

Exploring Factors Associated with Teachers' Research Competence in Talisayan District, Misamis Oriental: A Multiple Linear Regression Analysis

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ABSTRACT

This study examined the factors associated with teachers' research competence among secondary public-school teachers in the Talisayan District, Misamis Oriental. It employed a quantitative descriptive-correlational design and involved 105 teachers selected from a population of 145 through proportionate stratified sampling. A researcher-developed, multi-component instrument assessed demographic characteristics; perceived time, resources, research training, institutional support, mentorship, and technology; and research competence in terms of knowledge, skills, and attitude. Data were analyzed using frequency, percentage, mean, standard deviation, one-way analysis of variance, Kruskal-Wallis H test, Spearman rank correlation, and multiple linear regression. The institutional factors were perceived at a moderate level

overall (grand mean = 3.17), with institutional support rated highest ($M = 3.37$) and technology lowest ($M = 2.99$). Most respondents demonstrated advanced research knowledge (79.15%) and a high research attitude ($M = 3.51$), yet 76.19% were classified as novice in research skills. Perceptions of institutional factors differed significantly only by civil status, while research competence did not significantly differ across age, sex, civil status, or teaching experience. Institutional factors had a moderate positive relationship with research competence ($r = 0.506$, $p < .001$); however, no factor independently predicted competence in the regression model. The findings indicate that teacher research competence develops through the combined influence of time, resources, training, institutional support, mentorship, and enabling technology. A coordinated capability-building approach emphasizing hands-on research production, mentoring, resource access, and sustained institutional support is therefore recommended.

Keywords: *teacher research competence, institutional support, research training, research mentorship, professional development, multiple linear regression*

INTRODUCTION

Teacher engagement in research is an important dimension of continuing professional development because it enables educators to identify instructional problems, examine classroom practices, evaluate interventions, and use evidence in decision-making. Research competence is not limited to knowledge of concepts and procedures; it also involves the practical skills needed to design, conduct, analyze, and communicate research and the attitudes that sustain inquiry. When these dimensions are strengthened, teachers are better positioned to act as reflective practitioners and to contribute to school improvement (Borg, 2021; Creswell, 2020).

In Philippine basic education, teacher research is supported by policies that position inquiry as a mechanism for instructional improvement and institutional learning. The Basic Education Research Agenda and Research Management Guidelines encourage teachers and school leaders to conduct studies aligned with

classroom, curriculum, governance, and learner needs (Department of Education, 2016, 2017). The Governance of Basic Education Act of 2001 and the Enhanced Basic Education Act of 2013 likewise emphasize school-based innovation and continuous professional development (Republic of the Philippines, 2001, 2013). These mandates establish research participation as a professional and institutional responsibility rather than an optional academic activity.

Despite these policy directions, teachers frequently encounter conditions that limit their capacity to translate research expectations into completed studies. Heavy teaching and non-teaching responsibilities reduce the time available for research; insufficient access to funding, journals, software, and reliable internet constrains data gathering and analysis; and limited opportunities for training and mentorship weaken confidence in research design, statistics, and academic writing (Jomoad et al., 2021; Teig et al., 2019; Tingabngab & Binayao, 2023). These challenges may be more pronounced in rural and resource-constrained districts where teachers often perform multiple functions and have fewer opportunities to participate in research-related professional development.

The Talisayan District reflects this concern. Although the district promotes research during professional activities, participation in research congresses has remained limited, and teachers have identified workload, inadequate training, restricted resources, and insufficient technical guidance as barriers to initiating and completing research. Existing studies have largely examined teacher research in urban or well-resourced contexts, leaving limited localized evidence on how institutional conditions collectively relate to research competence among teachers in smaller rural school systems. The study therefore examined teachers' demographic characteristics, perceived institutional factors, and research competence; tested differences and relationships among these variables; and determined whether the identified factors singly or jointly predicted competence. The evidence was intended to guide practical interventions for strengthening the district's research culture.

Literature Review

Teachers' Research Competence

Teachers' research competence is a multidimensional construct that integrates knowledge, skills, and attitude. Research knowledge includes understanding research problems, designs, ethics, data analysis, and reporting procedures. Research skills involve the ability to formulate questions, review literature, develop instruments, select methods, analyze evidence, and communicate findings. Research attitude includes interest, motivation, confidence, and the perceived value of inquiry for professional practice (Borg, 2013, 2021; Smith & Lee, 2018). Competence is incomplete when one component is weak: teachers may understand research conceptually but remain unable to perform research tasks, or they may possess skills but lack the confidence and motivation to apply them.

The Research Skills Development framework describes inquiry competence as a progression from identifying and clarifying problems to locating information, evaluating evidence, organizing data, communicating results, and acting ethically (Willison, 2018). This progression supports the use of multiple forms of assessment rather than relying exclusively on self-report. Objective tests can capture conceptual knowledge, performance tasks can demonstrate applied research skill, and attitude scales can describe teachers' willingness to engage in inquiry. Such a comprehensive approach is particularly important when teachers' theoretical understanding may not correspond with actual research production.

Research engagement also develops through experience and sustained professional learning. Teachers who participate in research training, conduct classroom-based studies, receive feedback, and disseminate findings are more likely to build confidence and methodological fluency. Conversely, limited experience in writing proposals, analyzing data, presenting at conferences, or publishing findings can create a gap between knowing research and doing research (Borg, 2010; OECD, 2021; Tingabngab & Binayao, 2023).

Institutional Conditions for Teacher Research

Time and workload are consistently identified as central conditions affecting teachers' participation in research. Public-school teachers balance classroom instruction, assessment, documentation, administrative assignments, and community responsibilities, leaving limited uninterrupted time for reading, data analysis, and writing. When schedules are inflexible and non-teaching duties are extensive, teachers may postpone or discontinue research despite recognizing its professional value (Jomoad et al., 2021; Teig et al., 2019). Family and personal responsibilities may further shape how teachers experience these time demands (Lopez et al., 2022).

Resources are equally important because credible research requires access to journals, databases, funding, facilities, software, and dependable connectivity. Resource scarcity can limit the scope and quality of studies, increase personal expenses, and reduce motivation (Jomoad et al., 2021). Technology supports literature retrieval, data management, statistical analysis, collaboration, and dissemination, but access alone does not guarantee competence. Teachers also require the knowledge and confidence to use digital tools appropriately (Darling-Hammond, 2023; OECD, 2022).

Institutional support influences whether research becomes embedded in school culture. Supportive administrators establish clear policies, allocate time and resources, recognize research contributions, facilitate access to data, and encourage teachers to share findings. Such conditions promote research self-efficacy and participation, whereas inconsistent support contributes to low productivity and weakens the sustainability of school-based inquiry (Omar, 2022; Salazar-Clemeña & Almonte-Acosta, 2021).

Research Training, Mentorship, and Collaboration

Structured research training strengthens methodological knowledge, practical skill, and confidence. Effective programs move beyond lectures and provide hands-on experience in problem formulation, proposal development, instrument construction, data analysis, interpretation, manuscript writing, and publication. Sustained and relevant professional development is more likely to improve research competence than isolated seminars because participants receive repeated opportunities to apply concepts and complete outputs (Matjašič & Vogrinc, 2025; OECD, 2021).

Mentorship complements formal training by providing technical guidance, feedback, emotional support, and modeling throughout the research process. Experienced mentors can help novice researchers refine questions, select methods, address ethical concerns, interpret statistical findings, and respond to reviewers. Timely feedback also increases persistence and confidence, particularly when teachers encounter unfamiliar procedures (Hattie & Timperley, 2023). Collaborative research groups and Learning Action Cells can extend this support by enabling peer review, shared problem-solving, and collective use of limited resources.

Training and mentorship are most effective when supported by enabling institutional conditions. A seminar may increase knowledge but will not necessarily produce research if teachers lack time, data access, funding, or continued coaching. Similarly, technology may facilitate analysis but cannot replace methodological understanding. The literature therefore suggests that teacher research competence is shaped by an interconnected system of support rather than by a single intervention (Matjašič & Vogrinc, 2025; UNESCO, 2021, 2022).

Policy and Professional Context

The Department of Education has established mechanisms intended to strengthen basic education research. DepEd Order No. 39, s. 2016 identifies priority areas under the Basic Education Research Agenda, while DepEd Order No. 16, s. 2017 provides structures for research management, technical review, funding, dissemination, and utilization. DepEd Order No. 35, s. 2016 institutionalizes Learning Action Cells as a venue for collaborative professional development and inquiry. Together, these policies provide a formal basis for school-level research support (Department of Education, 2016, 2017).

The Continuing Professional Development Act also recognizes lifelong learning as a professional obligation, while national education laws support innovation and school-based decision-making (Republic of the Philippines, 2001, 2013, 2016). The continuing challenge is translating these policy provisions into consistent local practice. School systems need to ensure that teachers experience not only encouragement but also concrete

time allocation, accessible resources, practical training, mentorship, recognition, and opportunities to disseminate completed work.

Theoretical and Conceptual Framework

The study was anchored in Social Cognitive Theory, which explains competence and behavior through the reciprocal interaction of personal factors, environmental conditions, and action. Within this perspective, teachers' research knowledge, skills, and attitudes develop through practice, feedback, observation, successful experiences, and supportive conditions. Time, resources, training, institutional support, mentorship, and technology function as environmental factors that may strengthen or constrain research self-efficacy and engagement.

The conceptual framework treated the six institutional factors as independent variables, teachers' research competence as the dependent variable, and age, sex, civil status, and years of teaching experience as intervening demographic variables. The interaction of these variables provided the basis for identifying intervention priorities. The original schematic structure was retained and refined for publication clarity in Figure 1.

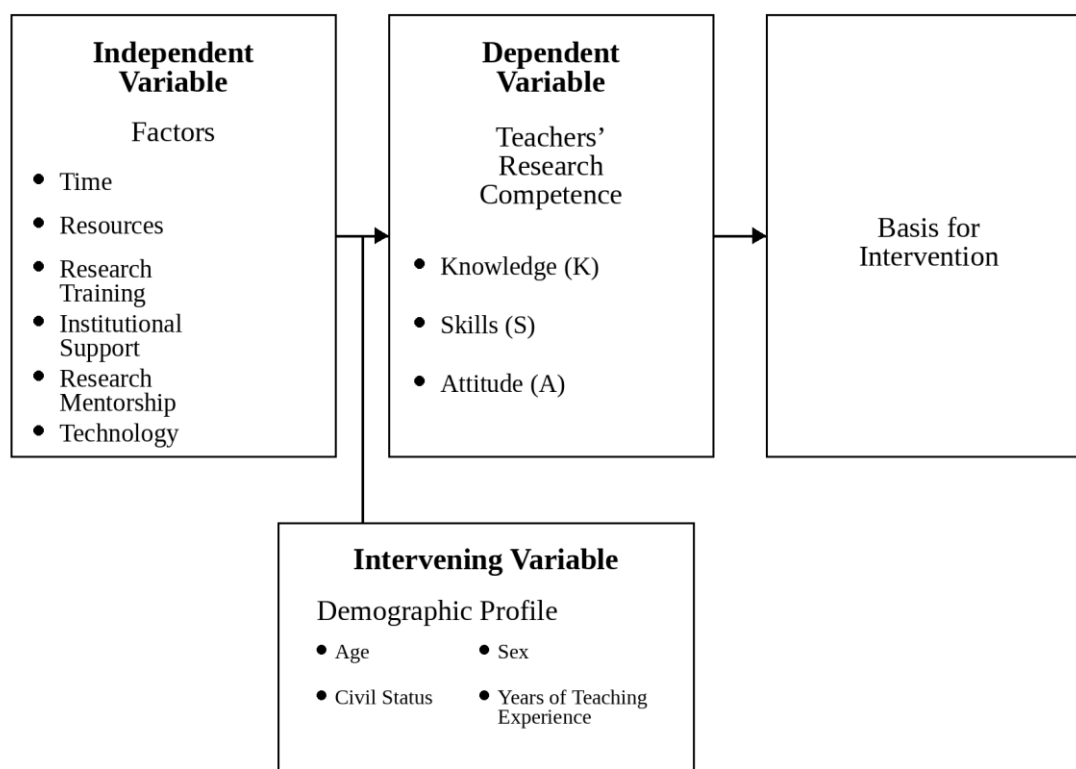


Figure 1. *Schematic Diagram of the Study*

METHODS

Research Design

The study employed a quantitative descriptive-correlational design. The descriptive component summarized the respondents' demographic profile, perceptions of institutional factors, and levels of research knowledge, skills, and attitude as they naturally occurred. The correlational component examined the association between the institutional factors and research competence, while multiple linear regression tested whether any

factor significantly predicted competence. The design did not establish causality but provided evidence regarding the direction, strength, and combined pattern of relationships among the variables (Creswell & Creswell, 2018).

Research Locale

The study was conducted in the secondary public schools of Talisayan District, Division of Misamis Oriental. The participating schools were Mandahilag National High School, Sta. Ines National High School, Talisayan National High School, Sta. Ines Senior High School, and Talisayan Senior High School. These schools differed in size, staffing, location, access to research resources, and exposure to professional development. The variation provided an appropriate district-level context for examining teachers' research competence under both relatively supported and resource-constrained conditions.

Participants and Sampling Technique

The population consisted of 145 secondary public-school teachers. Slovin's formula with a 0.05 margin of error yielded a sample of 105 respondents. Proportionate stratified sampling was then applied, with each school treated as a stratum, to ensure representation according to the number of teachers in each school. The final distribution included nine respondents from Mandahilag National High School, 21 from Sta. Ines National High School, 50 from Talisayan National High School, six from Sta. Ines Senior High School, and 19 from Talisayan Senior High School.

Research Instrument

A researcher-developed, multi-component instrument was used. The first component gathered age, sex, civil status, and years of teaching experience. The second measured teachers' perceptions of time, resources, research training, institutional support, research mentorship, and technology through five-point Likert-scale items. The third assessed research competence through an attitude scale, a performance-based research skills assessment, a research experience inventory, and a 40-item objective knowledge test.

The research skills assessment was aligned with the Research Skills Development framework and included statistical reasoning, methodology, ethics, literature review, and research planning tasks (Willison, 2018). Performance responses were scored using an analytic four-level rubric. Tables of Specifications were prepared for the skills and knowledge components to ensure coverage of content domains and cognitive levels. The instrument underwent expert content validation by specialists in statistics, education, and learning resources, followed by pilot testing among ten secondary public-school teachers who were excluded from the final sample.

Data Gathering Procedure

Approval was obtained from the Public Schools District Supervisor and the principals of the participating schools, together with institutional ethical clearance. Eligible teachers received an orientation and informed-consent form explaining the purpose, procedures, voluntary nature, confidentiality safeguards, and right to withdraw. The researcher personally administered the instruments according to the proportional allocation per school. Completed responses were checked for completeness and consistency, and valid data were encoded in a secure database for analysis.

Data Analysis

Frequency and percentage described the demographic profile and categorical competence levels. Mean and standard deviation summarized perceptions of the six institutional factors and research attitude. One-way analysis of variance tested differences in perceptions of institutional factors across profile groups. Kruskal-Wallis H tests examined differences in research knowledge, skills, and attitude. Spearman rank correlation determined the strength and direction of the relationship between institutional factors and research competence, and multiple linear regression assessed the individual predictive contribution of time, resources, research training, institutional support, mentorship, and technology. Statistical decisions were made at the .05 level of significance.

Ethical Consideration

The study protected participants' autonomy, privacy, and professional welfare. Participation was voluntary and did not affect employment status, performance evaluation, or workplace relationships. No names, employee numbers, or directly identifying school assignments were included in the analytical dataset. Paper records were secured, electronic files were password-protected, and access was limited to the researcher. Results were reported in aggregate form and used solely for academic and developmental purposes. Artificial intelligence tools were limited to language and formatting support and were not used to generate data, alter analyses, or replace the researcher's interpretation.

RESULTS AND DISCUSSION

Profile of the Respondents

Table 1. *Demographic Profile of Teacher-Respondents (N = 105)*

Variable	Category	f	%
Age	20-29	23	21.90
	30-39	46	43.81
	40-49	26	24.76
	50 and above	10	9.52
Sex	Male	28	26.67
	Female	77	73.33
Civil status	Single	26	24.76
	Married	76	72.38
	Widowed	3	2.86
Teaching experience	1-5 years	31	29.52
	6-10 years	39	37.14
	11-15 years	15	14.29
	16-20 years	13	12.38
	21 years and above	7	6.67

The respondents were predominantly in the 30-39 age group (43.81%), female (73.33%), married (72.38%), and had six to ten years of teaching experience (37.14%). The profile indicates an early-to-mid-career workforce with substantial classroom experience but potentially competing professional and family responsibilities. This context is important because demographic characteristics may shape teachers' perception of available time and support even when they do not directly determine research competence.

The distribution also shows that the district included both beginning and experienced teachers, allowing the study to examine whether research competence differed by career stage. Prior research suggests that experience alone does not guarantee current methodological competence when opportunities for updated research training remain limited (Insorio, 2024).

Perceived Institutional Factors

Table 2. *Summary of Perceived Institutional Factors*

Factor	Mean	SD	Interpretation
Time	3.28	0.894	Moderate
Resources	3.10	0.884	Moderate
Research training	3.17	0.856	Moderate
Institutional support	3.37	0.969	Moderate
Research mentorship	3.12	0.913	Moderate
Technology	2.99	0.947	Moderate
Grand mean	3.17	0.911	Moderate

Scale: 1.00-1.50 = Very Low; 1.51-2.50 = Low; 2.51-3.50 = Moderate; 3.51-4.50 = High; 4.51-5.00 = Very High.

All six factors were rated moderate, producing a grand mean of 3.17. Institutional support received the highest mean ($M = 3.37$), followed by time ($M = 3.28$) and research training ($M = 3.17$). Technology received the lowest rating ($M = 2.99$), reflecting limitations in access to hardware, software, connectivity, or integration of digital tools into the research workflow. The results suggest that support mechanisms existed but were neither consistently strong nor sufficient to produce sustained research engagement.

Within the time factor, teachers reported that non-teaching duties constrained research and that flexible hours were limited. Resource ratings reflected restricted financial support and access to databases. Research training and mentorship were also moderate, indicating that teachers had some exposure to seminars and experienced colleagues but lacked continuous, output-oriented guidance. These patterns are consistent with evidence that teacher research is inhibited when workload, resource access, training, and mentorship are addressed separately rather than as a coordinated support system (Jomoad et al., 2021; Matjašič & Vogrinc, 2025).

The relatively stronger rating for institutional encouragement is promising, but encouragement alone is insufficient. Administrative support must be translated into protected time, practical assistance, funding, recognition, and mechanisms for collaborative research. Technology should likewise be integrated with training so that available tools can be used effectively rather than treated as stand-alone resources (Darling-Hammond, 2023; Omar, 2022).

Differences in Perceived Institutional Factors

Table 3. *Differences in Perceptions of Institutional Factors by Demographic Profile*

Profile variable	F	p value	Decision
Age	0.75	.526	Not significant
Sex	0.46	.500	Not significant
Civil status	3.98	.022	Significant
Teaching experience	0.84	.525	Not significant

Perceptions of the institutional factors did not significantly differ by age, sex, or teaching experience. The shared ratings indicate that limitations in time, resources, training, support, mentorship, and technology were broadly experienced across the district. This finding emphasizes that structural conditions, rather than most personal characteristics, shaped teachers' research environment (Omar, 2022).

Civil status produced a significant difference ($F = 3.98$, $p = .022$). This result suggests that personal and family responsibilities may influence how teachers experience workload, schedule flexibility, and institutional support. Married teachers constituted the largest group, and domestic obligations may intensify perceived constraints on research time and energy (Lopez et al., 2022). Interventions should therefore be flexible enough to accommodate different personal circumstances while remaining accessible to all teachers.

Research Knowledge, Skills, and Attitude

Table 4. *Summary of Teachers' Research Competence*

Dimension	Key result	Interpretation
Research knowledge	83 teachers (79.15%) scored 33-40	Advanced
Research skill	80 teachers (76.19%) scored 0-80	Novice
Research attitude	Overall $M = 3.51$, $SD = 0.816$	High
Completed research	63 teachers (60.00%) completed none in the past 3 years	Limited experience
Dissemination	93 teachers (88.57%) had no presentation or publication	Very limited
Recent training	101 teachers (96.19%) attended no research training in the past 3 years	Very limited

Teachers demonstrated strong conceptual knowledge: 79.15% were classified as advanced and 19.15% as proficient. No respondent was classified as beginning or novice in knowledge. The result indicates that teachers generally understood research concepts and procedures, likely through graduate coursework, policy orientations, and prior professional learning.

The skills assessment revealed the opposite pattern. A large majority (76.19%) were classified as novice, while only 5.71% were advanced and 7.62% proficient. Sixty percent had completed no research during the previous three years; 88.57% had neither presented nor published research; and 96.19% had not attended research training during the same period. These data demonstrate a pronounced knowledge-practice gap: conceptual understanding was not consistently translated into research design, data analysis, manuscript preparation, dissemination, or publication.

Research attitude was high ($M = 3.51$), showing that teachers valued research, maintained interest despite professional challenges, and were willing to participate in further development. Positive attitude is an important foundation, but the findings show that motivation alone cannot compensate for limited technical practice and support. Teachers need opportunities to complete authentic research tasks with sustained feedback and clearly defined outputs (Borg, 2021; OECD, 2021).

The combination of advanced knowledge, novice skills, and positive attitude identifies a specific development priority. Capacity-building should not repeat introductory research concepts as its primary focus. Instead, it should emphasize guided production: identifying a feasible school problem, developing a proposal, constructing and validating instruments, managing data, applying statistical or qualitative analysis, writing an article, and presenting or submitting the finished study.

Differences in Research Competence

Table 5. *Kruskal-Wallis Tests of Research Competence across Demographic Profiles*

Dimension	Age p	Sex p	Civil status p	Experience p	Result
Knowledge	.218	.628	.994	.859	No significant differences
Skills	.705	.669	.339	.443	No significant differences
Attitude	.457	.820	.693	.729	No significant differences

Research knowledge, skills, and attitude did not significantly differ according to age, sex, civil status, or teaching experience. This finding indicates that the competence pattern was broadly shared across demographic groups. Older or more experienced teachers were not automatically more research-capable, and younger teachers did not necessarily demonstrate stronger skills. The similarity across profiles supports district-wide capability-building rather than narrowly targeted training based on age or career stage.

The result also reinforces the importance of contextual conditions. Teachers who work in the same institutional environment may develop similar levels of competence because they receive comparable access to training, mentoring, resources, and research opportunities. Equal access to sustained professional learning can therefore strengthen competence across demographic groups (Insorio, 2024; UNESCO, 2022).

Relationship and Predictive Analysis

Table 6. *Relationship and Regression Results*

Analysis	Statistic	p value	Interpretation
Institutional factors and research competence	Spearman $r = .506$	$< .001$	Moderate positive, significant
Time	$t = 0.0058$	.964	Not a significant individual predictor
Resources	$t = 0.0560$	.667	Not a significant individual predictor
Research training	$t = 0.1784$	.112	Not a significant individual predictor
Institutional support	$t = 0.1070$	.431	Not a significant individual predictor
Research mentorship	$t = 0.1682$	.180	Not a significant individual predictor
Technology	$t = 0.0626$	.528	Not a significant individual predictor

The institutional factors had a moderate positive and statistically significant relationship with teachers' research competence ($r = .506, p < .001$). Better conditions in time, resources, training, support, mentorship, and technology were associated with higher competence. This result supports the view that competence is developed through interaction with the professional environment rather than functioning solely as an individual trait (Salazar-Clemeña & Almonte-Acosta, 2021; Tingabngab & Binayao, 2023).

However, none of the six factors independently predicted research competence in the multiple regression analysis. Research training and mentorship showed comparatively stronger tendencies, but their p values remained above .05. The finding does not imply that the factors are unimportant. Instead, it indicates that no single condition is sufficient when separated from the others. Training without time and mentoring may not lead to completed outputs; technology without methodological skill may not improve analysis; and encouragement without resources may not sustain participation.

The correlation and regression results together demonstrate the multidimensional nature of research competence. A coordinated system is therefore more appropriate than isolated interventions. The district should combine protected research time, accessible resources and funding, practical training, structured mentoring, administrative recognition, peer collaboration, and technology integration in a single continuing development strategy (Hattie & Timperley, 2023; Matjašič & Vogrinc, 2025; UNESCO, 2021).

Intervention Priorities

Table 7. *Evidence-Based Priorities for Strengthening Teacher Research Competence*

Priority area	Source-based action
Hands-on capability building	Conduct quarterly or semiannual workshops and writeshops on proposal development, methods, data analysis, interpretation, article writing, and publication.
Structured mentorship	Assign research coordinators, master teachers, or experienced researchers to provide regular coaching, feedback, and progress monitoring.
Time and workload support	Provide protected research periods and flexible schedules that recognize teaching, non-teaching, and family responsibilities.
Resources and funding	Improve access to journals, databases, statistical tools, internet connectivity, research funds, and reproduction or data-gathering support.
Research culture and recognition	Establish peer research groups, recognize completed and disseminated studies, and integrate evidence use into school improvement processes.
Technology integration	Include practical training in literature-search tools, data management, statistical software, and responsible digital research practices.

These priorities were derived directly from the areas identified in the findings. They address the low level of practical skill and limited recent experience while sustaining teachers' strong knowledge and positive attitude. The proposed approach emphasizes actual research outputs, continuing mentorship, and an institutional environment that enables teachers to progress from conceptual understanding to independent research practice.

CONCLUSION

Secondary public-school teachers in Talisayan District possessed advanced research knowledge and a positive attitude toward inquiry, but their practical research skills and recent research participation were limited. The institutional factors supporting research were present only at a moderate level, with technology receiving the lowest rating. Perceptions of these conditions differed by civil status but not by age, sex, or teaching experience, while research competence itself remained statistically comparable across all demographic groups. The principal challenge was therefore not a lack of conceptual awareness or interest but the absence of sustained opportunities to apply research knowledge through guided practice and dissemination.

Institutional factors were moderately and positively associated with research competence, yet no single factor independently predicted competence. The study consequently concludes that teachers' research capability develops through the combined influence of time, resources, practical training, institutional encouragement,

mentorship, collaboration, and usable technology. Strengthening research competence requires a coherent district-wide system that supports the complete research cycle and recognizes teachers' personal and professional contexts.

Recommendation

School administrators should allocate protected research time, strengthen access to funding and research resources, and establish structured mentoring and peer-coaching arrangements. Capability-building activities should be continuous and output-oriented, covering proposal development, instrument construction, data gathering, statistical or qualitative analysis, research writing, presentation, and publication. Flexible participation mechanisms should be considered to accommodate teachers with differing family and workload responsibilities.

The Department of Education and the Schools Division Office should develop policies and funding mechanisms that institutionalize district research coaching, technology-supported research laboratories, and recognition for completed and utilized studies. School research coordinators and master teachers should monitor progress, provide technical feedback, and connect novice researchers with qualified mentors. Teachers should actively participate in research teams and professional development, while future studies may test the effectiveness of an integrated intervention program, include other districts, and use longitudinal designs to examine changes in research competence and productivity over time.

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