who were asked to respond to the survey. The use of a random sample was manipulated to achieve as much as possible a degree of validity and reliability of the results. All the respondents were then interviewed to answer four open-ended questions constituting the qual part of the study. Each individual was interviewed for about thirty minutes to respond to questions and understand the procedure. Such face-to-face interview conducted on campus was recorded and transcribed later. The reason behind such selection was attributed to the lack of time on one hand, and because of the research questions on the other hand. Thus, the researcher tried to combine between two methods of data collection in order to reach as much as possible a degree of credibility of the results.

2. Demographics

2.1. *Gender*: 33 % of the sample selected was female graduate students and 67% were male graduate students. See table 12.1.

2.2. *Age*: About two students, 33 % were females with a mean 43 & SD 16.97 of age. Another group of four male graduate students, about 67 %, was selected with a mean 34.25 & SD 3.2 of age. See table, 12.2.

2.3. *Ethnicity*: In this study, 83 % of the sample about five students were white and 17 % about one person was Asian. See table 12.3.

2.4. *Highest Education*: Five of the students, about 83 %, got Masters in education, three of them got M.Ed from University of Arkansas and two students got M.Ed from overseas, they are currently Ph.D. candidates. The sixth student representing 17 % of the sample was a Masters pursuing student at U of A. See table 12.4.

2.5. *Graduate Courses taken*: 50 % of the sample about three students got Masters from University of Arkansas and they are pursuing a Ph.D. While the other three students did not take Masters in the U.S.A However, two of them are pursuing Ph.D. while the third is doing Masters. 50 % of the students had more than two research classes before while 50 % did not take any research class before. Thus, this is an important factor which can be manipulated to assist the research question hypothesizing that there is an effect of previous research classes on the study strategies implemented by graduate students to understand research content. See table 12.5.

3. Data Preparation

3.1. Survey

A Likert formatted survey of 12 questions was first given to the informants to collect the quantitative data and then followed by four open-ended questions as a qualitative part of the study. In quantitative content analysis, textual and audiovisual material should be coded to apply statistical analysis to such textual and visual materials, (Bergman, 2010). The survey was coded as categories ranging from low, varied, to high categories and other Likert (Easy/neutral/difficult) formatted questions. The participants' responses were coded in tables and analyzed to show frequency levels of responses. The use of Likert scale was advantageous because such kind of scales is beneficial for doing double benefit jobs: they help implicitly elicit information from respondents in a comfortable way and get them involved in the research easily. The survey was analyzed by using MS Excel calculate mean, Standard Deviation, and other statistics. MS Excel application was used to calculate descriptive data since the sample was very small; there was no need to use SPSS or SAS.

3.2. Interview

An interview of open-ended questions was done with the informants to be used in the qualitative part of the research-case study. Since they serve the research purpose, these questions were chosen to be used as an interview representing the second instrument in this study to collect data. After collecting data, responses were coded to be easily analyzed. These interviews were recorded and transcribed into file format. MS Word was used to organize data into Word file.

A simple coding system was used in this study: each theme across the six cases was selected and given a code expressing such theme. For instance, most the respondents stressed the idea of the instructor's role in giving a feedback supporting students to understand the content, thus, the theme here is scaffolding, such theme was coded instructional support and the formulated meaning was the instructor's support. Tables were organized to include themes collected across the students' responses and analyzed to calculate frequency across the six cases. Some significant statements were selected from all cases to illustrate shared themes.

4. Data Analysis

4.1. Survey

In the first questions of the survey, "1,2,3,5,6,7a & 8", responses were categorized in the first column of a table for each question from "Low, varied, to high" to indicate respondents' choices. Low category is represented from 1 to 3 in the survey, varied is number 4 while high category is represented by numbers from 5 to 7. For each question, frequency of respondents choosing a certain category was mentioned in the second column while the third column expressed percentages of responses.

It is clear from the first question that there is a big discrepancy among students' responses to the survey, such variation can be attributed to many factors the most important of which was hypothesized by the researcher: the effect of previous research classes on the study strategies implemented by graduate students to understand research content presented in a graduate-level course as illustrated in the following analysis:

Categories	Frequency	Percentage
Low (1-3)	5	83%
Varied (4)	0	0%
High (5-7)	1	17%

Table 1: Question 1

In the first question, six graduate students responded to this question, with five of them chose the low category representing 83 % of the graduate students never jot down before beginning a research class, while only one student about 17 % chose high category. See table one. It is worth noting that this student did not take any research class before and he is doing Ph.D. in education. The discrepancy between him and his colleagues was very clear.

Categories	Frequency	Percentage
Low (1-3)	0	0%
Varied (4)	3	50%
High (5-7)	3	50%

Table 2: Question 2

In question two, 50 % of the respondents "Who took research classes before" said that they sometimes skim a textbook chapter before reading it in detail, while the other 50 % of the students who did not take any research classes and they do not have any experience in the field, they said they often do that. They probably do that to make themselves familiar with the content.

Categories	Frequency	Percentage
Low (1-3)	1	17%
Varied (4)	0	0%
High (5-7)	5	83%

Table 3: Question 3

The third question showed that 83 % of the students, three of them had research classes before while two did not, often complete assigned readings before the instructor discusses them in class. Only one student, who is not familiar with such strategies, said he never does that representing 17% of the total.

Strategies	Frequency	Percentage
Top (d)	4	67%
Bottom (F)	6	100%

Table 4: Question 4

Question four represented a new type of questions: it dealt with ranking strategies used to encounter difficult course content from top to the bottom. Four students about 67% picked up the choice: "Rereading the difficult content" as their first option, while all respondents chose: "Avoid dealing with it immediately and assume it will become clearer with time" as their bottom choice. There is a clear difference between both groups of students in responding to the first choice, they totally agree on number F to be their last choice. It did not matter who took research class before or not.

Categories	Frequency	Percentage
Low (1-3)	0	0 %
Varied (4)	0	0 %
High (5-7)	6	100 %

Table 5: Question 5

Surprisingly, in question 5, all respondents, about 6 students, 100 %, said they often make an outline before writing a paper for a class. This may be indicative of the nature of graduate study which necessitates such well-organized way of thinking before writing a paper.

Categories	Frequency	Percentage
Low (1-3)	0	0%
Varied (4)	3	50%
High (5-7)	3	50%

Table 6: Question 6

Concerning question 6, asked about reviewing a paper before submitting it, 50% of the students “Three who took research class before” answered that they sometimes ask a colleague for reviewing, while the other 50% of students, those who did not take any research classes, about three students, said they often ask for peer review. This ratio may signify their lack of information about the sound professional strategies of research conducting.

Categories	Frequency	Percentage
Low (1-3)	0	0%
Varied (4)	0	0%
High (5-7)	6	100 %

Table 7a: Question 7a

Responding to question seven a, all the six students, about 100 % said that they use the internet search engine to find information at the library. Every graduate student is fully aware of how to use the library directory; it is a daily routine for novice researchers. This skill does not need an academic study or taking courses to master it.

Search engine	Frequency	Percentage
Google	1	17%
Google Scholar	4	66%
Libinfo.uark.edu	1	17%

Table 7b: Question 7b

In number seven B, the response was different: only one person, 17% chose Google to be his search engine, one chose Libinfo.uark.edu, and about four students, 66 % chose Google Scholar to be their internet search engine. It is worth noting that all the three students who took research classes before considered Google Scholar to be their first preferable search engine.

Categories	Frequency	Percentage
Low (1-3)	3	50 %
Varied (4)	1	17%
High (5-7)	2	33%

Table 8: Question 8

Asked in question 8 about whether they seek assistance from the reference librarian to locate information, the answer was surprising: one of the students who did not take any research classes said that he never asks for help whereas his peers said they often ask for help because they are not familiar with the system of the library. On the contrary, about 50% of the students who are familiar with the library said they sometimes ask for help when necessary.

Categories	Frequency	Percentage
Easy (1-2)	3	50 %
Neutral (3)	0	0%
Difficult (4-5)	3	50%

Table 9: Question 9

The most apparent discrepancy between the two groups came in question 9, when asked about finding appropriate resources for conducting a research assignment, 50% about three students who took classes before whether qual or quan courses replied that it is easy to find such research resources while the other three students find it difficult due to their inadequate information in the research field.

Reading hours	Frequency	Percentage
(0-2)hours	0	0%
(3-5) hours	4	67%
(6-8) hours	0	0%
Other	2	33%

Table 10: Question 10

Regarding question 10, about 67% of the students, three of them took research classes before, replied that they usually read approximately from 3 to 5 hours weekly. However, two students, about 33%, said that they read more than 8 hours weekly. It can probably be attributed to some difficulty related to the academic language and terminology used in these courses which may be hard to some of the international students who are still English language learners.

Strategies	Frequency	Percentage
Top (d)	4	67%
Bottom (F)	2	33%

Table 11: Question 11

As for question 11 which asks about the main aspects of a research course followed by students to achieve their goals, we found that 67%, about four students replied that they depended more on “Reinforcement/encouragement” and they chose number D as their first choice. While 33 % about two respondents chose number F as their last sixth choice. Such kind of questions has its specific features, i.e., it depends on each student’s attitude toward aspects of research and the best ways he/she sees that they have to select.

Gender	Frequency	Percentage
Female	2	33 %
Male	4	67 %

Table 12.1: Gender

Age	Frequency	Percentage
30-39	5	83%
40-49	0	0%
50-59	1	17%

Table 12.2: Age

Ethnicity	Frequency	Percentage
White	5	83%
Asian	1	17%

Table 12.3: Ethnicity

Degree	Frequency	Percentage
B.A	1	17%
Masters	5	83%

Table 12.4: Highest Degree

Number of courses	Frequency	Percentage
None	3	50%
1 - 4	3	50%

Table 12.5: Graduate Research Courses

5. Case Study

Six case studies were chosen to be interviewed and studied in this qualitative part of the research. The six students are graduate students, as shown in tables, five of them are Ph.D. students at University of Arkansas and only one student is doing M.Ed. at the same university. The sample included two female students and four male students. Five of the students are white while the fifth is Asian. Thus, the researcher combined between two types of data collection methods in order to increase credibility and validity of the study which one of its limitations was small sample size. However, one of the strong points of this study was that the three randomly selected students did not take any research classes at University of Arkansas and they said they did not study research in detail as a separate courses, but they only knew research techniques in their countries through the process of dissertation writing and even the strategies they used, they think, were not professional but just attempts of amateurs and novice researchers. Consequently, the researcher found this point to be a good one to build his hypothesis that there is an effect of previous research classes on the academic performance of the graduate students. The researcher did not use gender as an independent variable since the sample size was very small; in addition, he excluded age as a variable. He only focused on the perceptions of those graduate students toward strategies implemented in research process.

5.1. Case 1

The first case is a Ph.D. female student who got M.Ed at Curriculum and Instruction department U of A; she is currently doing Ph.D. in the same department. She took about two research classes at U of A. Although she is older than the other students selected, about

55, she is very energetic, well-experienced in research, and has a very open-minded personality. The best thing of selecting this case and another female student was first based on a previous intention of the researcher to include gender and age as variables affecting the dependent variable which was academic performance in research field.

She thinks that research is an “Academic pursuit“. She does not like the theoretical part in research, and when it comes to some abstract ideas, she finds herself lost. The very point of challenges of research classes stressed upon by most students participating in this study. She thinks that some classes often present abstract and symbolic content and that becomes a difficulty because if a student does not have any background knowledge then she is like scrambling. However, she believes if she does basically understand the content or she does understand the base of the methodology or has it touched on for it, she can move far more quickly and rapidly in terms of being able to apply new content, pretty much the Piagetian concept of assimilation and accommodation. She said that she likes social situation for studying, however, in some time, she prefers to study by her own to solidify what she is doing.

Asked about the instructional support, she said that she needs counseling to help her understand the content, she needs someone, actually the instructor, to show her the path and she will continue. The researcher asked her about her general perceptions about the process of becoming a proficient researcher, she answered that she can make judgment calls that are based on rational thought and supported by research. For her, that is a good space to be in. However, as she suspects like many people, the more she learns, the more she feels the less she knows.

5.2. Case 2

A female white Ph.D. student was selected randomly from a group of graduate students at University of Arkansas. She is 31 years old; she has a good experience of research because she had about four research classes at U of A. Her highest degree is a Masters in education at Curriculum and Instruction department.

When asked about her definition of research, she answered that the act of collecting information, whether it be through surveys, interviews or reviewing documents. All of this is basically in order to better understand a phenomenon or a problem or just maybe a question someone may have.

She responded to the second question after a long pause and with a long sigh saying that she is a hands-on type of person who likes to see things being done in front of her. She agrees with the researcher and some other participants that she does not like theoretical part of a research. She tends to get stuck or fixated on a theoretical component, which keeps her from understanding related concepts. Because of this, she has learned to look at the big picture. It’s much harder for her to understand theory without content or an example or even a chance to practice it.

Asked about the instructional support, she replied that she likes to have any kind of support like group study sessions. A peer may explain better than any expert, she thinks. She does not believe that she is a proficient researcher; instead, she has to do many studies before moving from a novice to a proficient researcher, since it is an ongoing process.

5.3. Case 3

The third person is 33-year-old male Asian Ph.D. student. He was randomly selected among a group of graduate students who were asked to respond to the survey and asked to be interviewed by the researcher. The good point here is that this person did not take research classes before, thus, this fact strengthens the hypothesis that there may be a statistically significant difference between the two groups of respondents.

He believes that Research is an extension of knowledge, looking for information, and examining some sort of phenomena. He thinks that the most challenging point of a research is lack of hands-on activities. He is afraid of taking any research class because of this point. When asked about what he needs from his instructor, he took a long pause and answered back with a question: “In any class? Or in research in particular?”, he replied that he needs the teacher’s support, continuous feedback, or at least a direct contact to get a support and feedback when needed.

His general perceptions about research are not clear yet, although he got Masters, he thinks that he is not a proficient in research, instead, he tries to do things better than required so, he needs his instructor’s support and sometimes encouragement. He stressed the idea that a proficient researcher is not an easy thing, it takes time and great effort.

5.4. Case 4

The fourth student is doing Masters in education at U of A. He is 32 years old, he said he did not take any research class before and most of the research papers he did were not professional, he used to ask for assistance from his teacher or a classmate. He is sure that a research paper for a class is completely different from that submitted to a conference or any research institution specialized in this field. A research for him is the active collecting of information. However, he thinks that the language barrier is a big challenge facing him to learn research. He said he tried one day to read through a research methods books but unfortunately he felt like he got lost because of difficult terminology. He said he likes to see applicable things not keep talking and talking about theories and terms most of which are not understandable to him.

Concerning instructional support, he expressed his need to find a kind of support from his teacher at least when a new content is being first introduced. However, he does not think that he will be one day a proficient researcher because he is not interested in this field, all he needs is to write a good paper for each class and get a degree.

5.5. Case 5

This 33-year-old Ph.D. student is a little bit different from the other respondents, he took Masters from Saudi Arabia, he finds some difficulty in understanding the content of a research class he is actually enrolled in this semester. This is the first research class he has taken, so, he thinks he will have a long way to reach proficiency. A research to him is collecting information about something which is weird or unclear. He faces challenges in Math, so, he thinks that research conducting is not related to his major and he should not study Statistics, instead, he should take other classes which serve his specialty. Since he is non-native speaker, he sometimes finds himself unable to understand his teacher's instructions, however, he prefers to ask his teachers more than his classmates to get some clarification.

5.6. Case 6

The sixth participant is 39-year-old Ph.D. student at the Curriculum and Instruction department, he got Masters in ESL education from U of A. He had three research classes: one qualitative and two quantitative classes. This semester, he is taking MMR class because he is interested in combining between both strands in his proposed study. He thinks that MMR will help him with his dissertation because he needs to do a sequential design combining between a survey and a focus group. For him the definition of research is not different from his classmates' definition: a systematic process of collecting, analyzing, and reporting data to benefit a certain field of study. He thinks that most of the challenges which face him are the theories and theoretical frameworks controlling research conducting. Another challenge facing him is some of the process need vision especially Statistics which depend mainly on graphs, visuals, and charts which may be sometimes confusing to him because he is a visually impaired. He stressed the idea of getting a feedback from the instructor as a learning experience, yet, he thinks proficiency in research needs time and practice in a real not virtual world.

After interviewing and recording the six case studies, the process of coding came, an analysis across the six cases took place to find out similarities and dissimilarities among the participants' responses. Tables of frequency were designed in Excel to examine the range between outliers and calculate percentage of each respondent in comparison to the other group members. Each theme had a code representing it, a formulated meaning, frequency of the respondent, and a significant statement asserting such theme. Themes were collected across all cases to show frequency. The tables below show how data was displayed after being coded.

5.6.1. Open-ended Questions

Theme	Code	Formulated Meaning	Context	Frequency	Percentage
Definition of Research	Active collecting information.	Looking for information.	A research involves gathering and collecting data. A systematic process of collecting analyzing and reporting data.	6	100%

Table 13: Question 1

In the first question of the four open-ended questions, approximately all the respondents agreed on a quite similar definition of research as a systematic process of collecting, analyzing, and reporting data with the purpose of looking for information. Their responses were nearly the same, thus, the theme of research definition was coded as "Active collecting information" and given a formulated meaning. This question had a high frequency about six respondents, 100 % said the same definition with different wording.

Theme	Code	Formulated Meaning	Context	Frequency	Percentage
Constructivist Attitude	Applicability of Research	Like to do things by themselves.	I really like to see things done in front of me, Application/applicable	3	50%
Language barrier	Difficult Terminology	Language being a big barrier	New vocabulary, terminology	3	50%

Table 14: Question 2

In the second question, a big discrepancy showed up between the two groups of the research-class takers and the non-research-class takers: the first group viewed the biggest challenge facing them in research is the non-applicability of most of the studies, they expressed their wish to apply what they are studying on the real ground, their response represented 50 % of the responses while the other group who did not take any research class said the biggest challenge facing them is the language barrier and the excessive terminology used in research. Their responses represented 50 % in the frequency table. Such responses better serve the research

questions about the graduate students' "Perceptions" toward research studies and the effect of the previous research classes on their attitudes toward research.

Theme	Code	Formulated Meaning	Context	Frequency	Percentage
Scaffolding	Instructional Support	Students need instructor's feedback as academic support	My instructor gives me more examples, Instructor being a facilitator,	6	100%
Group work	Group Study	Students look for classmates' help	I love it where there is someone who can walk me through a subject, peer helping.	4	66%

Table 15: Question 3

The third question showed a big similarity between the two groups in their views of the instructional support as a kind of scaffolding they need from their instructors in their study. Such theme, scaffolding, was coded as instructional support, it recorded high frequency among the six respondents: about 100 % agreed on the same theme. This similarity between all respondents bridged the gap between the two groups and proved that although they are different in their research strategies probably due to previous experience, they share the same views and perceptions of research.

In addition, about 66 % of the respondents stressed their need to group work such as group study sessions as important strategy required to better understand the content, two of them were RCTs and two were NRCTs. Such close views reflect their shared views.

Theme	Code	Formulated Meaning	Context	Frequency	Percentage
Collective work	Collaboration	Collaborate with other researchers	I like to share doing things, two heads are better than one.	5	83%
Practice	Ongoing research	Looking for doing real research	I'm a hands-on type of person, I like to do things on the ground	5	83%

Table 16: Question 4

Question four showed that 83 % of the respondents agreed on the theme of collaboration as a basis for general perceptions of research proficiency. Furthermore, about 83 % viewed that practice is necessary for achieving such proficiency.

6. Conclusions

After analysis of the data collected from both the survey as an instrument used for the quantitative part and the interview used in the qual part, the study showed that there is a significant difference between the first group of the research-class takers, (RCT) and the second group of the Non-Research-class takers, (NRCT) in favor of the first group, that means that the previous research classes had an effect on the study strategies implemented by graduate students to understand research content. It is evident that the RCT group followed much better professional strategies than the NRCT group whose responses showed less professional and sometimes unreasonable.

However, the study findings indicated that both groups had a fairly similar perception toward the concepts of research, challenges of the research process, the need to the instructor's support and feedback, the attitude to practice research process in reality. Based on the frequency tables in both the quan part represented by the survey and the interview which is the qual part of the study, both groups of graduate students, who took research classes and those who did not study research, significantly differ in their implemented strategies of research due to previous studies and approximately share the same general perceptions toward the research.

7. Limitations

This complementary mixed methods study showed to what extent the previous research classes may affect the graduate students' perceptions toward research strategies and how this drawn sample view such strategies. However, this study had some limitations as follows:

- This study used a very small sample size, about six graduate students including two female and four male students, the fact that findings can not be generalized to the whole population of graduate students at U of A.
- Time specified for the study was not enough, about three weeks, which are not sufficient to collect and analyze data being gathered from sample of graduate students who were busy getting ready for the midterm exams.
- Due to a very limited portion of time allowed, frequency tables were only used to analyze data and other statistical tests such as ANOVA tests were excluded in this study.

8. Recommendations

It is recommended that this study is to be done again with much larger sample to be more reliable in applying generalization. In addition, variables such as gender, age, or ethnicity may be investigated to check whether each of them would have an effect on academic performance and graduate students' perceptions toward research strategies. Furthermore, a sufficient time has to be allowed for collecting, analyzing, and reporting much more data sets to increase power of the study since the more sample size increases, the more representativeness of the population will be achieved.

9. References

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