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Research Article

Attitudes Toward Research and its Impact to Research Skills Development among Grade 12 students of Meycauayan National High School

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ABSTRACT

The primary concern of this paper was to relate how Grade 12 students of Meycauayan National High School perceived research subjects such as Practical Research 2 and how these attitudes toward research affected their research skills development.

With the purpose of bridging the link between the affective domains of learning to how students develop their research skills, the researcher administered the Attitude Towards Research (ATR) Scale and a Research Skills Assessment Test to 60 Grade 12 Senior High School students who took Practical Research 2 course. The researcher evaluated the impact of the students' attitudes toward research in five factors and were generalized as Post-ATR and was correlated to the Final Grades of the respondents in Practical Research 2.

Upon data analysis using t-test and correlational statistics, it was highlighted that participants were more focused on how Research subjects are with utmost relevance and usefulness to their everyday lives, though, many of them still gave concern on anxiety and difficulty of the subject. It was also evident that in general, how students feel about research has a great impact on how they develop their research skills.

Through this study that found that improved attitudes toward research significantly increased the students' research skill and with the help of the data analyzed in this paper, the researcher encourage teachers to not only focus on students' cognitive and psychomotor skills but to give equal importance as well with the attitudes toward research as these would contribute to students' overall research skill development.

Keywords*: Research skills development, Attitudes toward research, Active learning, Senior high school, Practical Research*

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Background

The ultimate goal of education is to deliver learning process holistically from different aspects as students are expected to acquire knowledge, strengthen skills and develop values, to become lifelong learners. This idea was raised by Bloom and his colleagues on the development of three learning domains: cognitive, psychomotor, and affective (Wilson, 2016). This framework enables students to learn in different ways and allows teachers to construct learning opportunities that will develop knowledge, skills, and attitudes (KSA).

However, for the last decades, there has been a paradigm shift where most school curriculums reflect scantly or not at all on the integration of affective domain in their undertakings. Moreover, among the three domains, teachers tend to focus more on cognitive and psychomotor learning as they believed students learn best through "brains" and "by doing". In the end, affective learning is listed as least priority.

To resolve that, this study was designed to give equal importance as well with affective learning and determine how students' affective perception on Research subjects be associated with their research skills development. Together with several research studies focused on how students' characteristics, behavior, perception, and attitudes be able to relate with learning (Awang et al., 2013; Janssen & O'Brien, 2014; and Langat, 2015), this study aimed to reinforce affective learning and finds the connection between students' attitudes towards research and their research skills. By doing this, the research study would be a great material to establish the link between the two given variables. Aside from that, Research teachers would have to innovate how to incorporate affective learning strategies in teaching research subjects that will generate better students' outcomes.

Statement of the Problem:

General Problem: How did the attitudes of Senior High School students of MNHS toward Research subjects affect the progress of their Research Skills?

Specific Research Questions:

1. What were the attitudes of Senior High School students toward their research subjects?
2. How can the students' research skills be described after taking up research subjects?
3. Could the students' attitudes toward Practical Research 2 influence how they develop their research skills in the course?

Research Hypotheses

H_o: There was no significant relationship between attitudes toward Quantitative Research and the development of Research skills among Grade 12 Senior High School students of MNHS.

H_a: There was a significant relationship between attitudes toward Quantitative Research and the development of Research skills among Grade 12 Senior High School students of MNHS.

Significance of the Study

The result of this research was deemed to have tremendous implications to the following:

Students. This study would primarily benefit the students of MNHS as to how they can develop their research skills meaningfully by considering their attitudes towards a subject they have thought to be complex like Research subjects. This would give them an insight to value their attitude towards Research and its impact to increase their level of Research skills.

Teachers. This research would trace back one of the factors in learning as teachers need to also consider the affective side of every student towards the subject. Teachers need to address the issue on level of research skills by contemplating on students' attitudes and being aware on its impact to research development skills.

Researchers. For other researchers who identified this kind of research topic interesting, specially to allow them to find another proof of the correlation present between affective nature of students to their skills development.

Scope and Delimitation

The study focused only on the attitudes towards Research subject of Grade 12 students of MNHS and its effect to their research skill development. The assessment was conducted over the course of one (1) semester, preferably during the First Semester of SY. 2018-2019, when students are taking up Practical Research 2 (PR2).

Methods

Research Design

The study used a descriptive- correlational design in which students are assessed by their attitudes towards Research subjects and through their research development skills. This connection built a relationship between the two variables as to whether students' attitudes towards research can be a predictor of their research development skills as shown on the conceptual paradigm of the study (Figure 1).

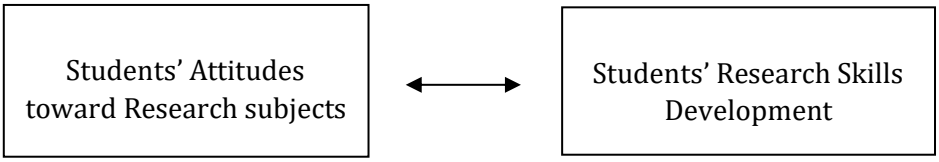

Figure 1. Conceptual Paradigm of the Study

Respondents and Sampling Method

The participants of this study were selected from all Grade 12 students who are currently taking up Practical Research 2. Specifically, the researcher utilized stratified random sampling to get a sample size of **60 students** from Grade 12- STEM, Grade 12- ABM, Grade 12- HUMSS and Grade 12- GAS, that best represented the population.

Proposed Innovation/Intervention/Strategy

The study was conducted by assessing the students' attitudes towards research subjects and their research development skills. Using existing research instruments, the researcher identified the relationship between the abovementioned variables. The tools were administered before the start of the course where the researcher will orient the participants about the nature of the study. Additionally, there was a regular monitoring of students' attitudes and skills through intervention of doing Active Learning Strategies. After the course, the researcher has discovered that there is students' improvement in terms of their attitudes and skills through post analysis procedures.

Instrument

To gather data, the researcher utilized the students' Attitude Towards Research (ATR) Scale developed by Papanastasiou (2002) and a researcher-constructed research skills assessment which is based on Gilmore and Feldon (2010). These two research instruments/assessment tools were administered to the sample before and after the semester.

Data Collection Procedures

Upon seeking for the approval from the School Head and proper authorities, the researcher assessed the students' Attitudes towards Research from the start of the semester. Then, series of classroom activities highlighting Active Learning were executed, that strengthened their attitudes towards research and enhance their research skills, will be implemented. Afterwards, the researcher evaluated their research skills and check how students develop both their attitudes and skills.

Ethical Considerations

The researcher asked the permission from the School Head to conduct the study in such a way that it will never obstruct the duties and responsibilities of the researcher. Once approved, the researcher revisited several literatures and reviewed them to give proper citation and acknowledgements. Additionally, the researcher reported findings as honest as possible to derive at the ultimate truth of the study. The participants of this study were selected and informed about the procedures without taking any possible risks or extra credit for their involvement.

Data Analysis

The researcher applied statistics to measure relationship between students' attitudes towards research and their research development skills. The researcher used the Statistical Package for Social Sciences (SPSS) to analyze the data and use Correlational Statistics that examined the relationship between the two variables.

Results and Discussion

Students' Attitude towards Research

In order to determine the students' attitudes, the scores given from the Attitude towards Research (ATR) Scale were analyzed and presented in a five (5) factor- ATR scale (Table 1).

Table 1. Five Factor groupings from ATR questionnaire

Classification	Items
Usefulness for the profession	2. Research should be taught to all students
	8. Research is useful for my career
	14. Research is connected to my field of study
	17. Research is very valuable
	20. The skills I have acquired in research will be helpful to me in the future
	21. Research is useful to every professional
	22. Knowledge from research is as useful as writing
	24. Research should be indispensable in my professional training
	27. I will employ research approaches in my profession
Research Anxiety	1. Research makes me anxious *
	6. I feel insecure concerning the analysis of research data *
	7. Research scares me *
	16. Research is stressful *
	18. Research makes me nervous *
	25. Research is complicated *
	28. Research is difficult *
	32. Research is complex subject *
Research Difficulty	9. I find it difficult to understand the concepts of research *
	10. I make many mistakes in research *
	11. I have trouble with arithmetic *
Research Attitudes	3. I enjoy research
	4. Research is interesting
	5. I like research
	12. I love research
	13. I am interested in research
	15. Most students benefit from research
	29. I am inclined to study the details of research procedures carefully
Relevance to daily life	19. I use research in my daily life
	23. Research is irrelevant to my life *
	26.Research thinking does not apply to my personal life *
	31. Research-orientated thinking plays an important role in my daily life

*- with negative implication (Recoded)

Aside from the classification of the five factors given in table 1, the participants were instructed about the items given with asterisk (*) as these define negative implications to avoid confusion. To analyze the data accurately, these items were recoded so that a higher response on each question corresponded to more positive attitudes toward research.

Baseline Data

Table 2. Pre-Assessment of Attitudes towards Research of students by Gender

Factors	Male = 30		Female = 30		Total = 60	
	Mean	SD	Mean	SD	Mean	SD
Usefulness for the profession	5.84	1.767	6.38	0.866	6.11	1.316
Research Anxiety	3.54	1.615	2.57	1.703	3.06	1.659
Research Difficulty	3.75	1.531	3.20	1.620	3.48	1.576
Positive Attitudes	5.23	1.549	5.73	0.851	5.48	1.200
Relevance to Life	5.18	1.887	5.48	1.161	5.33	1.524

Note: These items were rated on a scale of 1 to 7 where 1= Strongly Disagree (SDA) and 7= Strongly Agree (SA).

From Table 2 showing the students' ATR rating before the course, it was detected that both male and female participants strongly agreed on the usefulness of research to the profession with the mean rate of 5.84 and 6.38, respectively. The same pattern was observed on the mean rate of both genders on research anxiety with 3.54 for males and 2.57 for females.

With the help of the survey form to determine the research skills of the students before the course, the participants rated their skills as presented in Table 3.

Table 3. Pre-Assessment on the Average Level of Research Skills by Gender

Research Skills	Male		Female		Total	
	Mean	SD	Mean	SD	Mean	SD
a. Critical thinking	3.45	0.605	3.20	0.676	3.32	0.640
b. Organizing ideas	3.30	0.923	3.53	0.516	3.41	0.719
c. Finding information	3.55	0.759	3.53	0.834	3.54	0.796
d. Writing skills	3.35	0.587	3.20	0.676	3.27	0.631
e. Reading skills	3.65	0.671	3.40	0.828	3.52	0.749
f. Ability to analyze ideas from article	3.25	1.070	3.33	0.816	3.29	0.943
g. Oral communication skills	3.00	0.795	3.47	0.915	3.23	0.855
h. Ability to ask questions	3.35	0.933	3.93	0.704	3.64	0.818
i. Methodological knowledge	3.40	0.681	2.93	0.799	3.16	0.740
j. Sense of "big picture"	3.55	0.489	3.47	0.834	3.51	0.661
k. Time management	2.90	0.718	3.13	0.743	3.01	0.730
l. Ability to collaborate	3.45	1.050	3.60	0.632	3.52	0.841
m. Reviewing related literature	3.30	0.801	3.40	1.056	3.35	0.928
n. Interpretation of statistical results	3.40	0.940	3.13	0.640	3.26	0.790
o. Capacity to draw generalization/ summary	3.40	0.995	3.33	0.617	3.36	0.806

Note: These items were rated on a scale of 1 to 5 where 1= no ability and 5= expert ability.

As observed in table 3, female participants had highest mean rate of 3.93 on "ability to ask questions" while male participants preferred "reading skills" with a mean rate of 3.65.

Generally, participants from both genders had given quite a low rate on "time management" with 2.90 for males and 3.13 for females.

Research Skills Groupings and its relation to students' ATR

To relate the research skills of students to their attitudes of students towards research prior to the intervention, the researcher classified the participants based on their score as to following: Below Average (≤45), Passing (46-

50), Fair (51-55), Good (56-60) and Very Good (61and above).

Table 4. Average ATR rating from different Research Skills groupings

Factors	Below Average		Passing		Fair		Good		Very Good	
	X	SD	X	SD	X	SD	X	SD	X	SD
Usefulness	5.85	1.24	5.44	1.95	6.06	1.89	6.58	0.41	6.78	0.39
Anxiety	2.94	1.79	3.45	1.31	2.95	1.69	3.63	2.17	3.71	2.31
Difficulty	3.30	1.59	3.81	1.52	3.30	1.51	3.50	1.56	4.66	1.07
Attitude	5.17	0.97	5.20	1.63	5.14	1.62	5.82	0.57	6.24	1.02
Relevance	4.79	1.76	5.11	1.94	4.58	2.08	5.69	1.23	5.00	1.69

Table 4 shows the distribution of ATR rating of student in different groupings. Clearly, students with positive remarks in "usefulness", "attitude" and "relevance" had generally a notable research skills rating at the beginning of the course. It was manifested with a high rate of 6.78, 6.24 and 5.00, respectively. On the other hand, students with negative remarks in "anxiety", and "difficulty" tend to have poor research skills rating.

Relationship of Students' ATR and their Research Skill Development

After a semester for completing the requirements for Practical Research 2 and a series of Active Learning Approaches such as debate, drills, presentations, problem-based learning (PBL), and many other related activities implemented in and out of the class, the researcher came up with the final grades of the participants from the subject to determine the final rating for the participants' research skills development.

Table 5. Correlation of Five Factors from ATR to Research skills in Practical Research 2

	Usefulness	*Anxiety*	*Difficulty*	*Attitude*	*Relevance*	*Post-ATR*	*Level of Research skills*
Usefulness	1						
Anxiety	-0.2483	1					
Difficulty	-0.24631	0.624613	1				
Attitude	0.918527	-0.12374	-0.08985	1			
Relevance	0.877473	-0.20516	-0.09232	0.844004	1		
Post-ATR	0.386736	0.159217	0.096203	0.358918	0.319689	1	
Level of Research skills	0.12996	-0.21827	-0.02340	0.012593	0.090813	0.524447	1

From table 5, it was observed that both "Anxiety" and "Difficulty" had negative correlation coefficient with the other factors and most importantly with the Final Grade in PR2. On the other side, "Usefulness", "Attitude" and "Relevance" had positive correlation coefficient with one another and with the Final Grade in PR2. In terms of magnitude, majority of the factors had little relationship either positive or negative. But the most important data was reflected at the correlation between Post-ATR and the Final Grade in PR2 with 0.52447 showing a high positive relationship between the two variables.

Table 6. Hypothesis Testing for Correlation Coefficient

	Mean	Variance	N	R	Df	t stat	t Critical
Post-ATR	156.97	252.440	60	0.524	58	3.49	2.445
FG in Research	83.371	25.534	60				

To make a decision using hypothesis testing, table 6 shows the t statistics for correlation coefficient. At 1% significance level, the value of t stat is 3.49 which is greater than the t critical of 2.445 and falls at the rejection region. Hence, the null hypothesis would be rejected and could be concluded that there is a positive relationship between Attitudes towards Research among students and their Final Grade in PR2.

Discussion

The study was carried out to determine whether students' attitudes toward Research could be related to their Research skills development. This study explored the participants perception on five dimensions called as factors from the given ATR survey questionnaire. It was found out that based on table 2, the respondents found research as useful for their future profession. Together with the analysis made by Papanastasiou (2005), people feel favorably to activities that they find useful especially in their lives. The same way participants gave more concern on the relevance of research to everyday lives. This was also manifested in table 5 where "Usefulness" had a strong positive relationship with "Attitude" and "Relevance". Despite that, there are also several participants who identified "Research Anxiety" and "Difficulty" as two of the major factors to consider in dealing with the students' attitude. As presented by Kakupa (2019), while most view research as useful, it could necessarily lead to liking research, thus, reducing research anxiety.

As supported by the Handbook for Research Skills Development developed by University of Adelaide (2009), students could report their research skills in a self-assessment gained from pre- and post- course intervention. Based on the baseline data, generally, participants are aware of their academic standing and noted different skills as their expertise in the field. However, respondents are very honest especially when they pointed out "time management" to be the real dilemma. Since, Senior High School in the Philippines is considered quite as young program in the curriculum, students found difficulty on adjusting time resources with the addition of Research subjects which are typically new to them.

Based on past literature, many researchers supported the relationship between attitude and academic achievement (Oguan, Bernal & Pinca, 2014). This study in accordance with Abun, et al. (2019) identified that Attitudes Toward Research (ATR), is a good telling factor that the students' Research Skills Development (RSD) as cognitive and affective towards research can affect their intention to conduct research. It was reinforced with the rejection of the null hypothesis and acceptance of alternative hypothesis of stating that there is a positive relationship between ATR and RSD. Although related to each other, thereare some other factors that must be considered such as sample size, race, socio-economic status, age and readiness, and others.

Conclusion

This study revealed that there is a significant relationship between how students feel about research and how they develop their research skills along the course. Therefore, it was noteworthy to focus on facilitating Active Learning Approaches in classrooms and engage students to research to enhance their attitudes towards the subject. Educators need to find time to increase the students' positive attributes and diminish the level of anxiety and the feeling that the subject is difficult.

Recommendation

The researcher highly recommended the duplication of this work on a different setting. It was also suggested to use mixed method research in analyzing the qualitative aspects of students' attitudes toward research.

Students were also advised to be aware of their feelings and perceptions to research, with the equal focus given to cognitive and psychomotor skills. They could attend research conferences, seminars and/or be part of a research club for them to develop positive attitudes.

In the end, teachers were encouraged to be aware of their students' attitudes not just in research but across different subjects to foster deeper understanding on how students learn best.

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