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**RESEARCH ARTICLE**

**Research Competence among Public Senior High Teachers of District 1 in Ifugao Province**

**Joseph M. Ducyao Jr.**

*Master of Arts in Education Major in Educational Management, University of Baguio, General Luna Road, Baguio City, Philippines*

**Corresponding Author:** Joseph M. Ducyao Jr., **E-mail:** 20193510@s.ubaguio.edu

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**ABSTRACT**

Teachers are one of the prime movers in helping students to come up with efficient and effective research outputs. In relation, the purpose of this study is to determine the research competence of public senior high teachers in District 1 of Ifugao Province. A descriptive design was used in the study. A questionnaire and assessment were used to gather data from 64 volunteer teachers from the different public schools with senior departments using a total enumeration sampling. The tool was both adapted and a researcher-made questionnaire. Data were analyzed through Excel and SPSS. The finding revealed that teachers have adequate knowledge and a positive attitude but with fair skill and assessment toward research. The teacher's profiles such as number of years handling research, highest educational attainment, and number of researches produced have significant differences in their level of knowledge and assessment toward research except number of research-related training and seminar attended while only the number of years in handling research have significant differences on their level of skill toward research whereas the profiles have no significant differences on their level of attitude. In general, teachers need to increase their knowledge, skill, and assessment toward research by practicing and utilizing what they already know and joining still to research-related training and seminars while sustaining their positive attitude. A research seminar plan was proposed based on the results of the study.

**KEYWORDS**

Assessment, attitude, knowledge, research, research competence, skill

**ARTICLE INFORMATION**

**ACCEPTED:** 02 July 2023

**PUBLISHED:** 11 July 2023

**DOI:** 10.32996/jweep.2023.5.2.5

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**1. Introduction**

Research is dominant in every field, not only in education but also in other fields. It helps to improve the jobs and lives of the people wherein its focus is to attain and explore quality and knowledge that embodies solutions to problems following a scientific and methodical style (Kapur, 2018). Indeed, countries such as France (Campus France, n.d.), China (Gu et al., 2019), Japan (Pavone, 2019), United States (Staddon, 2020), Russia (Schiermeier, 2020), Singapore (Sharma, 2017), South Africa (Ekrem, 2020), India (Jameel & Ayyar, 2019), and Philippines (RTI International, n.d.) among others are dealing with research to attain the country's objectives such as strong development, big economy, fruitful business, quality education, successful technology, and a wealthy lifestyle. Meanwhile, in an educational setting, there are lots of topics that need to be researched like instructional improvement, clarity of learning outcomes, learner-critical factors toward excellence, and educational equity. Once these researchers addressed these problems then it is said that these researches are significant enough (Daniel, 2020). Specifically, it will help to build knowledge, facilitate learning, decide on a student's career path, enhance motivation, and develop collaboration (Union Journal Staff, 2021). In this study, it is about research competence.

However, some challenges hinder the performances and competence of researchers. Specifically, in the case of teachers, they are experiencing difficulties in the data analytical process (Yalcin & Yalcin, 2017), not enough required knowledge, skills, and adequate resources (Tegegne, 2019; Faribi et al., 2019; Suyo-Vega et al., 2020), insufficient time and research training research training (Leonard & Wibawa, 2020). Similarly, in the country, some of the challenges are the struggle with design and methodology predominantly related to statistical knowledge and ability (Dapiawen, 2017; Manongsong & Panopio, 2018; Basilio & Bueno, 2019;

Gepila et al., 2018; Anub (2020)), time (Mejia & Salcedo, 2020), literature review and research conceptualization (Toquero, 2021; Tindowen, 2019), and anxiety in writing and conducting the study, assignment research aside from their research to be conducted, and lack of analysis of the quantitative and qualitative data to identify the issues to be investigated (Bullo et al., 2021).

These are the concepts of the research process wherein teachers should be able to understand or induce the basic knowledge and skill in each different research process to have better assistance both to themselves and others, particularly their students. Teachers may have differences in specializations, intelligence, coping mechanisms, and skills but when these concepts are added to their understanding and if synergized together, they may build a team who can mold accurate results and outputs after general review, comments, feedback, and suggestions done by themselves.

Indeed, research is seen to help students to develop good discipline, values, and ethics and enhance their knowledge and their skills to create their research output beneficial to the community (Sumbawati & Anistiyasari, 2018; Hegde & Karunasagar, 2021; Tabuena & Hilario, 2021).

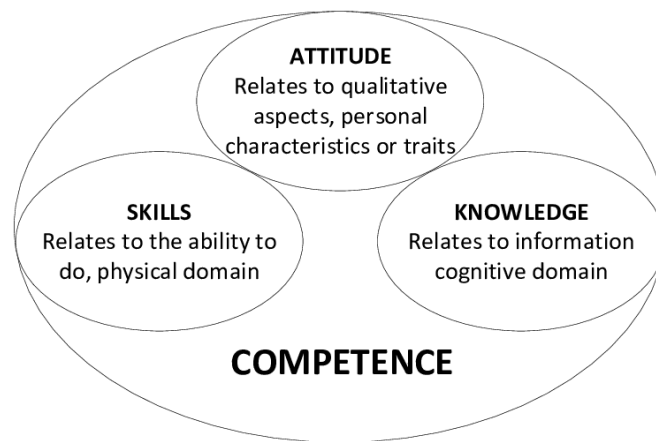
As mentioned above, countries are doing research for development and betterment and the competence may be varied from one country to another but the goal is always the same, that is, to see and experience a better change employed and carried by graduates who are ready and prepared to apply 21<sup>st</sup> Century Skills, other essential skills, and competences in the world of work and life.

The Philippines has adopted 2-year in high school known as the senior department wherein teachers will teach Practical Research; Inquiries, Investigation, and Immersion; Research or Capstone Project, and research is an inclusion under English and Filipino subjects (DepEd, 2018; DepEd, 2019). The Department of Education (DepEd) made an adoption of the basic education research agenda in which the school's division to stakeholders shall adopt the agenda and encourage teachers to be researchers on educational concerns, issues, or platforms (GOVPH, 2016; GOVPH, 2017; DepEd, 2017).

Therefore, it is beneficial to highlight the development and improvement of teachers' competence to better portray change and transformation of both teachers' and learners' endeavors as well as society (Gepila, 2020), considering that research subjects are newly merged into the curriculum.

Competence is a mixture of knowledge, skills, and attitudes where: a) knowledge is composed of the facts and figures, concepts, ideas, and theories that are already established and support the understanding of a certain area or subject; b) skills are defined as the ability and capacity to carry out processes and use the existing knowledge to achieve results; c) attitudes describe the disposition and mindsets to act or react to ideas, persons or situations (European Commission, 2018).

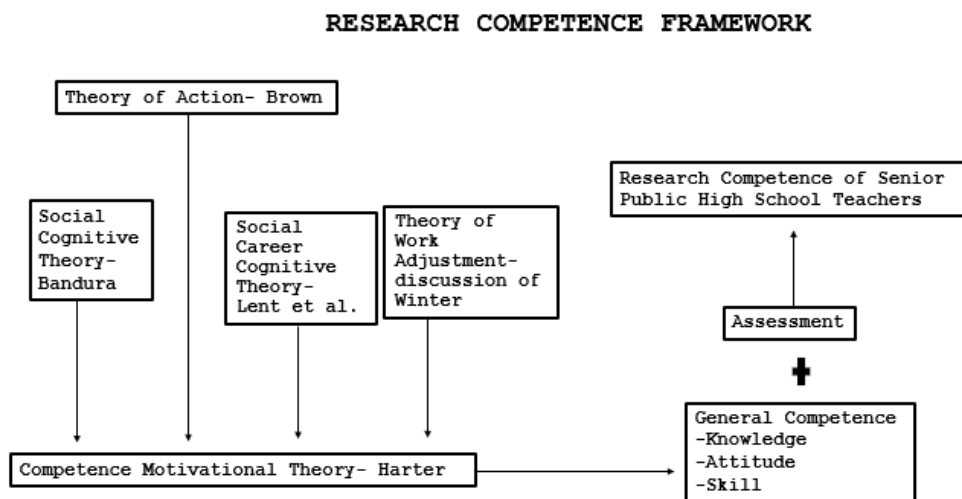
**Figure 1.** Diagram of Competence



Concerning the study, a teacher must acquire competence to have better management and approach when handling, doing, or teaching research. Concepts or components of competence can be summarized by the diagram used by Tumbas et. al (2019) shown in Figure 1.

This study is supported by the **Competence Motivation Theory**, Harter (1978) posited that competence motivation acts as an enrichment of a person's abilities but there are factors that can affect competence such as cognition, affection, and skill which are based on the **Theory of Social Cognitive (Bandura, 1991)**, **Social Career Cognitive Theory (Lent et al., 1994)** wherein these abilities should be aligned on the **Theory of Work Adjustment (Winter, n.d.)** in order for it to be more successful.

**Figure 2.** Research Competence Framework



Meanwhile, teachers should also follow the six elements of the **Theory of Action** (Brown, 2017) in doing, teaching, or dealing with research. Meanwhile, Watson (1994) stated that in achieving competence, there should be an assessment. The framework of the study was summarized by the researcher as shown in Figure 2.

Previous studies did not include assessments to determine teachers’ research competence but recommended to have more research on the research competence of senior high school teachers. In particular, this current study will provide an additional literature review on this topic aiming to determine the level of knowledge, attitude, skill, and assessment towards research as perceived by the teachers that can identify their level of research competence when the (1) number of years of handling research, (2) highest educational attainment, (3) number of researches produced, and (4) number of research-related training and seminars attended are considered; and conduct a general workshop program about research as an output.

The pandemic was considered which restricted travel and transportation therefore, the locale was limited to District 1 of Ifugao only wherein it is focused on the responses of public senior high teachers only, and thus cannot be generalized in all disciplines in the educational institutions. In addition, the study is limited to the knowledge, attitude, and skill towards research as perceived by the teachers and an assessment of research in identifying their research competence considering four profiles only in which other variables will not be taken into major consideration.

**2. Methodology**

The study employed quantitative research following the descriptive design. The instrument was adapted and modified from Mejia and Salcedo (2020) for the knowledge towards research (35 items); Caingcoy (2020) for the attitude (15 positives and seven negative statements); and a researcher-made for the skills (26 items) which were based from the knowledge indicators while the assessment (20 items-primary and 6 items-secondary) was adapted from the internet (Benzo et al., 2020; Danvers & Desai, 2008; Gray, 2020; The Open University, 2017) for the primary while the secondary was a researcher-made. The questionnaire containing the respondent’s profile was evaluated, validated, and approved by the university tool validator before it was presented to the 64 volunteer participants with their profiles shown in Table 1.

Table 1. Profiles of Teachers

Profiles	Categories	Frequency	Percentage
1	0	30	46.88
	1-3	15	23.44
	4-6	13	20.31
	7-9	0	0
	10 or more	6	9.37
Total		64	90.63
2	1	8	12.5
	2	34	53.12

	3	15	23.44
	4	7	10.94
	5	0	0
	Total	64	100
3	0	15	23.44
	1-3	39	60.94
	4-6	5	7.81
	7-9	5	7.81
	10 or more	0	0
	Total	64	100
4	0	53	82.81
	1-3	11	17.19
	4-6	0	0
	7-9	0	0
	10 or more	0	0
	Total	64	100

Note for Category of profile 2: 1- Bachelor's Degree, 2- Bachelor with Master Units, 3- Master's Degree, 4- Master with Doctor Units, 5- Doctor's Degree

Pandemic protocols, consents and approvals from authorities, authors, and participants, and ethical considerations were obliged. Scaling was used for the participants to respond to the general competence items and statements. Regarding knowledge towards research, the choices ranged from not knowledgeable (1) to highly knowledgeable (4). For the attitude towards research, it was scaled from strongly disagree (1) to strongly agree (4) wherein the positive statements had (1) as the lowest and (4) as the highest while the negative statements had (1) as the highest and (4) as the lowest. Meanwhile, the perceived skill was mounted from not skilled (1) to highly skilled (4). The University Statistician helped in treating the data for accuracy of results in which Mean (M) and Standard Deviation (SD) were used for the descriptive questions while the inferential questions utilized ANOVA for profiles 1, 2, and 3, and T-Test for profile 4 incorporating Tukey Test. Level of significance was .05 for the inferential general competencies while .85 for the inferential assessment.

### 3. Results and Discussion

#### 3.1 Level of Knowledge Toward Research

Table 2 shows that the level of knowledge toward research by teachers was adequate, expressing that they are knowledgeable about the competencies and can perform, do, handle, or teach research with extra support, guidance, or training. Supported by Anub (2020), teachers were competent in the technical aspect of research involving its format, major, and other parts. Teachers viewed that research was significant to everyday life, wherein research-based outputs were beneficial in enhancing instructional conveyance. Further, they can also easily formulate specific questions for the study and can identify directly to whom the study will benefit. Additionally, Abun et al. (2019) also found that teachers strongly agree that research is important for enriching their knowledge and useful for their career which is indispensable for their professional training.

Table 2. Level of Knowledge Toward Research, N = 64

Research Topics	Mean	SD	Type
1. nature or characteristics of research	2.61	0.68	AK
2. importance of research in life	2.91	0.76	AK
3. review of related literature	2.52	0.71	AK
4. review of related studies	2.50	0.66	FK
5. background of the study	2.56	0.70	AK
6. definition of terms used in the study	2.67	0.77	AK
7. significance of the study	2.67	0.79	AK
8. expected outcome of the study	2.58	0.70	AK
9. scope and limitations of the study	2.59	0.74	AK
10. theoretical or conceptual frameworks	2.42	0.61	FK

11. paradigm of the study	2.31	0.66	FK
12. research objectives	2.53	0.71	AK
13. research questions or problems	2.45	0.68	FK
14. research hypothesis	2.42	0.77	FK
15. methodology	2.41	0.63	FK
16. research design	2.42	0.61	FK
17. population of the study	2.63	0.72	AK
18. data instrument or tool	2.42	0.70	FK
19. data gathering procedure	2.47	0.75	FK
20. treatment of data	2.22	0.74	FK
21. ethical consideration	2.52	0.77	AK
22. presentation of data	2.44	0.75	FK
23. analysis of data	2.33	0.77	FK
24. interpretation of data	2.36	0.76	FK
25. results of the study	2.48	0.71	FK
26. summary of findings	2.47	0.73	FK
27. conclusions	2.53	0.75	AK
28. recommendations	2.64	0.74	AK
29. references	2.55	0.68	AK
30. updated APA format	2.36	0.78	FK
31. title page	2.56	0.68	AK
32. acknowledgment	2.69	0.63	AK
33. table of contents	2.70	0.68	AK
34. list of tables or figures	2.56	0.63	AK
35. appendices	2.59	0.70	AK
<b>OVER ALL</b>			
	<b>2.52</b>	<b>0.60</b>	<b>AK</b>

On the contrary, Manongsong and Panopio (2018) indicated that teachers evaluated themselves as competent in terms of technical, major, and other parts (Suyo-Vega et al., 2020) of research as well statistical tools or treatment and development of research design (Dapiawen, 2017; Yalcin & Yalcin, 2017); however, these were some of the indicators with the lowest rank because not every teacher was knowledgeable on treating different kinds of data as to why faculty were recommended to consult their university statistician for proper guidance demonstrating that support is still needed in doing their research.

Indeed, knowing the parts of research will help someone to attain the objectives of the activity since a process will be taken while knowing its importance will act as a guide to continue the activity until it is finished. However, there is a need to be resourceful to know the parts, types, processes, or kinds of research and to know the next steps to be undertaken. It does not mean that a person is obliged to know everything about research but at least to know the basics. Generally, teachers still need to help themselves to be familiarized with the other parts or processes of research while sustaining what they already know.

### 3.2 Differences in the Level of Knowledge of Teachers in terms of their Profiles

Table 3 presents that there is a significant difference in their perceived knowledge of research considering profiles 1, 2, and 4. It means that teachers' knowledge of research has something to do with the span of engagement in doing or handling research ( $F(3, 60) = 7.276, p < 0.05$ ), graduate school experience ( $F(3, 60) = 7.196, p < 0.05$ ), and researches they have worked on ( $t(62) = -2.492, p < 0.05$ ).

Using Tukey HSD Test, it showed that teachers with 4 to 6 years had significantly higher knowledge compared to others with 0 years of handling research. Teachers with Masters' degrees with Doctor Units had higher knowledge levels compared to teachers with Bachelor's degree with MA units while teachers with Master's degree had significantly higher knowledge levels compared to teachers with Bachelors' degree and teachers with Bachelors' degree with MA units. On the other hand, teachers with 1 to 3 researches had a significantly higher knowledge of research than teachers with no research output.

Indeed, the K-12 curriculum is still new as well as the teachers in which they have four common research subjects being handled such as Practical Research 1; Practical Research 2; Inquiries, Investigation, and Immersion; and Research or Capstone Project while it is inclusion for English and Filipino subjects (DepEd, 2018; DepEd, 2019).

Table 3. Differences in the Level of Knowledge of Teachers in terms of their Profiles

ANOVA RESULTS						
Profile	Sources	Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	6.063	3	2.021	7.276	0.000
	Within Groups	16.665	60	0.278		
2	Between Groups	6.013	3	2.004	7.196	0.000
	Within Groups	16.714	60	0.279		
3	Between Groups	1.596	3	0.532	1.511	0.221
	Within Groups	21.131	60	0.352		
T-TEST RESULT						
4	Std. Error Difference		df	Mean Difference	t	Sig. (2-tailed)
		0.19125	62	-0.48	-2.492	0.015

As anticipated, Dapiawen (2017) testified that graduate school faculty had an expert level of knowledge on the parts of research papers and had a high capability of completing different research activities. In relation, Enero and Limjuco (2017) found that higher education institution faculty can enumerate research methods & tools that are used to interpret the findings of particular research as well as its components and concepts. They also know the kinds of research and understand research concepts as well as research ethics. Teachers have undergone their Masters and Doctors schooling in which they have made their researches. Additionally, Caingcoy (2020) mentioned that teachers should have exposure to research as early as possible while prioritizing teachers to professional advancement to be able to achieve higher productivity.

**3.3 Level of Attitude Toward Research**

Indicators 16-22 were rescored and followed the positive statement's description and interpretation. Table 4 displays that teachers have agreeable attitudes indicating that they have a positive attitude to perform, do, handle, or teach research. The result is corroborated by the studies of Ghalley (2021), Caingcoy (2020), Ulla et al. (2017), Anzaldo and Cudiamat (2019), and Galarion, (2018) in which teachers agreed that research is a contributor to unlocking new knowledge, mode to the development of a new skill, beneficial for promotion, and means of sharing ideas and experiences.

Table 4. Level of Attitude Toward Research, N = 64

Your attitude towards research as:	Mean	SD	Type
1. a guide to influence the design and structure of teacher education programs	3.08	0.57	A
2. a valuable for the improvement of the teaching-learning process	3.19	0.66	A
3. a way to develop optimism in the teaching-learning process	3.20	0.62	A
4. an act to better understanding of the teaching-learning problems	3.20	0.64	A
5. an essential to professional training	3.20	0.56	A
6. a basis for teaching contents	3.17	0.67	A
7. a contributor to unlock new knowledge	3.31	0.61	A
8. a framework for building a better affection	3.17	0.65	A
9. a mode to the development of a new skill	3.30	0.60	SA
10. as a means of sharing ideas and experiences	3.25	0.64	A
11. a beneficial for promotion	3.30	0.63	SA
12. an enjoyable activity	2.84	0.77	A
13. an interesting activity	2.94	0.75	A
14. as a help to prepare teachers to engage in research	3.23	0.63	A
15. a scaffolding to teachers in conducting, doing or teaching research	3.31	0.63	SA
16. a stressful endeavor	2.28	0.78	A
17. a challenging activity	2.16	0.91	A
18. a time-consuming activity	2.03	0.87	A
19. an expensive activity	2.16	0.85	A
20. an insignificant activity	2.80	0.90	D
21. a contributor to anxiousness	2.47	0.90	A
22. an additional obligation	2.22	0.91	A
<b>OVER ALL</b>	<b>2.90</b>	<b>0.47</b>	<b>A</b>

However, even though a generally positive attitude was demonstrated toward research, the respondents and other teachers agreed that research is time-consuming, challenging, expensive, and an additional obligation (Tindowen et al., 2019; Ghalley, 2021; Abun et al., 2019; Bullo et al., 2021).

On the other hand, research is an activity that follows a process that requires good time, extra money, and enough effort to be able to finish it. However, being resourceful, efficient, and understanding while maintaining a positive attitude to do research will help in establishing a teacher to achieve improvement. Indeed, the reason why teachers instill high affection in valuing to do research is for them to become better educators (Basilio & Bueno, 2019).

Winter, (n.d.) discoursed that one of the abilities of a person is attitude, whereas if it corresponds with his role, then a satisfactory appreciation will be received in exchange for better performance. Relatively, teachers' rewards in writing research are unlocking of knowledge, skill development, and promotion serving them to initiate a positive attitude leading them to perceive optimism toward research.

### 3.4 Differences in the Level of Attitude of Teachers in terms of their Profiles

Table 5 illustrates that all of the profiles of the respondents have no significant difference in the level of attitude towards research. It means that regardless of the number of years handling research, highest educational attainment, number of research-related training and seminars attended, and researches produced, their level of attitude towards research are all the same.

Table 5. Differences in the Level of Attitude of Teachers in terms of their Profiles

ANOVA RESULTS						
Profile	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	0.105	3	0.035	0.15	0.929
	Within Groups	13.956	60	0.233		
2	Between Groups	1.082	3	0.361	1.668	0.183
	Within Groups	12.978	60	0.216		
3	Between Groups	0.09	3	0.03	0.129	0.942
	Within Groups	13.97	60	0.233		
T-TEST RESULT						
4	Std. Error Difference		df	Mean Difference	t	Sig. (2-tailed)
	0.15428		62	-0.26	-1.687	0.097

On the contrary, Akcoltekin et al. (2017) saw that professional seniority showed a major effect on attitudes toward educational research in which teachers with 1-5 years of professional seniority had more positive attitudes than those teachers with more than 5 years of professional seniority. Also, Albalawi and Johnson (2022) found that there was a significant difference in the number of training courses a teacher attended which had a significant impact on how teachers viewed their capability to investigate and validate the outcomes of research. However, in this study, most of the teachers are new and only a few of them have joined training and seminars related to research but that does not affect how they see research. Research has pros and cons as reflected by teacher’s responses in this study. This is backed up by the research of Ulla et al. (2017) wherein the teachers finished their research because it was a requirement for their graduate degrees and the only reason they did research was their motivation to be promoted. Definitely, in this generation, a graduate degree is needed before getting a higher position.

Some of the respondents have experience in producing research and the researcher is certain that those who already have research will continue to produce more because they already know most of the steps considering that DepEd will give some funds to the outputs once guidelines are achieved (DepEd, 2020) while those teachers who do not have yet will be encouraged to move and work on the topics they want to study and produce. This kind of motivation will let them possess a highly positive attitude toward research. Indeed, Khan et al. (2018) exposed that rewards influence research in which it was shown that reward systems or incentives had a great impact on research activities inside the campuses wherein their interest was enhanced as well while posing a positive attitude toward research. All in all, the result is substantiated in Table 4.

**3.5 Level of Skill Toward Research**

Table 6 demonstrates that participants are fairly skilled in research indicating that they can hardly perform the competencies toward research without support, guidance, or training. All of the 26 identified research activities or tasks are evaluated as fairly skilled. The top indicators with lowest means which are also found out by other researchers like Basilio and Bueno (2019), Yalcin and Yalcin (2017), Oestar and Marzo (2022), Albalawai and Johnson (2022), Abinan (2021), and Bullo et al. (2021) are constructing research instrument, creating research titles, selecting an appropriate statistical tool to analyze data, filtering of research topics, making theoretical-conceptual framework, inferring data accurately, and presentation of results in a coherent manner.

Table 6. Level of Skill Toward Research, N = 64

As a teacher, I am skillful in the following research activities/tasks.	Mean	SD	Type
1. filtering of research topics	2.23	0.68	FS
2. selecting research topics	2.30	0.60	FS
3. creating research titles	2.19	0.63	FS
4. construction of the background of the study	2.33	0.64	FS
5. formulation of research questions	2.34	0.67	FS



6. handling of beneficiaries	2.39	0.74	FS
7. signifying scope and limitations of the study	2.42	0.75	FS
8. selecting relevant literature to be used in the current study	2.34	0.69	FS
9. managing of data and information from different literatures	2.31	0.63	FS
10. recording literatures and related studies	2.31	0.70	FS
11. making theoretical-conceptual framework	2.23	0.68	FS
12. constructing of meaning of the terms used in the study	2.39	0.74	FS
13. choosing an appropriate research design	2.41	0.72	FS
14. selecting study sites appropriately	2.33	0.71	FS
15. picking the sample or population of the study	2.33	0.73	FS
16. constructing research instrument	2.13	0.63	FS
17. proposing proper data gathering procedure	2.31	0.68	FS
18. selecting appropriate statistical tool to analyze data	2.19	0.63	FS
19. imposing appropriate ethics in research	2.39	0.72	FS
20. gathering data accurately thru observation, interview or survey questionnaire	2.41	0.70	FS
21. presenting of data using tabular, graphical or textual form.	2.30	0.68	FS
22. inferring data accurately	2.23	0.63	FS
23. presentation of results in coherent manner	2.23	0.70	FS
24. creating a logical summary of the study	2.33	0.64	FS
25. drawing conclusions from research findings	2.33	0.69	FS
26. framing recommendations based on conclusions	2.34	0.69	FS
<b>OVER ALL</b>	<b>2.31</b>	<b>0.57</b>	<b>FS</b>

It was a common observation that engaging with statistical tools or data analysis is quite difficult and based on the informal sharing of the participants, most of them were not mathematically inclined. Indeed, other teachers from different schools were also seeking help from statisticians or experts who can help them to do the treatment of data (Manongsong & Panopio, 2018; Yalcin & Yalcin, 2017). Meanwhile, knowledge and skill go hand in hand to be an effective and efficient person in doing activities like research. Relatively, in this study, teachers have fair skills in the tasks or activities about research considering that some of the knowledge part indicators also showed fair knowledge as revealed in Table 2. Generally, teachers are still coping with the necessary skills in the different competencies, parts, or processes of research.

### 3.6 Differences in the Level of Skill of Teachers in terms of their Profiles

Table 7 explains that only profile 1 has a significant difference on teacher's level of skill indicating that their skill depends on the timeline they were handling research ( $F(3, 60) = 8.517, p < 0.05$ ). Using Tukey Test, it revealed that teachers with 1 to 3 years, 4 to 6 years, and 10 or more years of handling researches had significantly higher skills compared to teachers with 0 years of handling research. Indeed, the more teachers experience longer in service, the more they will handle and will be competent in research (Abinan, 2021).

Table 7. Differences in the Level of Skill of Teachers in terms of their Profiles

ANOVA RESULTS						
Profile	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	6.182	3	2.061	8.517	0.000
	Within Groups	14.517	60	0.242		
2	Between Groups	1.933	3	0.644	2.06	0.115
	Within Groups	18.766	60	0.313		
3	Between Groups	0.642	3	0.214	0.64	0.592
	Within Groups	20.057	60	0.334		
T-TEST RESULT						
4	Std. Error Difference		df	Mean Difference	t	Sig. (2-tailed)
		0.19048	62	-0.15	-0.791	0.432

Further, Abinan (2021) also found out that the highest educational attainment, seminars and training research attended, and research exposure was not significantly related to the level of competence of teachers towards research in which teachers are still updating their educational qualification, joined merely at local seminars or training like regional or divisional level, and only produced up to three researches only.

On the contrary, Enero and Limjoco (2017) revealed that teachers with graduate degrees can define, describe, identify, and classify research; illustrate and convey research schemes and functions; discuss research concepts, logics, and ethics; label or outline research components; and enumerate research methods and tools to interpret findings signifying that they were putting into practice the learnings about research. Moreover, Anub (2020) indicated that teachers with engagement in mass training for applied subjects possess adequate research skills and knowledge than those teachers who have joined the seminars for both the mass training for applied subjects and training on sampling designs and have not yet attended any seminar related to research subjects. It could be better if the focus is prioritized to learn a certain topic one at a time. However, most of the respondents of this present study have limited seminars and training attended and showed fair skill toward research.

**3.7 Level of Assessment Toward Research**

**a) Primary Assessment**

European Commission (2018) discussed that competence is a mixture of knowledge, skills and attitudes. An application to understand competence is by doing an assessment in which the knowledge, skills, and attitudes will be applied that is accompanied by samples of performance, workplace observations, and prior achievements (Watson, 1994). Meanwhile, three of teachers did not answer the primary assessment and they were not included in identifying the teachers' research assessment. Questions with no answers were given zero points. Table 8.1 delivers that the level of assessment of respondents toward research was typified as fairly competent implementing a developing proficiency level toward research.

Table 8.1 Level of Assessment Toward Research, N = 61

Score	Frequency	Percentage	Type
16 - 19	2	3.28	Very Competent
12 - 15	19	45.90	Adequately Competent
8 - 11	31	44.26	Fairly Competent
4 - 7	9	6.56	Not Competent
<b>Mean=10.42</b>			<b>Fairly Competent</b>
<b>Total</b>	61	100	

In the meantime, the result of the primary assessment is corroborated by the respondent's level of skill as shown in Table 6 whereas they have fair skill toward research. Also, they were fairly knowledgeable on other parts of the research as presented in Table 2. Moreover, the result of the primary assessment was confirmed by the secondary assessment as shown in Table 8.2 in which teachers only answered the questions that they were familiar with.

**b) Secondary Assessment**

Table 8.2 shows that as the question goes on, the number of teachers answering the questions decreases. In casual discourse, other teachers have shared and written in the questionnaire that they do not know how to solve, construct, or answer, and are not aware nor forgot how to answer the questions. The secondary assessment is used as a springboard in validating the primary assessment in which they only tried answering the questions that they knew. Some of them only answered one or two questions with complete and incomplete answers and only 5 of them tried to answer all of the questions but most of them only answered questions 1 and 2. Indeed, Lent et al. (1994) in their Social Career Cognitive Theory claimed that if people see themselves as competent in executing their tasks or jobs to have a better result; then, they will modify a stable interest in the activity, otherwise, they will not be interested once they feel they are not competent in doing it.

In the following discussion, answers that include the name of their schools were not included as examples.

Table 8.2 Number of Teachers who Answered the Secondary Assessment, N = 34

Application Questions	Number of Teachers Answered	Mean Score	Expected Points per Question
Question 1	24	4.33	5
Question 2	24	3.42	5
Question 3	15	2.33	5
Question 4	12	2.92	5
Question 5	11	5.18	10
Question 6	6	3.83	10

Specifically, when the answers of the teachers (n = 24) to the first question **“Suggest a good title for the study including POEM (population, outcome, exposure, method).”** were analyzed, most of their answers (n = 12) were *“Relationship or Correlation of Teaching Strategies and Grade 10 student's performance in Mathematics in Ifugao Private Schools”* which was aligned to the provided case while other teachers (n = 6) have provided *“Impact or Effect of Teaching Strategies in Mathematics Performance among Grade 10 students in Ifugao Private High School”* which meets the given scenario but slightly answered the question while others (n = 3) wrote *“Improving Mathematics Performance through Peer Tutoring/Teaching Strategies”* which was still related to the topic but did not completely answer the question and the rest of them (n = 3) have provided answers unaligned to the given scenario such as *“Assessment of Mastery...”, “Factors affecting the behavior of students in electricity...”, “Perception of Public-School Teachers to Research...”*. Although teachers have a fair assessment as shown in Table 8.1 and fair skill specifically in creating research titles as shown in Table 2, still it can be said that teachers can create good titles based on a given scenario. Further, after the answers of teachers (n = 24) to the second question **“Provide 5 factors that could be considered in formulating, selecting or conducting the research topic/title?”** were analyzed, even though some of them only provided 1, 2, or 3 answers, they were categorized and the top 5 factors that they knew were sources/references (n = 9), time (n = 7), relevance of the study (n = 7), enough knowledge (n = 6), cost (n = 5), and interest (n = 4) while others enumerated location of the study, population of the study, and objectives of the study. Indeed, teachers have adequate knowledge on how to search on review of related literatures to be used on their topics which was shown in Table 2 and agreed that research is expensive and relevant at the same time as shown in Table 4, it is still

good for them to know other factors that can be considered when working with researches. Meanwhile, when the answers of teachers ( $n = 15$ ) to the third question **“Write two descriptive type of research questions.”** were analyzed, few of the teachers ( $n = 3$ ) provided a common answer which was aligned with the given scenario such as *“What is the level of mathematics performance among grade 10 students of private high school in Ifugao?”* and *“What are the strategies used by the teachers in teaching Math”* while the rest ( $n = 12$ ) tried to give good answers but not aligned to the given scenario such as *“What is the level of satisfaction of students in the modular distance learning?”*, *“How do Gen Z and Millennials differ from the fashion preferences in New York?”*, *“What features do the best laptops have?”*, *“How often do you exercise?”* *“How regularly do you go on a vacation trip?”*, *“How often do you buy apps for games purposes?”*, *“How much time do you spend on watching Tiktok videos?”*, and *“Is there a correlation between teacher's performance to research studies?”* while others provided hanging answers like *“what percentage”*, *“How much”*, *“using how and what”*, *“Qualitative”*, and *“Quantitative”*. Based on their provided answers, it can be gleamed that they are aware that the descriptive research questions usually start with “what” and “how” but some of them have confusion with the inferential question which usually starts with “Is there a significant...”. Generally, they have difficulty in creating research questions from a given scenario. In the meantime, after the answers of the teachers ( $n = 12$ ) to the fourth question **“Write two inferential type of research questions.”** were analyzed, similarly with question 3, teachers are aware that inferential questions usually start with “Is there a significant relationship...” but only few of them ( $n = 4$ ) listed common answers like *“Is there a significant relationship between teachers' highest degree attained and students' mathematics performance?”*, *“Is there a significant relationship between teachers' age and student's mathematics performance?”*, *“Is there a relationship between teaching strategies in the academic performance of Grade 10 in Mathematics?”*, *“Is there a relationship between teaching strategies in the academic performance of Grade 10 in Mathematics?”*, *“Is there a significant effect of teaching strategies to Grade 10 students' performance in Math?”*, and *“Is there a significant effect of teachers' profiles on students' performance in Math?”* and the rest of them ( $n = 8$ ) have either provided hanging, incorrect, or unaligned answers such as *“How many”*, *“How far/depth”*, *“Is the average body mass index (BMI) of the pupils differ from 8.2kg?”*, *“Is the average content of Soda X less than 330 ml as indicated in the level?”*, *“What is the mean score of the control group before the implementation of the bar model or visualization tool?”*, *“What is the mean score of the control group after the implementation of the bar model or visualization tool?”*, and *“Does age affect the performance of students in mathematics?”*. It can be said that teachers have confusion between descriptive and inferential questions. On the other hand, when the answers of teachers ( $n = 11$ ) to the fifth question **“Create a conceptual framework using IVDV approach.”** were analyzed, only one teacher ( $n = 1$ ) have created an Independent Variable-Dependent Variable (IVDV) approach which was aligned to the given scenario following two boxes wherein the first box was the profiles of teachers and teaching strategies with an arrow pointing to the second box indicating the mathematics performance of grade 10 students while some of them ( $n = 5$ ) knew and aware of the approach but they have placed incorrect or only focused to students or teachers as the populations with variables such as students emotional intelligence as IV and learning outcomes as DV, whereas the rest of them ( $n = 4$ ) have created Input-Process-Output (IPO) approach and one of them ( $n = 1$ ) just enumerated 4 steps without any arrows and boxes which are 1) choose your research question, 2) select your independent and dependent variable, 3) visualize your cause-and-effect relationship, and 4) identify other influencing variables. It can be said that the system approach and IVDV were being interchanged by the teachers. In the meantime, after the answers of the teachers ( $n = 6$ ) to the sixth question **“Problem Solving”** were analyzed, only one of them ( $n = 1$ ) solved the problem following the provided formula while the rest ( $n = 5$ ) tried to solve it and stopped at the middle of the solution process and others did not arrive the correct answer.

For some reason, the answers of teachers on the secondary assessment can be associated with their scores on the primary assessment. Supplementary, it can be said that respondents need to utilize their learnings and experiences to a greater extent to achieve a better score in an assessment of research topics.

### **3.8 Differences in the Level of Assessment of Teachers in terms of their Profiles**

Table 9 exemplifies that only profiles 1, 2, and 4 have significant differences in the teacher's level of assessment toward research. It means that timeframe in handling research ( $F(3, 57) = 1.508, p < 0.85$ ), graduate school experience ( $F(3, 57) = 2.963, p < 0.85$ ), and researches made ( $t(31) = -2.08, p < 0.85$ ) had an effect in obtaining a good score in a research assessment.

Table 9. Differences in the Level of Assessment of Teachers in terms of their Profiles

ANOVA RESULTS						
Profile	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	38.82	3	12.94	1.508	0.222
	Within Groups	489	57	8.578		
2	Between Groups	74.54	3	24.85	2.963	0.04
	Within Groups	478	57	8.386		
3	Between Groups	4.286	3	1.429	0.156	0.926
	Within Groups	523.5	57	9.184		
T-TEST RESULT						
4	Std. Error Difference		df	Mean Difference	t	Sig. (2-tailed)
		0.19125	31	-0.9	-2.08	0.046

Using Tukey HSD Test, it revealed that teachers with 4 to 6 years of handling research had a significantly higher level of assessment than those with 0 years of handling research, teachers with Master with Doctors' Units have a higher level of assessment compared to teachers with Bachelor's Degree, and teachers with 1 to 3 researches produced had a higher score than teachers with zero.

The result is supported in Tables 2, 3, 6, and 7 in which the number of years in handling research helps to increase the level of knowledge and skill toward research which are determinants to be able to answer a question.

Anyhow, practicing the Theory of Action which is regarded as a 'route map' will be a great help in working out what needs to be transpired (Brown, 2017) while balancing and matching the necessary work competence can mitigate a positive performance in the workplace with satisfactory rating (Winter, n.d). Moreover, being updated with the different factors and concepts as it was discussed in the Social Cognitive Theory and Social Career Cognitive Theory (Lent et al., 1994; Bandura, 1991) will help teachers to determine the needs to be considered to attain and be motivated to enrich competence thru an improvement process (Harter, 1978).

**4. Conclusion and Recommendation**

The general competence of teachers has something to do with their number of years in handling research, highest educational attainment, and the number of researches produced under knowledge and assessment, while only the number of years in handling research effects skill. It means that as their profiles increase or become higher, it will help them to gain an increased or higher general competence as well. The general competence of teachers may be further improved by providing more avenues for exposure to research while taking their own researches and graduate studies, maintaining their positive attitude by joining or practicing school or DepEd research activities, collaborating with other senior high teachers or experts, providing support from DepEd thru training or seminars for them to practice and apply their learnings based on their experiences. Still, it is encouraged that teachers should join research-related training and seminars to acquire new knowledge and skill in terms of research. The research seminar program that may be adopted, proposed or designed by the school research coordinators may consider the findings of this present study to augment the research competence of public senior high school teachers. Lastly, further study is recommended to figure out the needs in terms of research considering that research subjects are still new in the new curriculum.

**Statements and Declarations:** This research received no external funding. The author declares no conflict of interest.

**Acknowledgements:** The researcher would like to thank the **Almighty Father** for his strength, good health, knowledge, wisdom, and guidance. In the same way, he would like to extend his sincerest gratitude and appreciation to the following people who are instruments in the completion of this research.

**Dr. Vilma Deponio**, his research teacher in Thesis Writing 1; **Mr. Lexter Eligio** and **Ms. Erenlyn Ariston**, his classmates; **Dr. Aida Dapiawen**, the Dean of the School of Teacher Education and Liberal Arts (STELA) at the same time acted as his panel in his Proposal, Pre-final, and Final Defense; **Dr. Thea Suaco**, **Ms. Jenett Flores**, and **Dr. Marivic Mutong**, his panel members in his Proposal, Pre-final, and Final Defense; **Dr. Julius Gat-eb**, his adviser; **Ms. Leny Estacio**, his tool validator; **Ms. Rhoda Marie Carbonel** and **Ms. Jacqueline Bonifacio**, his ethics reviewers; **Mr. Miguel Villacruz**, his statistician; **Dr. Manuel E. Caingcoy**, **Dr. Myla Mejia**, and **Dr. Renato Salcedo** for allowing him to adopt your questionnaires; **Dr. Soraya T. Faculo** and **Dr. Isabel Bongtiwon**, **Principals/School Heads**, and **Teachers** for allowing him to conduct and distribute the questionnaires to the schools and for accommodating him to get in touch with the teachers and for answering the questionnaires; **OM Shaila Marie Buada**, **OM Alpha Gacasan**, **Coach Theresa Retuyan**, and **Coach Haryelle Mae Bato**, his Sitel supervisors; **OM Daisy Dulay** and **UM Nina Katrina Dulnuan**, his Concentrix supervisors; **Mr. Russell Rembrandt Paud**, **Mr. Ronaldo Dimmangna**, **Mr. Marval Pedro**, **Mr. Joel Buyagawon**, and **Ms. Mirasol Lamuton**, for giving hospitality, time to visit the different schools, and answers to his research queries. Significantly, his **parents and siblings** for motivating him to finish the thesis no matter what especially to his big brother **Jameson Ducyao** for helping him with his travel expenses.

He wanted to thank you for being part of his Thesis journey.

-THGIRENO-

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