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Prospective Teacher's Aptitude towards Teaching and their Course Related to Teaching Methods: A Correlational Study

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Abstract

This study investigated the correlation between prospective teachers' aptitude for teaching and their subject knowledge of teaching methods at the university level. The research employed a descriptive and quantitative correlational design. The population included all graduate students enrolled in the 7th and 8th semesters, and a purposive sampling technique was used to select 52 participants from BS and B.Ed (Hons) programs. Data were collected using two questionnaires: the Teaching Aptitude Test Battery (TATB) by Singh and Sharma (1998), consisting of 30 items and one open-ended question, and a self-constructed questionnaire based on the semester scheme of studies for teaching methods in Mathematics, General Sciences, History and Geography, and Second Language Acquisition. The reliability of the aptitude scale was 0.779, and that of the teaching methods questionnaire was 0.876. Expert validation was obtained from three faculty members. Findings revealed varying levels of knowledge across subjects. In Science, 34.6% of students scored low, 34.6% average, and 30.8% high. In History and Geography, 36.5% showed low, 30.8% average, and 32.7% high levels. For Second Language Acquisition, most 7th-semester students fell into the average category, while 8th-semester female students showed higher knowledge levels. Overall, prospective teachers' aptitude showed weak positive but statistically insignificant correlations with all subject

areas, indicating no strong relationship between teaching aptitude and teaching method knowledge. The study concluded that existing knowledge gaps, particularly in Mathematics and SLA, highlight the need for enhanced teacher education programs and specialized training interventions to strengthen teaching aptitude and subject competence.

Keywords: *Prospective Teachers, Teaching Aptitude and courses of teaching methods*

Introduction

The effectiveness of a teacher is a crucial determinant of student learning outcomes, making the preparation of prospective educators an essential focus within the educational landscape. Teaching aptitude the inherent ability and readiness to teach effectively plays a significant role in shaping teachers' approaches to instructional strategies and methods. As prospective teachers transition from theoretical knowledge to practical application in the classroom, the methods they employ can significantly influence their ability to engage students and facilitate teach (Hattie, 2021). Thus, appreciating the bond between teaching skills and the choice of teaching methods is important in developing and refining teacher education programs, and in improving education as a whole.

A central theme of current research is distinguishing the impact of teaching ability on the instructional methods employed by prospective teachers, as highlighted by Alshaikh (2023) and those with higher teaching aptitude are more likely to implement student-centered approaches that emphasize active participation and critical thinking. In the same vein, Korkmaz and Cakiroglu (2022) suggested that teaching with high teaching creativity has teaching aptitude, and thus, high teaching aptitude is likely to result in the more creative in the choice and use of instructional methods. The sheer bulk of evidence, however, is not without problems, and the impact of different factors on this relationship has still to be investigated. Teaching ability and teaching method selection are affected by demographic factors (Çelik et al., 2021), teaching background, and previous teaching experiences. In addition, the concentration of some teacher training programs on some of the factors may lead to an imbalance on the understanding and application of the factors in the prospective teachers' methods of teaching. There is still a need to explore the teaching skills and methods of teaching, especially in relation on how the proposed teacher training programs will be implemented. The anticipated outcome of this research is to uncover the teaching training programs designed to influence the anticipated challenges to the prospective teachers will face in the classrooms. In the end, knowing this disconnect. Most previous research focusses on either teaching aptitude or teaching methods in isolation, rather than investigating their relationship in a higher education environment. Furthermore, the function of demographic characteristics such as age, gender, academic discipline, and past teaching experience in modulating this association is poorly understood. This gap highlights the necessity for research that not only examines the relationship between teaching aptitude and teaching methods, but also evaluates how these associations may differ among different demographic groups of prospective teachers.

Rationale

The teaching profession is critical in shaping educational quality, and prospective teachers bear a great deal of responsibility for this. Because teacher preparation programs are supposed to

provide future educators with the requisite skills and information, knowing the relationship between their attitude towards teaching and the courses they take on teaching methods is critical. This study is driven by the need to investigate how these two components interact, with the goal of improving university teacher training programs. The premise for this study stems from the urgent need to improve teacher education programs by better matching them with the innate abilities of potential instructors. Understanding this association will help universities improve their teacher training programs, resulting in better-prepared educators and better educational outcomes for students.

1.1.Objectives of the Study

1. To find out the graduate prospective teachers' aptitude towards teaching.
2. To find out the graduate prospective teachers' aptitude towards subjects of teaching methods.
3. To find out the relationship between graduate prospective teachers' aptitude towards teaching and their subjects of teaching methods.

1.2.Research Questions

1. What is the level of graduate (BS and B.Ed Hons) prospective teachers' aptitude towards teaching?
2. What is the level of graduate prospective teachers' aptitude towards teaching methods in different subjects (Mathematics, General Sciences, English/Second Language Acquisition, History and Geography)?
3. What is the relationship between graduate prospective teachers' aptitude towards teaching and their knowledge of teaching methods?

Review of related literature

The effectiveness of the teachers in the quality of the education provided thus, it is important to outline the aspects that allow someone to practice teaching. One aspect is the readiness to teach they show, which is the cognitive, skill-related, behavioral, and attitudinal facets needed to teach, to put in simpler terms. This literature review investigates the correlation between the prospective teachers' teaching aptitude and the teaching methods attention given in the course.

Teaching Aptitude

Teaching skills are the necessary natural characteristics, acquired skills, or abilities that enable one to function successfully as a teacher. Research suggests that strong teaching skills positively correlate to instructional practice, classroom management efficiency, and student engagement (Kato & Tsuji, 2021). From the work of Arar (2022), teaching skills impact a teacher's instructional approach. More importantly, they impact a teacher's ability to create a students' learning atmosphere. This necessitates teacher education programs to identify and nurture the prospective educator's teaching skills. In studying the emergence of teaching skills, the focus of attention has been on teacher preparation programs. Çelik et al. (2021) the promise of teaching skills under a structured focus approach, arguing that certain pedagogy courses enable the learner to acquire a substantial knowledge and techniques base. In addition, experiencing a variety of

teaching styles while undergoing teacher education improves teaching skills, thereby enabling the teacher to respond effectively and efficiently to the varying needs of learners.

Subjects of Teaching Methods

The goal of the teaching methods subjects is to equip would-be instructors with effective teaching techniques and procedures. Within this course, a comprehensive range of educational theories, practices, and teaching methods spanning numerous topic areas is included. Studies have established the type and quality of courses available greatly influences the instructional methods future educators will employ. For instance, Hamari et al. (2023) showed prospective teachers trained in courses rooted in active learning and constructivist pedagogy developed a toolkit of teaching strategies that they subsequently utilized in their classrooms. The cultivation of teaching skill is directly related to the courses taken, and is vital in the creation of qualified educators. Korkmaz and Cakiroglu (2022), have identified a constructive correlation between course instructional methods and teaching competency levels of prospective instructors.

Subject of teaching methods

Mathematics Teaching Methods

Help students learn how to apply their knowledge of math to practical problems. The use of physical tools to teach abstract ideas, for example, using blocks and abacuses. Let students independently come up with some mathematical rules and their relationships. The students are taught techniques and formulas, which are then practiced, and this classifies as direct instruction. Apply different forms of diagrams, graph, and charts to enhance students' mathematical reasoning. Students cooperating together with their mates to resolve problems and achieve set goals in mathematics.

1. **Second Language Acquisition (SLA) Teaching Methods**

Communicative Language Teaching (CLT) focuses on developing the ability of learners to make meaningful utterances or conversations, and interactions in the target language. Lessons applied from Task-Based Learning emphasize carrying out purposeful activities such as problem-solving or project work whereby learners speak the language in some real context. The Grammar-Translation Method includes teaching grammar rules and vocabulary by means of translation exercises from the native language to the new one. Total Physical Response (TPR) encourages learning through encouraging learners' physical responses to oral commands, which helps comprehension as well as retention. Content-based instruction comprises what is learned based on content other than linguistic matter-e.g., subject matter from history or science-so that it becomes contextual and interesting. Immersion approaches refer to teaching students completely in the target language about a variety of topics so that fluency is learned through consistent exposure and practice.

2. **History Teaching Methods**

For example, storytelling has been a powerful pedagogical tool in history education as narratives and biographies are used to help learners relate better to and visualize events in the past (Egan, 1989). Inquiry-Based Learning supports this by calling upon students to ask questions and research subjects which in turn promotes the development of higher-order thinking skills and a

more nuanced understanding of historical events (Levy et al., 2011). The tools and methods of Primary Source Analysis can take the form of analyzing primary documents, newspapers, photographs, or physical artifacts for learners directly to interpret historical perspectives on their own and display higher-order thinking skills (Wineburg, 2001). Likewise, Debates & Discussions allow students the occasion to express and defend views on events of the past and stimulate students as active learners and citizens (Hess, 2009). The Need for a Chronological Approach A chronological approach is important, since studying history in an ordered fashion will enable learners to understand processes of causation over time (Counsell, 2000). Lastly, Role-Playing and Simulations allow students to be in the shoes of historical figures which promotes empathy and takes into account various perspective (Taylor & Warner, 2006).

Geography Teaching Methods

Fieldwork in geography is about going out in the real world, learning to see and examine the physical landscapes, maps, and geographical characteristics, and learning to experience the geography (Kent, Gilbertson, & Hunt, 1997). Geographic Information Systems (GIS) and other mapping instruments strengthen spatial analysis and visualization, thereby helping learners to analyze, interpret, and visualize different sets of mapped data (Goodchild, 2006). Students learn best when the geography problems are real, current, and meaningful, such as learning the geography of climate change and urbanization. This enhances their critical thinking and problem-solving capabilities (Savery, 2006).

In addition, case studies offer opportunities to engage with and apply geographical theories to different regions or situations, enhancing understanding of the concepts (Yin, 2018). Simulations and other forms of interactive learning technology allow students to engage with and understand the more abstract and dynamic processes of geography, such as weather changes and population increases (Prensky, 2001). Also, the integration of geography with other subjects, especially history, economics, and environmental science, promotes cross-curricular integration and comprehensive learning (Beane, 1997). All these strategies improve teaching by fostering student interest and encouraging active engagement, as well as encouraging the development of skills that are transferable and situate geography within a broader spectrum of learning.

Relationship between Teaching Aptitude and Teaching Methods Courses

Teaching aptitude and courses on teaching methods is foundational to effective teacher education. Teaching aptitude refers to an individual's natural or developed capacity to instruct, manage classrooms, and engage with students, while courses on teaching methods provide the structured knowledge and skills to enhance this capacity. The link between teaching aptitude and teaching methods courses is an important topic of study in teacher education. Teaching aptitude, defined as an individual's innate capacity or propensity to teach successfully, can have a substantial impact on how well they connect with and implement different teaching strategies. According to research, teachers with higher teaching aptitude are more likely to use a variety of effective teaching tactics, which leads to improved student outcomes. Furthermore, courses meant to improve teaching methods can help teachers increase their abilities by giving practical skills and theoretical information required for effective pedagogy (Darling-Hammond, 2006). Tschannen-

Moran and Hoy (2001) discovered that teacher self-efficacy, which is closely related to teaching ability, improves with targeted professional development, including teaching methods courses. As a result, there is a synergistic relationship between teaching aptitude and training in teaching methods, emphasizing the significance of comprehensive teacher education programs that address both components.

Methodology

3.1.Research Design and Method

The research implies a quantitative method approach. The research design used was descriptive correlational. This research utilized a descriptive correlational research design supported by inquiry for the purpose of assessing prospective teachers' aptitude for teaching and teaching method (courses) subject. The goal of descriptive research is to explain what is found in data collected via surveys and statistical analysis. It is also used to define profiles, frequency distributions, and features of persons, events, occurrences, or variables that are associated with them. In a nutshell, it describes "what is" about the data (Ariola, 2006; Abun, 2019).

3.2.Population

All the students of graduate from the Institute of Education University of Sargodha, (Main campus) were taken as the population of the study. The population comprised the two programs of BS and B. Ed (Hon) 7th and 8th semester students.

The following sections present the details of sample distribution;

Table:3.1

Program-wise distribution of samples

Program	Frequency	Percentage
BS	19	36%
B. Ed Hons	33	64%
	52	100%

3.3 Sample and Sampling Technique

Purposive sampling techniques were used for data collection from the institute of Education, University of Sargodha (main campus). Purposive sampling is a non-random sampling technique in which researchers intentionally select specific individuals or groups from a larger population based on predetermined criteria, rather than using random selection methods. The sample of this study was 52 students from graduate university students.

3.4 Instrument Development

The *Teaching aptitude Test Battery (TATB) that is the work of Dr. R.P. Singh and Mrs. S. N. Sharma (1998)* was utilized to assess the potential teachers' aptitude. Questionnaire sample format by the Vidyaguru and Diwakar Rajputthe. The questionnaire was adapted. The questionnaire consisted of 30 items that were used to find out the prospective teacher's teaching

aptitude towards teaching. And second questionnaire consist of 30 items develop to find out the prospective teacher's aptitude towards the coursers of teaching methods in which teaching of mathematics, teaching of general sciences, teaching of history and geography and teaching of English language researchers follow the Scheme of Studies BS and B. Ed Education outline.

1.5.Validation for the instrument

To validate the instrument (questionnaire), the researcher verified the 3 experts from the institute of Education. The instrument was then modified based on their suggestion and finalized by the researchers' supervisor.

1.6.Pilot Study

A pilot study was carried out to assess the instruments' reliability. Cronbach alpha was 0.779, indicating that the questionnaire may be used for this study. This is due to the fact that instruments with coefficients larger than 0.80 are seen to be very reliable (Cohen et al., 2007).

1.7.Reliability

Reliability statistics

Variables	Cronbach's Alpha	N of Items
Teaching aptitude	0.779	30
subject of teaching methods	0.876	40

Interpretation:

The above table shows the Reliability statistics of the questionnaire about teaching aptitude of 30 items from the first 30 respondents. Cronbach's Alpha used to investigate the scale. Results indicate that the alpha value was equal to 0.779. Second questionnaire about subject of teaching methods of 40 items from the first 30 respondents. Cronbach's Alpha used to investigate the scale. Results indicate that the alpha value was equal to 0.876.

Data Collection

Researcher shared the questionnaire to graduate university students for data collection. In this study, researcher was collecting data online in the Google form from the institute of Education, University of Sargodha (main campus). Which included the two programs BS 7th and 8th semester, B. Ed (Hon) 7th and 8th semester. Students' responses were collected online and then analyzed.

Firstly, data were collected from 7th and 8th semester students of BS and B. Ed (Hon) for teaching aptitude toward teaching. Secondly, data collection related to their subject of teaching

methods researchers develop the questionnaire and follow the Scheme of Studies BS and B.Ed Education outline.

Data analysis and interpretation

This chapter covers the analysis and interpretation of the data collected about prospective teacher's aptitude for teaching and their subject of teaching methods. The data was analyzed using Frequency distribution, percentages, computing variables, Pearson's correlation coefficient, and level of teaching aptitude high, average, and low. The data was arranged according to the research questions.

4.1. Demographic Information

The following section presents the demographic details of the sample.

Table 4.1.1

Semester, Program and Gender

			Gender		
Semester			Male	Female	Total
7th Semester	Program	BS	2	12	14
		B.Ed	5	15	20
	Total		7	27	34
8th Semester	Program	BS	0	5	5
		B.Ed	2	11	13
	Total		2	16	18
Total	Program	BS	2	17	19
		B.Ed	7	26	33
	Total		9	43	52

Interpretation

Above table shows that the data distribution of students across the 7th and 8th semesters by gender and academic program. In the 7th semester, there are 14 students in the BS program, with 2 males and 12 females. In the B.ED program, 20 students are enrolled, comprising 5 males and 15 females. This brings the total for the 7th semester to 34 students, with 7 males and 27 females. For the 8th semester, the BS program has 5 students, all of whom are female. In the B.ED program, there are 13 students, including 2 males and 11 females. The total for the 8th semester stands at 18 students, with 2 males and 16 females.

Overall, across both semesters, the BS program has a total of 19 students (2 males and 17 females), while the B.ED program has 33 students (7 males and 26 females). The grand total for both programs across the semesters is 52 students, consisting of 9 males and 43 females.

Table 4.1.2

Background area

Background area

	Frequency	Percent
Arts	24	46.2
Science	28	53.8
Total	52	100.0

Interpretation

The table presents data on the background areas of a sample of 52 individuals, divided into two categories: Arts and Science. Among the participants, 24 individuals, or 46.2%, have a background in Arts, while 28 individuals, making up 53.8%, come from a Science background. This indicates a slightly higher representation of individuals with a Science background compared to those from the Arts, reflecting a diverse range of backgrounds within the sample.

4.2. Teaching aptitude

Teaching aptitude according to knowledge level:

Thirty (30) items were based on knowledge level for teaching aptitude .There were some examples of the knowledge level for teaching aptitude.

Example of Knowledge items:

1. Skilled educators do not need a thorough lesson plan for a subject because.
2. Basic requirement of teaching efficiency is—
3. the most appropriate meaning of learning is—
4. Experienced teachers do not require a detailed lesson plan for a topic because-
5. Women are better teachers at the primary level because.

4.2.1. Knowledge level

Teaching Aptitude according to knowledge level for graduate (BS) and (B. Ed Hons) Prospective Teachers

Knowledge level		
Knowledge level	Frequency	Percentage
High knowledge level	16	30.8
Average knowledge level	22	42.3
Low knowledge level	14	26.9
Total	52	100.0

Interpretation:

The table presents the distribution of knowledge levels among a group of 52 individuals. It shows that 30.8% of the participants have a high knowledge level, indicating a solid understanding of the subject matter. In contrast, 42.3% possess an average knowledge level, suggesting a moderate grasp of the content. Finally, 26.9% of the participants fall into the low knowledge level category, reflecting limited familiarity with the topic. Overall, the majority of individuals in this group have at least an average level of knowledge, while a notable portion demonstrates high knowledge as well.

4.2.2. Teaching Aptitude according to knowledge level for graduate (BS) and (B. Ed Hons) Prospective Teachers at the 7th semester

Semester	Program		Gender		
			Male	Female	Total
7th	BS	High knowledge level	0	4	4
		Average knowledge level	1	4	5
		Low knowledge level	1	4	5
	Total		2	12	14
	B.Ed	High knowledge level	2	5	7
		Average knowledge level	3	7	10
		Low knowledge level	0	3	3
	Total		5	15	20
	Total	High knowledge level	2	9	11
		Average knowledge level	4	11	15
		Low knowledge level	1	7	8
	Total		7	27	34

Interpretation:

The table presents data on the knowledge levels of students in the 7th semester across two programs: BS and B.Ed. For the BS program, there are 14 students, with 4 females showing a high knowledge level, while 5 females and 5 students (1 male and 4 females) exhibit average and low knowledge levels, respectively. In contrast, the B.Ed program consists of 20 students, where 7 students (2 males and 5 females) demonstrate high knowledge levels, and 10 students (3 males and 7 females) show average knowledge levels, while 3 females have a low knowledge level. Overall, across both programs, a total of 34 students are analyzed, with 11 students at a high knowledge level, 15 at an average level, and 8 at a low level. In summary, the majority of students across both programs have an average knowledge level, with a notable number achieving high knowledge, particularly among females.

4.2.3. Teaching Aptitude according to knowledge level for graduate (BS) and (B. Ed Hons) Prospective Teachers at the 8th semester

Semester	Program			Gender		
				Male	Female	Total
8th	BS	knowledge level	High knowledge level	0	2	2
			Average knowledge level	0	3	3

	Total			5	5
B.Ed	knowledge level	High knowledge level	1	2	3
		Average knowledge level	0	4	4
		Low knowledge level	1	5	6
	Total		2	11	13
Total	knowledge level	High knowledge level	1	4	5
		Average knowledge level	0	7	7
		Low knowledge level	1	5	6
	Total		2	16	18

Interpretation:

The table presents the knowledge levels of students across two programs, BS and B.ED, divided by gender. In the 8th semester of the BS program, both male and female students have equal representation, with each group having 2 students at a high knowledge level and 3 students at an average knowledge level, totaling 5 students for each gender. In the B.ED program, there are 3 students with a high knowledge level (1 male and 2 females) and 4 students with an average knowledge level (all females). Additionally, there are 6 students classified as having a low knowledge level (1 male and 5 females), bringing the total for the B.ED program to 2 males and 11 females, with an overall total of 13 students. Combining the data from both programs, there are 5 students with a high knowledge level, 7 with an average knowledge level, and 6 with a low knowledge level, resulting in a total of 2 males and 16 females across all categories. This indicates a higher number of female students, particularly in the B.ED program, and a diverse distribution of knowledge levels among them.

4.3. Knowledge level of prospective teachers towards the subject of Teaching of Mathematics

Description of Knowledge level of subject of Teaching of Mathematics

Ten (10) items were based on *subject of Teaching of Mathematics* .There were some examples of the *subject of Teaching of Mathematics*.

Example:

1. The importance of objective-based teaching in mathematics is to:
2. Inductive method involves teaching by:
3. Which method is teacher-centered and involves direct instruction?
4. Which method focuses on real-world applications of mathematical concepts?
5. Drill and practice techniques in mathematics are used to:

Knowledge level of prospective teachers towards the subject of Teaching of Mathematics

Knowledge level related to Teaching of Mathematics

Knowledge level	Frequency	Percentage
Low level of teaching mathematics	22	42.3
Average level of teaching mathematics	15	28.8
High level of teaching mathematics	15	28.8
Total	52	100.0

Interpretation

The above table shows that the knowledge levels related to the teaching of mathematics among a group of 52 individuals. Low level of teaching mathematics 42.3%. The largest portion, 42.3%, of the individuals have a low level of knowledge in teaching mathematics. This indicates that nearly half of the group may struggle with effectively teaching mathematical concepts. Average level of teaching mathematics (28.8%)**.** About 28.8% of the individuals have an average level of knowledge in teaching mathematics, suggesting they have a moderate understanding but might still need some improvement to enhance their teaching skills. High level of teaching mathematics (28.8%)**.** Similarly, 28.8% of the individuals possess a high level of knowledge in teaching mathematics. These individuals likely have strong proficiency and may effectively convey mathematical concepts to students.

4.3.2. BS 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Mathematics"

Knowledge level related to Teaching of Mathematics					
Program	Semester		Gender		Total
			Male	Female	
BS	7th	Low level	2	4	6
		Average level	0	4	4
		High level	0	4	4
	Total		2	12	14
	8th	Average level		2	2
		High level		3	3
	Total			5	5

Interpretation:

The table provides data on the knowledge level related to the teaching of mathematics, broken down by program semester and gender (male and female) for BS students. 2 male students and 12 female students are enrolled in the 7th semester. While females are represented in all knowledge levels (low, average, high), male students are only present in the low knowledge category. This suggests that female students outperform male students in the 7th semester in terms of knowledge related to teaching mathematics. The total number of students in the 8th semester is 5, with equal distribution of males and females (5 each). Students in the 8th semester are generally

at the average or high knowledge level, and there are no students in the low knowledge category. This suggests that students in the 8th semester have a more developed understanding of teaching mathematics compared to those in the 7th semester.

4.3.3. B.Ed (Hons) 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Mathematics"

Knowledge level related to Teaching of Mathematics					
			Gender		
Program	Semester		Male	Female	Total
B.ED	7	Low level	3	8	11
		Average level	1	5	6
		High level	1	2	3
		Total	5	15	20
	8	Low level	0	5	5
		Average level	1	2	3
		High level	1	4	5
		Total	2	11	13

Interpretations:

The above table shows that the knowledge levels related to teaching mathematics among B.Ed. students, by gender (Male, Female) and semester (7th, 8th). 7th Semester: Most students (55%) have a low knowledge level, particularly females. There are fewer students in the high knowledge category, indicating room for improvement in understanding mathematics teaching concepts. 8th Semester: Knowledge levels improve, with more students in the high knowledge category and a reduction in the number of students at the low level. This trend is more pronounced among female students.

4.4. Knowledge level of prospective teachers towards the subject of Teaching of Science

Description of Knowledge level of subject of Teaching of Science

Ten (10) items were based on *subject of Teaching of Science* .There were some examples of the *subject of Teaching of Science*.

Example:

1. A hypothesis in science is:
2. The primary source of energy for the human body is:
3. The ozone layer is important because it
4. Energy from the sun is:
5. Work is defined as:

Knowledge level of prospective teachers towards the subject of Teaching of Science

Knowledge level related to Teaching of Science		
Knowledge level	Frequency	Percentage
Low level	18	34.6
Average level	18	34.6
High level	16	30.8
Total	52	100.0

Interpretation:

The above table shows that the knowledge levels related to the teaching of science among a group of 52 individuals**.** Low level (34.6%).18 individuals (34.6%) have a low level of knowledge in teaching science. This indicates that a significant portion of the group may face challenges in effectively teaching scientific concepts**.** Average level (34.6%)**.** An equal number of individuals (18 people, 34.6%) have an average level of knowledge in teaching science, suggesting moderate proficiency, with room for improvement**.** High level (30.8%)**.** 16 individuals (30.8%) possess a high level of knowledge in teaching science, indicating strong competency and likely effective teaching skills.

4.4.1. BS 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Sciences"

Knowledge level related to Teaching of Science					
			Gender		
Program	Semester		Male	Female	Total
BS	7th	Low level	1	3	4
		Average level	0	4	4
		High level	1	5	6
	Total		2	12	14
	8th	Low level		3	3
		Average level		1	1
		High level		1	1
	Total			5	5

Interpretation:

The above table shows that the knowledge levels related to teaching science among BS students, divided by semester and gender (male and female). **Total for 7th Semester.** 2 males and 12 females (total 14). A majority of students are female, with more females in the higher knowledge categories (average and high) compared to males. **Total for 8th Semester:** 5 students (1 male, 4 females), with a more balanced distribution across low, average, and high knowledge levels compared to the 7th semester.

4.4.2. B.Ed 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Sciences"

Knowledge level related to Teaching of Science					
				Gender	
Program	Semester			Male	Female	Total
B.Ed (Hons)	7		Low level	1	6	7
			Average level	1	6	7
			High level	3	3	6
		Total		5	15	20
	8		Low level	0	4	4
			Average level	2	4	6
			High level	0	3	3
		Total		2	11	13

Interpretation

The above table shows that the knowledge levels related to teaching science among B.Ed (Hons) students, by semester (7th and 8th) and gender (male and female). **Total for 7th Semester.** 5 males and 15 females (total 20). While female students are more numerous, the distribution across knowledge levels is similar for both genders, with a relatively even split between low, average, and high levels. **Total for 8th Semester.** 2 males and 11 females (total 13). In the 8th semester, more females are represented in the low and high knowledge levels, while males are concentrated in the average level.

4.5. Knowledge level of prospective teachers towards the subject of Teaching of History and geography

Description of Knowledge level of subject of Teaching of History and geography

Ten (10) items were based on *subject of Teaching of History and geography* .There were some examples of the *subject of Teaching of History and geography*.

Example:

1. What is the main focus of teaching history?
2. Geography primarily deals with:
3. Effective lesson planning in geography should include:
4. Temperature is a measure of:
5. Winds are primarily caused by:

Knowledge level of prospective teachers towards the subject of Teaching of History and geography

Knowledge level related to Teaching of *History and geography*		
Knowledge level	Frequency	Percent

Low level	19	36.5
Average level	16	30.8
High level	17	32.7
Total	52	100.0

Interpretation:

The above table shows that the knowledge levels related to the teaching of History and Geography among 52 individuals. **Low level (36.5%)**: 19 individuals, or 36.5% of the group, have a low level of knowledge in teaching History and Geography. This suggests that over one-third of the participants may struggle with effectively teaching these subjects. **Average level (30.8%)**: 16 individuals, or 30.8%, have an average level of knowledge. These participants have a moderate understanding of teaching History and Geography, with room for improvement. **High level (32.7%)**: 17 individuals, or 32.7%, possess a high level of knowledge. These individuals likely demonstrate strong proficiency in teaching History and Geography.

4.5.1. ***BS 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of History and geography"***

Knowledge level related to Teaching of History and geography					
			Gender		
Program	Semester		Male	Female	Total
BS	7	Low level	0	2	2
		Average level	2	5	7
		High level	0	5	5
	Total		2	12	14
	8	Low level		2	2
		Average level		3	3
	Total			5	5

Interpretation:

The above table shows that the knowledge levels related to the teaching of History and Geography among BS students, categorized by semester (7th and 8th) and gender (male and female). **7th Semester.** 2 males and 12 females (total 14). In this semester, no males have low or high knowledge levels, while female students show a wider range of knowledge, with representation across all levels. Females dominate the higher knowledge categories. **8th Semester.** 5 males and 5 females (total 10). In this semester, the number of students at the low level remains the same as in the 7th semester, but there is an increase in average level students, with males and females represented equally.

4.5.2. B.Ed (Hons) ***7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of History and geography"***

Knowledge level related to Teaching of History and geography					
			Gender		
Program	Semester		Male	Female	Total
B.ED	7th	Low level	2	9	11
		Average level	0	3	3
		High level	3	3	6
		Total	5	15	20
	8th	Low level	0	4	4
		Average level	1	2	3
		High level	1	5	6
		Total	2	11	13

The above table shows that the knowledge levels related to teaching History and Geography among B.Ed students, categorized by semester (7th and 8th) and gender (male and female). **7th Semester.** 5 males and 15 females (total 20). In this semester, a significant number of female students (9 out of 15) have a low knowledge level, while males show a higher representation in the high knowledge category. **8th Semester.** 2 males and 11 females (total 13). In this semester, the number of students at the low level decreases slightly, but females still represent the majority in the low knowledge category.

4.6. Knowledge level of prospective teachers towards the subject of Teaching of second language Acquisition

Description of Knowledge level of subject of Teaching of second language Acquisition

Ten (10) items were based on *subject of Teaching of second language Acquisition* .There were some examples of the *subject of Teaching of second language Acquisition.*

Example*:*

1. What is the primary focus of Second Language Acquisition (SLA)?
2. A second language refers to:
3. What is a first language?
4. Functional approaches to SLA emphasize:
5. Learning and literacy as social interaction highlight:

Knowledge level of prospective teachers towards the subject of Teaching of second language Acquisition

Knowledge level related to Teaching *second language Acquisition*		
Knowledge level	Frequency	Percent

Low level of teaching SLA	19	36.5
Average level of teaching SLA	20	38.5
High level of teaching SLA	13	25.0
Total	52	100.0

Interpretation

The above table shows that the knowledge levels related to Teaching Second Language Acquisition (SLA) among a sample of 52 individuals. **Low Level of Teaching SLA (36.5%)**. 19 participants (approximately one-third) reported a low level of knowledge in teaching SLA. This indicates a significant proportion of individuals who may require additional training or resources to enhance their understanding and skills in this area. **Average Level of Teaching SLA (38.5%)**. 20 participants fell into the average category, representing the largest group (almost 39%). This suggests that while many individuals possess a foundational understanding of teaching SLA, there may be room for improvement to reach higher levels of proficiency. **High Level of Teaching SLA (25.0%)**. 13 participants indicated a high level of knowledge in teaching SLA. Although this group is smaller compared to the others, it still represents a notable portion of the sample, suggesting that there are some individuals with advanced understanding and skills in this area.

4.6.1. ***BS 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of second language Acquisition"***

Knowledge level related to Teaching of *second language Acquisition*					
			Gender		
Program	Semester		Male	Female	Total
BS	7th	Low level of	2	3	5
		Average level	0	5	5
		High level	0	4	4
	Total		2	12	14
	8th	Low level		2	2
		Average level		2	2
		High level		1	1
	Total			5	5

Interpretation

The above table shows that the knowledge levels related to the Teaching of Second Language Acquisition (SLA) among students in the BS program across two semesters (7th and 8th) and is segmented by gender. **7th Semester:** 2 males and 12 females (total 14). In this semester, a majority of females are represented in the average and high knowledge categories, while males have a lower presence, particularly in the higher levels of knowledge. **8th Semester:** 5 students (2 males and 3 females). The number of students with low knowledge levels decreases compared to the 7th semester, indicating some improvement in understanding. **Knowledge Levels in the 7th Semester:** A significant portion of females (5 out of 12) possess an average knowledge level, while very few males reach the higher knowledge levels. **Knowledge Levels in the 8th Semester:**

There is an increase in the average level of knowledge, and the low level decreases significantly, indicating progress among students.

4.6.2. *B.Ed (Hons) 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of second language Acquisition"*

Knowledge level related to Teaching of *second language Acquisition*					
			Gender		
Program	Semester		Male	Female	Total
B.ED	7	Low level of teaching SLA	1	6	7
		Average level	2	7	9
		High level of teaching SLA	2	2	4
	Total		5	15	20
	8	Low level of teaching SLA	1	4	5
		Average level	1	3	4
		High level of teaching SLA	0	4	4
	Total		2	11	13

Interpretation

The table presents the knowledge levels related to the teaching of Second Language Acquisition (SLA) among B.Ed students, categorized by semester (7th and 8th) and gender (male and female). **7th Semester:** 5 males and 15 females (total 20). In this semester, the majority of students are female, and most students fall into the average knowledge level category. **8th Semester:** 2 males and 11 females (total 13). In this semester, the number of students at the low level decreases, and there is a notable increase in females achieving the high level. Knowledge Levels in the 7th Semester: The majority of students are in the average knowledge level, with a substantial number (7 out of 20) at the low level, indicating a need for improvement. Knowledge Levels in the 8th Semester: There is a decrease in the low knowledge level category and a significant increase in females achieving the high level (4 out of 11), suggesting overall progress in knowledge related to teaching SLA.

4.7. Relationship between graduate prospective teachers' aptitude towards teaching and their subjects of teaching methods.

Correlations					
	knowledge level	Mathematics	Science	History & geography	Second Language Acquisition

knowledge level	Pearson Correlation	1	.022	.060	.089	.188
	Sig. (2-tailed)		.876	.671	.530	.181
	N	52	52	52	52	52
Mathematics	Pearson Correlation	.022	1	.107	.382**	.452**
	Sig. (2-tailed)	.876		.452	.005	.001
	N	52	52	52	52	52
Science	Pearson Correlation	.060	.107	1	.370**	.484**
	Sig. (2-tailed)	.671	.452		.007	.000
	N	52	52	52	52	52
History & geography	Pearson Correlation	.089	.382**	.370**	1	.679**
	Sig. (2-tailed)	.530	.005	.007		.000
	N	52	52	52	52	52
Second Language Acquisition	Pearson Correlation	.188	.452**	.484**	.679**	1
	Sig. (2-tailed)	.181	.001	.000	.000	
	N	52	52	52	52	52

**. Correlation is significant at the 0.01 level (2-tailed).

Interpretation

The table presents the correlation coefficients among four variables: overall knowledge level, mathematics, sciences, history and geography, and second language acquisition (SLA), based on a sample size of 52 participants.

Correlation Coefficients

Knowledge Level:

- Correlation with math: **0.022** (not significant, p = 0.876)
- Correlation with sciences: **0.060** (not significant, p = 0.671)
- Correlation with history: **0.089** (not significant, p = 0.530)
- Correlation with SLA: **0.188** (not significant, p = 0.181)

Interpretation: Overall knowledge level has weak positive correlations with math, sciences, history, and SLA, but none are statistically significant, indicating no strong relationship between overall knowledge level and these subjects.

Major findings and Discussion

The study sample included 52 individuals, with 53.8% (28 participants) from a Science background and 46.2% (24 participants) from an Arts background, indicating a diverse representation of educational backgrounds.

Knowledge Levels in Mathematics:

1. 42.3% (22 individuals) demonstrated a low level of knowledge in teaching mathematics, suggesting challenges in conveying mathematical concepts.
2. 28.8% (15 individuals) exhibited an average level of knowledge, while another 28.8% (15 individuals) showed a high level of proficiency in teaching mathematics, indicating a need for targeted improvement [8].

Knowledge Levels in History and Geography

1. 36.5% (19 individuals) had a low level, 30.8% (16 individuals) had an average level, and 32.7% (17 individuals) possessed a high level of knowledge, suggesting that many may require additional support.

Low level of knowledge: The fact that a substantial portion of students (36.5%) falls into the low knowledge category raises critical concerns about their preparedness to engage with the subject matter effectively. This trend is consistent with recent studies indicating that students often struggle with critical thinking and analysis in subjects like History and Geography, which are essential for understanding societal contexts and geographical issues (Levesque, 2022; Duffy & Pritchard, 2021). Factors contributing to low knowledge levels may include insufficient instructional strategies, lack of engagement with the material, or inadequate prior knowledge foundations.

Average Level of Knowledge: The 30.8% of students categorized at an average knowledge level suggests a need for targeted interventions. Students in this category may have grasped basic concepts but lack deeper understanding or the ability to apply knowledge critically. According to research by Smith and O'Donnell (2023), students often benefit from active learning strategies, such as project-based learning and collaborative tasks, which can enhance their engagement and understanding.

High Level of Knowledge: While 32.7% of students demonstrated a high level of knowledge, it is essential to ensure that these students are adequately challenged to further develop their skills. Providing enrichment opportunities, such as advanced coursework or independent research projects, can help maintain their interest and deepen their understanding (Hattie & Donoghue, 2016). However, a high-performing segment of students does not negate the pressing need for support for those struggling.

Knowledge Levels in Second Language Acquisition (SLA)

1. 36.5% (19 participants) had a low level of knowledge in SLA, 38.5% (20 participants) had an average level, and 25% (13 participants) achieved a high level, indicating varied understanding among prospective teachers.

The varied levels of understanding in SLA highlight a critical aspect of teacher education: the importance of targeted training and resources to enhance educators' competencies in language instruction. The substantial proportion of participants (36.5%) with a low level of knowledge raises concerns, as a strong foundation in SLA is crucial for effective teaching and learning processes. Research indicates that teachers' knowledge and beliefs about language acquisition significantly influence their pedagogical practices and, consequently, student outcomes (Ellis, 2016; Liu, 2021).

This suggests that addressing the gaps in SLA knowledge is essential for improving educational quality. He/she distribution of knowledge levels has important implications for teacher training programs. Teacher education curricula should prioritize SLA theories, methodologies, and practical applications to equip future teachers with the necessary skills and knowledge to support their students effectively. Studies have shown that professional development and ongoing training significantly enhance teachers' confidence and competence in language instruction (Graham, 2017). Institutions may need to consider incorporating more comprehensive SLA modules or workshops that focus on contemporary theories and evidence-based practices. The presence of a considerable number of participants with an average level of knowledge (38.5%) suggests that while some foundational understanding exists, there is still significant room for improvement. It may be beneficial for teacher education programs to implement differentiated instruction and support systems that cater to the diverse needs of prospective teachers. Research indicates that mentorship and collaborative learning opportunities can foster deeper understanding and skills in SLA (García & Wei, 2014). Furthermore, integrating technology and innovative teaching strategies could enhance engagement and understanding of SLA concepts among prospective teachers.

Trends across Semesters:

1. In the 7th semester, 55% of students, particularly females, exhibited low knowledge levels in mathematics. By the 8th semester, there was a marked improvement, especially among female students, with an increase in those achieving high knowledge levels [3].

The analysis of knowledge levels in mathematics across the 7th and 8th semesters reveals significant trends, particularly in the context of gender differences. In the 7th semester, 55% of students demonstrated low knowledge levels, with a notable prevalence among female students. This finding is consistent with existing literature that highlights the challenges female students often face in mathematics education, including societal stereotypes and a lack of confidence in their mathematical abilities (Steele, 2010; Wang et al., 2020). The transition from the 7th to the 8th semester shows a marked improvement in knowledge levels, especially among female students. This change can be attributed to various factors, including the implementation of targeted educational interventions and supportive learning environments. Research indicates that tailored instructional strategies and mentorship programs can significantly enhance female students' confidence and performance in mathematics (Graham et al., 2013; Hill et al., 2010).

Correlation Analysis

1. Overall knowledge levels showed weak positive correlations with subjects such as mathematics, sciences, history, and SLA, but none were statistically significant, indicating no strong relationships between overall knowledge level and these subjects.
2. These findings underscore the need for targeted interventions to enhance the teaching aptitude and knowledge levels of prospective teachers, particularly in mathematics and SLA.
3. These findings highlight the necessity for targeted interventions to enhance the teaching aptitude and knowledge levels of prospective teachers, particularly in mathematics and

SLA, to ensure they are well-equipped to meet the educational needs of their future students.

The weak positive correlations observed in the study (with correlation coefficients near zero) indicate that while there may be a slight tendency for overall knowledge to relate to specific subject knowledge, this relationship is not robust. For example, a study by Reddy et al. (2020) found that teacher efficacy is often linked more closely with specialized subject knowledge rather than overall knowledge levels. The lack of statistically significant correlations implies that a holistic understanding of various subjects may not be adequately integrated into teacher training programs. Consequently, educators may not be fully prepared to deliver content effectively across subjects. Given the findings, there is a pressing need for targeted interventions aimed at enhancing the teaching aptitude and knowledge levels of prospective teachers, particularly in mathematics and SLA. Research by Wilson et al. (2021) emphasizes that focused professional development can significantly improve teachers' instructional practices and, subsequently, student learning outcomes. Implementing specialized training workshops, mentoring programs, and collaborative teaching models could help bridge these gaps. By emphasizing pedagogical content knowledge, teacher education programs can foster a deeper understanding of how to teach complex subjects effectively, which is particularly important for subjects like mathematics and SLA that require specific strategies for effective teaching.

Conclusion

1. **Gender Disparities:** Female students in the B.Ed program generally exhibit higher knowledge levels compared to male students, particularly in subjects like Science and Second Language Acquisition.
2. **Knowledge Distribution:** A significant number of students across various subjects demonstrate low to average knowledge levels, highlighting the need for improvement in teaching competencies, especially in Mathematics and Science.
3. **Semester Performance:** There is a noticeable increase in knowledge levels from the 7th to the 8th semester, indicating that students improve their understanding as they progress through their program. However, the presence of students with low knowledge levels remains a concern.
4. **Correlation Analysis:** The weak positive correlations between overall knowledge levels and specific subjects suggest that while some relationship exists, it is not strong enough to imply that overall knowledge directly influences proficiency in individual subjects.

Recommendations:

1. Teacher education programs should incorporate comprehensive training modules that focus on developing both teaching aptitude and effective teaching methods.
2. Establishing mentorship programs that pair prospective teachers with experienced educators can provide valuable support and guidance.

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Prospective teacher's aptitude towards teaching and their subject of teaching methods: A correlational study

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Abstract

Aptitude is a distinct ability that differs from ordinary intellectual ability. It assists an individual in obtaining the necessary level of skill in a given subject, such as teaching. The study intended to find out the correlation of Prospective Teacher's aptitude for Teaching and subject of teaching methods at University. The study was descriptive in nature and a quantitative correlational research design was used. Population of this study was all graduate students those particularly form 7th and 8th semester of education department. The sample was collected through purposive sampling technique and sample was 52 students of BS, and B.Ed (Hons). Two questionnaire was used. The questionnaire was adapted from the Teaching aptitude Test Battery (TATB) developed by Singh and Sharma (1998). Adopted questionnaire consisted of 30 items and one open-ended question. Second questionnaire about subject of teaching method under the following teaching methods 1.teaching of mathematics, 2.teaching of general sciences, 3.teaching of history and geography and 4.teaching of second language acquisition. For the questionnaire about subject of teaching method follow the course outline that was Semester System Scheme of Studies and Course Outlines of BS and B.Ed (hons). The reliability of the questionnaire related to teaching aptitude was 0.779 and second questionnaire reliability that was related to course of teaching methods was 0.876. Researcher validate the questionnaire from 3 experts from the Department of Education. For the finding of prospective teachers' teaching aptitude across three levels: high, average, and low. In Science, 34.6% showed low and average knowledge each, while 30.8% had high knowledge. For History and Geography, 36.5% had low, 30.8% average, and 32.7% high knowledge levels. In Second Language Acquisition, most 7th-semester students were average, with an increase in high-level knowledge among 8th-semester females. Overall, weak positive but statistically insignificant correlations were found between teaching aptitude and subject knowledge in math, science, history, and SLA. The study further emphasizes the necessity for enhanced teacher training programs to address existing knowledge gaps, particularly in Mathematics and SLA, and recommends the implementation of specialized training to improve teaching aptitude among prospective teachers.

Keywords: Prospective Teachers, Teaching Aptitude and courses of teaching methods

Introduction

The effectiveness of a teacher is a crucial determinant of student learning outcomes, making the preparation of prospective educators an essential focus within the educational landscape. Teaching aptitude the inherent ability and readiness to teach effectively plays a significant role in shaping teachers' approaches to instructional strategies and methods. As prospective teachers transition from theoretical knowledge to practical application in the classroom, the methods they employ can significantly influence their ability to engage students and facilitate teach (Hattie, 2021). Therefore, understanding the relationship between teaching aptitude and the selection of teaching methods is vital for improving teacher education programs and enhancing overall educational quality.

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Recent research has emphasized the significance of teaching ability in determining the efficacy of instructional approaches among future instructors. Alshaikh (2023) discovered that those with a better aptitude for teaching are more likely to use student-centered strategies that encourage active learning and critical thinking. Similarly, Korkmaz and Cakiroglu (2022) found a positive relationship between teaching aptitude and the use of creative teaching tactics, implying that higher aptitude may lead to more effective pedagogical options. Despite the rising quantity of evidence, questions remain about how various factors influence this link. Demographic variables (Çelik et al., 2021), educational background, and prior experiences can influence teaching ability and technique selection. Furthermore, teacher education programs may differ in their emphasis on developing these abilities, resulting in variation in how potential teachers approach their teaching methods. The purpose of this study is to look into the relationship between prospective teachers' teaching abilities and the subject-specific teaching methods. By examining these links, the study hopes to shed light on how teacher education programs might be altered to better prepare future educators for the intricacies of the classroom. Finally, recognizing this association might help build effective teaching strategies that improve student learning and achievement.

Gap of the Study: While earlier study has looked into the elements that influence teaching ability and the efficiency of various teaching approaches, there is still a lack of understanding about how these two variables interact, particularly among potential university teachers. Most previous research focusses on either teaching aptitude or teaching methods in isolation, rather than investigating their relationship in a higher education environment. Furthermore, the function of demographic characteristics such as age, gender, academic discipline, and past teaching experience in modulating this association is poorly understood. This gap highlights the necessity for research that not only examines the relationship between teaching aptitude and teaching methods, but also evaluates how these associations may differ among different demographic groups of prospective teachers.

Rationale: The teaching profession is critical in shaping educational quality, and prospective teachers bear a great deal of responsibility for this. Because teacher preparation programs are supposed to provide future educators with the requisite skills and information, knowing the relationship between their attitude towards teaching and the courses they take on teaching methods is critical. This study is driven by the need to investigate how these two components interact, with the goal of improving university teacher training programs. The premise for this study stems from the urgent need to improve teacher education programs by better matching them with the innate abilities of potential instructors. Understanding this association will help universities improve their teacher training programs, resulting in better-prepared educators and better educational outcomes for students.

1.1. Objectives of the Study

1. To find out the graduate prospective teachers' aptitude towards teaching.
2. To find out the graduate prospective teachers' aptitude towards subjects of teaching methods.
3. To find out the relationship between graduate prospective teachers' aptitude towards teaching and their subjects of teaching methods.

1.2. Research Questions

1. What is the knowledge level of graduate (BS and B.Ed Hons) prospective teachers' aptitude towards teaching?
2. What is the knowledge level of graduate (B.S) prospective teachers' aptitude towards subjects of teaching methods?

2.1. What is the Knowledge level of graduate (B.S) prospective teachers' aptitude towards subject of teaching of mathematics?

2.2. What is the Knowledge level of graduate (B.S) prospective teachers' aptitude towards subject of teaching of general sciences?

2.3. What is the Knowledge level of graduate (B.S) prospective teachers' aptitude towards subject of teaching of English language?

2.4. What is the Knowledge level of graduate (B.S) prospective teachers' aptitude towards subject of teaching of history and geography?

3. What is the level graduate (B.Ed Hons) prospective teachers' aptitude towards subject of teaching methods?

3.1. What is the Knowledge level of (B.Ed Hons) prospective teachers' aptitude towards subject of teaching of mathematics?

3.2. What is the Knowledge level of (B.Ed Hons) prospective teachers' aptitude towards subject of teaching of general sciences?

3.3. What is the Knowledge level of (B.Ed Hons) prospective teachers' aptitude towards subject of teaching of language?

3.4. What is the Knowledge level of (B.Ed Hons) prospective teachers' aptitude towards subject of teaching of history and geography?

4. What is the correlation between the graduate (BS) prospective teachers' aptitude toward teaching and their subject of teaching method?
5. What is the correlation between the graduate (B.Ed Hons) prospective teachers' aptitude toward teaching and their subject of teaching methods?

Operational Definitions

Aptitude

Aptitude refers to an individual's inherent or acquired potential to acquire or develop specific skills, knowledge, or abilities in a particular domain. It is a measure of an individual's readiness or capacity to learn and excel in a specific area of study. Aptitude measures the future performance of teachers and identifies prospective teachers' strengths and weaknesses, determine their suitability for specific programs or courses.

Teaching Aptitude

Teaching aptitude operationally defined as the set of abilities, knowledge, attitudes, and traits that allow persons to effectively express and impart knowledge, assist learning, and engage students in the educational process. It involves the ability to understand and adapt to diverse learning needs, employ appropriate teaching strategies, and create a positive and stimulating learning environment.

Subject of teaching methods

The subject of teaching methods encompasses the strategies, techniques, and approaches utilized by teachers to facilitate learning and enhance students' understanding in various academic disciplines. This subject is critical in preparing teachers to effectively deliver content, engage students, and foster critical thinking skills.

Review of related literature

The quality of education is intrinsically linked to the effectiveness of teachers, making it essential to examine the factors that contribute to teaching success. One such factor is the **aptitude towards teaching** exhibited by prospective teachers, which encompasses their knowledge, skills, attitudes, and dispositions necessary for effective instruction. This literature review explores the relationship between prospective teachers' teaching aptitude and the subject of teaching methods they undertake during their training.

Teaching Aptitude

Teaching aptitude refers to the innate qualities and acquired skills that enable an individual to perform effectively as a teacher. Research indicates that a strong teaching aptitude is associated with improved instructional practices, better classroom management, and higher student engagement (Kato & Tsuji, 2021). A study by Arar (2022) found that teaching aptitude not only affects teachers' pedagogical choices but also their ability to foster positive learning environments. This underscores the need for teacher education programs to identify and cultivate teaching aptitude among prospective educators. In examining the development of teaching aptitude, researchers have emphasized the role of teacher preparation programs. Çelik et al. (2021) highlighted the significance of structured training in enhancing teaching aptitude, asserting that specific pedagogical courses help prospective teachers build a solid foundation of knowledge and skills. Furthermore, exposure to diverse teaching methodologies during training can enhance teaching aptitude, enabling future teachers to adapt their approaches to meet the diverse needs of their students.

Subjects of Teaching Methods

Teaching methods subjects are aimed to provide future teachers with effective instructional strategies and procedures. These subjects cover a variety of educational theories, practices, and teaching methodologies across multiple topic areas. Research reveals that the type and quality of courses offered have a substantial impact on the teaching strategies used by future instructors. For example, Hamari et al. (2023) discovered that courses emphasizing active learning and constructivist approaches helped prospective teachers establish a repertoire of effective teaching tactics that they later adopted in their classrooms. The alignment of teaching ability and course selection is crucial for developing competent teachers. Korkmaz and Cakiroglu (2022) discovered a positive relationship between the teaching methods used in courses and prospective instructors' aptitude levels.

Subject of teaching methods

1. **Mathematics Teaching Methods**
2. Encouraging students to address real-life situations using mathematical concepts.
3. Manipulative teaching involves using physical objects, such as blocks or abacuses, to convey abstract concepts.
4. Discovery Learning: Enables pupils to discover mathematical rules and correlations.
5. Direct instruction involves explicitly teaching techniques and formulas, followed by practice.
6. Use visual representations such as diagrams and graphs to enhance mathematical reasoning.

7. Collaborative learning involves students working together to solve issues and complete mathematical objectives.

1. Second Language Acquisition (SLA) Teaching Methods

1. Communicative Language Teaching (CLT) aims to promote conversation and interaction in the target language.
2. Task-Based Learning involves learners completing meaningful linguistic activities, such as problem-solving or project completion.
3. The Grammar-Translation Method emphasizes grammar principles and vocabulary through translation tasks between the target and native languages.
4. Total Physical Response (TPR): Requires physical movement in response to verbal information to improve language learning.
5. Material-Based Instruction (CBI) combines language instruction with material from other courses, such as history or science.
6. Immersion: Instructing language learners in a second language across many topics.

1. History Teaching Methods

1. Storytelling is using narratives and biographies to bring historical events to life. Inquiry-Based Learning encourages students to ask questions and research historical events or concerns.
2. Primary Source Analysis: Using actual documents, pictures, and artefacts to comprehend historical contexts.
3. Debates and Discussions: Students are encouraged to take stances on historical events and participate in structured debates.
4. Chronological Approach: Teaching history in a sequential order to demonstrate cause and effect over time.
5. Role-playing and simulations: Students act as historical figures to gain a better understanding of different points of view.

2. Geography Teaching Methods

1. Fieldwork involves direct examination of physical environments, maps, and geographical characteristics.
2. Utilize GIS and mapping tools to analyses spatial data and create maps.
3. Problem-Based Learning: Students tackle real-world geographical concerns such as climate change and urban growth.
4. Case studies investigate geographical principles by focusing on specific areas or regions.
5. Interactive learning involves using simulations and digital tools to understand geographic topics such as weather patterns or population increase.
6. Integrating geography with history, economics, and environmental science to promote cross-curricular learning.

Each subject's teaching methods aim to enhance student understanding, engagement, and the ability to apply knowledge in different contexts.

Relationship between Teaching Aptitude and Teaching Methods Courses

Teaching aptitude and **courses on teaching methods** is foundational to effective teacher education. Teaching aptitude refers to an individual's natural or developed capacity to instruct, manage classrooms, and engage with students, while courses on teaching methods provide the structured knowledge and skills to enhance this capacity. The link between teaching aptitude and teaching methods courses is an important topic of study in teacher education. Teaching aptitude, defined as an individual's innate capacity or propensity to teach successfully, can have a substantial impact on how well they connect with and implement different teaching strategies. According to research, teachers with higher teaching aptitude are more likely to use a variety of effective teaching tactics, which leads to improved student outcomes. Furthermore, courses meant to improve teaching methods can help teachers increase their abilities by giving practical skills and theoretical information required for effective pedagogy (Darling-Hammond, 2006). Tschannen-Moran and Hoy (2001) discovered that teacher self-efficacy, which is closely related to teaching ability, improves with targeted professional development, including teaching methods courses. As a result, there is a synergistic relationship between teaching aptitude and training in teaching methods, emphasizing the significance of comprehensive teacher education programs that address both components.

Methodology

3.1. Research Design and Method

The research implies a quantitative method approach. The research design used was descriptive correlational. This research utilized a descriptive correlational research design supported by inquiry for the purpose of assessing prospective teachers' aptitude for teaching and teaching method (courses) subject. The goal of descriptive research is to explain what is found in data collected via surveys and statistical analysis. It is also used to define profiles, frequency distributions, and features of persons, events, occurrences, or variables that are associated with them. In a nutshell, it describes "what is" about the data (Ariola, 2006; Abun, 2019).

3.2. Population

All the students of graduate from the Institute of Education University of Sargodha, (Main campus) were taken as the population of the study. The population comprised the two programs of BS and B. Ed (Hon) 7th and 8th semester students.

The following sections present the details of sample distribution;

Table:3.1 Program-wise distribution of samples

Program	Frequency	Percentage
BS	19	36%
B. Ed Hons	33	64%
	52	100%

3.3 Sample and Sampling Technique

Purposive sampling techniques were used for data collection from the institute of Education, University of Sargodha (main campus). Purposive sampling is a non-random sampling technique in which researchers intentionally select specific individuals or groups from a larger population based on predetermined criteria, rather than using random selection methods. The sample of this study was 52 students from graduate university students.

3.4 Instrument Development

The *Teaching aptitude Test Battery (TATB) that is the work of Dr. R.P. Singh and Mrs. S. N. Sharma (1998)* was utilized to assess the potential teachers' aptitude. Questionnaire sample format by the Vidyaguru and Diwakar Rajputthe. The questionnaire was adapted. The questionnaire consisted of 30 items that were used to find out the prospective teacher's teaching aptitude towards teaching. And second questionnaire consist of 30 items develop to find out the prospective teachers aptitude towards the coursers of teaching methods in which teaching of mathematics, teaching of general sciences, teaching of history and geography and teaching of English language researchers follow the Scheme of Studies BS and B.Ed Education outline.

1.5. Validation for the instrument

To validate the instrument (questionnaire), the researcher verified the 3 experts from the institute of Education. The instrument was then modified based on their suggestion and finalized by the researchers' supervisor.

1.6. Pilot Study

A pilot study was carried out to assess the instruments' reliability. Cronbach alpha was 0.779, indicating that the questionnaire may be used for this study. This is due to the fact that instruments with coefficients larger than 0.80 are seen to be very reliable (Cohen et al., 2007).

1.7. Reliability

Reliability statistics		
Variables	Cronbach's Alpha	N of Items
Teaching aptitude	0.779	30
subject of teaching methods	0.876	40

Interpretation:

The above table shows the Reliability statistics of the questionnaire about teaching aptitude of 30 items from the first 30 respondents. Cronbach's Alpha used to investigate the scale. Results indicate that the alpha value was equal to 0.779. Second questionnaire about subject of teaching methods of 40 items from the first 30 respondents. Cronbach's Alpha used to investigate the scale. Results indicate that the alpha value was equal to 0.876.

Data Collection

Researcher shared the questionnaire to graduate university students for data collection. In this study, researcher was collecting data online in the Google form from the institute of Education, University of Sargodha (main campus). Which included the two programs BS 7th and 8th semester, B. Ed (Hon) 7th and 8th semester. Students' responses were collected online and then analyzed.

Firstly, data were collected from 7th and 8th semester students of BS and B. Ed (Hon) for teaching aptitude toward teaching. Secondly, data collection related to their subject of teaching methods researchers develop the questionnaire and follow the Scheme of Studies BS and B.Ed Education outline.

Data analysis and interpretation

This chapter covers the analysis and interpretation of the data collected about prospective teacher's aptitude for teaching and their subject of teaching methods. The data was analyzed using Frequency distribution, percentages, computing variables, Pearson's correlation coefficient, and level of teaching aptitude high, average, and low. The data was arranged according to the research questions.

4.1. Demographic Information

The following section presents the demographic details of the sample.

Table 4.1.1Semester, Program and Gender

			Gender		
Semester			Male	Female	Total
7th Semester	Program	BS	2	12	14
		B.Ed	5	15	20
	Total		7	27	34
8th Semester	Program	BS	0	5	5
		B.Ed	2	11	13
	Total		2	16	18
Total	Program	BS	2	17	19
		B.Ed	7	26	33
	Total		9	43	52

Interpretation

Above table shows that the data distribution of students across the 7th and 8th semesters by gender and academic program. In the 7th semester, there are 14 students in the BS program, with 2 males and 12 females. In the B.ED program, 20 students are enrolled, comprising 5 males and 15 females. This brings the total for the 7th semester to 34 students, with 7 males and 27 females. For the 8th semester, the BS program has 5 students, all of whom are female. In the B.ED program, there are 13 students, including 2 males and 11 females. The total for the 8th semester stands at 18 students, with 2 males and 16 females. Overall, across both semesters, the BS program has a total of 19 students (2 males and 17 females), while the B.ED program has 33 students (7 males and 26 females). The grand total for both programs across the semesters is 52 students, consisting of 9 males and 43 females.

Table 4.1.2 Background area

Background area		
	Frequency	Percent
Arts	24	46.2
Science	28	53.8
Total	52	100.0

Interpretation

The table presents data on the background areas of a sample of 52 individuals, divided into two categories: Arts and Science. Among the participants, 24 individuals, or 46.2%, have a background in Arts, while 28

individuals, making up 53.8%, come from a Science background. This indicates a slightly higher representation of individuals with a Science background compared to those from the Arts, reflecting a diverse range of backgrounds within the sample.

4.2. Teaching aptitude

Teaching aptitude according to knowledge level:

Thirty (30) items were based on knowledge level for teaching aptitude .There were some examples of the knowledge level for teaching aptitude.

Example of Knowledge items:

1. Skilled educators do not need a thorough lesson plan for a subject because.
2. Basic requirement of teaching efficiency is—
3. the most appropriate meaning of learning is—
4. Experienced teachers do not require a detailed lesson plan for a topic because-
5. Women are better teachers at the primary level because.

4.2.1. Knowledge level

Teaching Aptitude according to knowledge level for graduate (BS) and (B. Ed Hons) Prospective Teachers

Knowledge level		
Knowledge level	Frequency	Percentage
High knowledge level	16	30.8
Average knowledge level	22	42.3
Low knowledge level	14	26.9
Total	52	100.0

Interpretation:

The table presents the distribution of knowledge levels among a group of 52 individuals. It shows that 30.8% of the participants have a high knowledge level, indicating a solid understanding of the subject matter. In contrast, 42.3% possess an average knowledge level, suggesting a moderate grasp of the content. Finally, 26.9% of the participants fall into the low knowledge level category, reflecting limited familiarity with the topic. Overall, the majority of individuals in this group have at least an average level of knowledge, while a notable portion demonstrates high knowledge as well.

4.2.2. Teaching Aptitude according to knowledge level for graduate (BS) and (B. Ed Hons) Prospective Teachers at the 7th semester

			Gender		
Semester	**Program**		Male	Female	Total
7th	BS	High knowledge level	0	4	4
		Average knowledge level	1	4	5
		Low knowledge level	1	4	5
	Total		2	12	14
	B.Ed	High knowledge level	2	5	7
		Average knowledge level	3	7	10
		Low knowledge level	0	3	3
	Total		5	15	20
	Total	High knowledge level	2	9	11
		Average knowledge level	4	11	15

		Low knowledge level	1	7	8
	Total		7	27	34

Interpretation:

The table presents data on the knowledge levels of students in the 7th semester across two programs: BS and B.Ed. For the BS program, there are 14 students, with 4 females showing a high knowledge level, while 5 females and 5 students (1 male and 4 females) exhibit average and low knowledge levels, respectively. In contrast, the B.Ed program consists of 20 students, where 7 students (2 males and 5 females) demonstrate high knowledge levels, and 10 students (3 males and 7 females) show average knowledge levels, while 3 females have a low knowledge level. Overall, across both programs, a total of 34 students are analyzed, with 11 students at a high knowledge level, 15 at an average level, and 8 at a low level. In summary, the majority of students across both programs have an average knowledge level, with a notable number achieving high knowledge, particularly among females.

4.2.3. Teaching Aptitude according to knowledge level for graduate (BS) and (B. Ed Hons) Prospective Teachers at the 8th semester

				Gender		
Semester	Program			Male	Female	Total
8th	BS	knowledge level	High knowledge level	0	2	2
			Average knowledge level	0	3	3
		Total			5	5
	B.Ed	knowledge level	High knowledge level	1	2	3
			Average knowledge level	0	4	4
			Low knowledge level	1	5	6
		Total		2	11	13
	Total	knowledge level	High knowledge level	1	4	5
			Average knowledge level	0	7	7
			Low knowledge level	1	5	6
		Total		2	16	18

Interpretation:

The table presents the knowledge levels of students across two programs, BS and B.ED, divided by gender. In the 8th semester of the BS program, both male and female students have equal representation, with each group having 2 students at a high knowledge level and 3 students at an average knowledge level, totaling 5 students for each gender. In the B.ED program, there are 3 students with a high knowledge level (1 male and 2 females) and 4 students with an average knowledge level (all females). Additionally, there are 6 students classified as having a low knowledge level (1 male and 5 females), bringing the total for the B.ED program to 2 males and 11 females, with an overall total of 13 students. Combining the data from both programs, there are 5 students with a high knowledge level, 7 with an average knowledge level, and 6 with a low knowledge level, resulting in a total of 2 males and 16 females across all categories. This indicates a higher number of female students, particularly in the B.ED program, and a diverse distribution of knowledge levels among them.

4.3. Knowledge level of prospective teachers towards the subject of Teaching of Mathematics

Description of Knowledge level of subject of Teaching of Mathematics

Ten (10) items were based on ***subject of Teaching of Mathematics*** .There were some examples of the ***subject of Teaching of Mathematics***.

Example:

1. The importance of objective-based teaching in mathematics is to:
2. Inductive method involves teaching by:
3. Which method is teacher-centered and involves direct instruction?
4. Which method focuses on real-world applications of mathematical concepts?
5. Drill and practice techniques in mathematics are used to:

Knowledge level of prospective teachers towards the subject of Teaching of Mathematics

Knowledge level related to Teaching of Mathematics

Knowledge level	Frequency	Percentage
Low level of teaching mathematics	22	42.3
Average level of teaching mathematics	15	28.8
High level of teaching mathematics	15	28.8
Total	52	100.0

Interpretation

The above table shows that the knowledge levels related to the teaching of mathematics among a group of 52 individuals. **Low level of teaching mathematics 42.3%. T**he largest portion, 42.3%, of the individuals have a low level of knowledge in teaching mathematics. This indicates that nearly half of the group may struggle with effectively teaching mathematical concepts. **Average level of teaching mathematics (28.8%)**. About 28.8% of the individuals have an average level of knowledge in teaching mathematics, suggesting they have a moderate understanding but might still need some improvement to enhance their teaching skills. **High level of teaching mathematics (28.8%)**. Similarly, 28.8% of the individuals possess a high level of knowledge in teaching mathematics. These individuals likely have strong proficiency and may effectively convey mathematical concepts to students.

4.3.2. BS 7^{h} and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Mathematics"

Knowledge level related to Teaching of Mathematics

Program	Semester			Gender		Total
				Male	Female	
BS	7th		Low level	2	4	6
			Average level	0	4	4
			High level	0	4	4
		Total		2	12	14
	8th		Average level		2	2
			High level		3	3
		Total			5	5

Interpretation:

The table provides data on the knowledge level related to the teaching of mathematics, broken down by program semester and gender (male and female) for BS students. 2 male students and 12 female students are enrolled in the 7th semester. While females are represented in all knowledge levels (low, average, high), male students are only present in the low knowledge category. This suggests that female students outperform male students in the 7th semester in terms of knowledge related to teaching mathematics. The total number of students in the 8th semester is 5, with equal distribution of males and females (5 each). Students in the 8th semester are generally at the average or high knowledge level, and there are no students in the low knowledge category. This suggests that students in the 8th semester have a more developed understanding of teaching mathematics compared to those in the 7th semester.

4.3.3. B.Ed (Hons) 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Mathematics"

Knowledge level related to Teaching of Mathematics					
			Gender		
Program	Semester		Male	Female	Total
B.ED	7	Low level	3	8	11
		Average level	1	5	6
		High level	1	2	3
		Total	5	15	20
	8	Low level	0	5	5
		Average level	1	2	3
		High level	1	4	5
		Total	2	11	13

Interpretations:

The above table shows that the knowledge levels related to teaching mathematics among B.Ed. students, by gender (Male, Female) and semester (7th, 8th). **7th Semester:** Most students (55%) have a low knowledge level, particularly females. There are fewer students in the high knowledge category, indicating room for improvement in understanding mathematics teaching concepts. **8th Semester:** Knowledge levels improve, with more students in the high knowledge category and a reduction in the number of students at the low level. This trend is more pronounced among female students.

4.4. Knowledge level of prospective teachers towards the subject of Teaching of Science

Description of Knowledge level of subject of Teaching of Science

Ten (10) items were based on ***subject of Teaching of Science*** .There were some examples of the ***subject of Teaching of Science***.

Example:

1. A hypothesis in science is:
2. The primary source of energy for the human body is:
3. The ozone layer is important because it
4. Energy from the sun is:

5. Work is defined as:

Knowledge level of prospective teachers towards the subject of Teaching of Science

Knowledge level related to Teaching of Science		
Knowledge level	Frequency	Percentage
Low level	18	34.6
Average level	18	34.6
High level	16	30.8
Total	52	100.0

Interpretation:

The above table shows that the knowledge levels related to the teaching of science among a group of 52 individuals. **Low level (34.6%)**.18 individuals (34.6%) have a low level of knowledge in teaching science. This indicates that a significant portion of the group may face challenges in effectively teaching scientific concepts. **Average level (34.6%)**. An equal number of individuals (18 people, 34.6%) have an average level of knowledge in teaching science, suggesting moderate proficiency, with room for improvement. **High level (30.8%)**. 16 individuals (30.8%) possess a high level of knowledge in teaching science, indicating strong competency and likely effective teaching skills.

4.4.1. BS 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Sciences"

Knowledge level related to Teaching of Science					
			Gender		
Program	Semester		Male	Female	Total
BS	7th	Low level	1	3	4
		Average level	0	4	4
		High level	1	5	6
	Total		2	12	14
	8th	Low level		3	3
		Average level		1	1
		High level		1	1
	Total			5	5

Interpretation:

The above table shows that the knowledge levels related to teaching science among BS students, divided by semester and gender (male and female). **Total for 7th Semester.** 2 males and 12 females (total 14). A majority of students are female, with more females in the higher knowledge categories (average and high) compared to males. **Total for 8th Semester:** 5 students (1 male, 4 females), with a more balanced distribution across low, average, and high knowledge levels compared to the 7th semester.

4.4.2. B.Ed 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of Sciences"

Knowledge level related to Teaching of Science					
			Gender		
Program	Semester		Male	Female	Total
B.Ed (Hons)	7	Low level	1	6	7

		Average level	1	6	7
		High level	3	3	6
	Total		5	15	20
8		Low level	0	4	4
		Average level	2	4	6
		High level	0	3	3
	Total		2	11	13

Interpretation

The above table shows that the knowledge levels related to teaching science among B.Ed (Hons) students, by semester (7th and 8th) and gender (male and female). **Total for 7th Semester.** 5 males and 15 females (total 20). While female students are more numerous, the distribution across knowledge levels is similar for both genders, with a relatively even split between low, average, and high levels. **Total for 8th Semester.** 2 males and 11 females (total 13). In the 8th semester, more females are represented in the low and high knowledge levels, while males are concentrated in the average level.

4.5. Knowledge level of prospective teachers towards the subject of Teaching of History and geography

Description of Knowledge level of subject of Teaching of History and geography

Ten (10) items were based on *subject of Teaching of History and geography* .There were some examples of the *subject of Teaching of History and geography*.

Example:

1. What is the main focus of teaching history?
2. Geography primarily deals with:
3. Effective lesson planning in geography should include:
4. Temperature is a measure of:
5. Winds are primarily caused by:

Knowledge level of prospective teachers towards the subject of Teaching of History and geography

Knowledge level related to Teaching of *History and geography*		
Knowledge level	Frequency	Percent
Low level	19	36.5
Average level	16	30.8
High level	17	32.7
Total	52	100.0

Interpretation:

The above table shows that the knowledge levels related to the teaching of History and Geography among 52 individuals. **Low level (36.5%)**: 19 individuals, or 36.5% of the group, have a low level of knowledge in teaching History and Geography. This suggests that over one-third of the participants may struggle with effectively teaching these subjects. **Average level (30.8%)**: 16 individuals, or 30.8%, have an average level of knowledge. These participants have a moderate understanding of teaching History and Geography, with room for improvement. **High level (32.7%)**: 17 individuals, or 32.7%, possess a high level of knowledge. These individuals likely demonstrate strong proficiency in teaching History and Geography.

4.5.1. BS 7^{h} and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of History and geography"

Knowledge level related to Teaching of History and geography					
			Gender		
Program	Semester		Male	Female	Total
BS	7	Low level	0	2	2
		Average level	2	5	7
		High level	0	5	5
	Total		2	12	14
	8	Low level		2	2
		Average level		3	3
	Total			5	5

Interpretation:

The above table shows that the knowledge levels related to the teaching of History and Geography among BS students, categorized by semester (7th and 8th) and gender (male and female). **7th Semester.** 2 males and 12 females (total 14). In this semester, no males have low or high knowledge levels, while female students show a wider range of knowledge, with representation across all levels. Females dominate the higher knowledge categories. **8th Semester.** 5 males and 5 females (total 10). In this semester, the number of students at the low level remains the same as in the 7th semester, but there is an increase in average level students, with males and females represented equally.

4.5.2. B.Ed (Hons) *7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of History and geography"*

Knowledge level related to Teaching of History and geography					
			Gender		
Program	Semester		Male	Female	Total
B.ED	7th	Low level	2	9	11
		Average level	0	3	3
		High level	3	3	6
	Total		5	15	20
	8th	Low level	0	4	4
		Average level	1	2	3
		High level	1	5	6
	Total		2	11	13

The above table shows that the knowledge levels related to teaching History and Geography among B.Ed students, categorized by semester (7th and 8th) and gender (male and female). **7th Semester.** 5 males and 15 females (total 20). In this semester, a significant number of female students (9 out of 15) have a low knowledge level, while males show a higher representation in the high knowledge category. **8th Semester.** 2 males and 11 females (total 13). In this semester, the number of students at the low level decreases slightly, but females still represent the majority in the low knowledge category.

4.6. Knowledge level of prospective teachers towards the subject of Teaching of second language Acquisition

Description of Knowledge level of subject of Teaching of second language Acquisition

Ten (10) items were based on *subject of Teaching of second language Acquisition* .There were some examples of the *subject of Teaching of second language Acquisition.*

Example*:*

1. What is the primary focus of Second Language Acquisition (SLA)?
2. A second language refers to:
3. What is a first language?
4. Functional approaches to SLA emphasize:
5. Learning and literacy as social interaction highlight:

Knowledge level of prospective teachers towards the subject of Teaching of second language Acquisition

Knowledge level related to Teaching *second language Acquisition*

Knowledge level	Frequency	Percent
Low level of teaching SLA	19	36.5
Average level of teaching SLA	20	38.5
High level of teaching SLA	13	25.0
Total	52	100.0

Interpretation

The above table shows that the knowledge levels related to Teaching Second Language Acquisition (SLA) among a sample of 52 individuals. **Low Level of Teaching SLA (36.5%)**. 19 participants (approximately one-third) reported a low level of knowledge in teaching SLA. This indicates a significant proportion of individuals who may require additional training or resources to enhance their understanding and skills in this area. **Average Level of Teaching SLA (38.5%)**. 20 participants fell into the average category, representing the largest group (almost 39%). This suggests that while many individuals possess a foundational understanding of teaching SLA, there may be room for improvement to reach higher levels of proficiency. **High Level of Teaching SLA (25.0%)**. 13 participants indicated a high level of knowledge in teaching SLA. Although this group is smaller compared to the others, it still represents a notable portion of the sample, suggesting that there are some individuals with advanced understanding and skills in this area.

4.6.1. *BS 7^{h} and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of second language Acquisition"*

Knowledge level related to Teaching of *second language Acquisition*

Program	Semester		Gender		
			Male	Female	Total
BS	7th	Low level of	2	3	5
		Average level	0	5	5
		High level	0	4	4
		Total	2	12	14
	8th	Low level		2	2
		Average level		2	2
		High level		1	1
		Total		5	5

Interpretation

The above table shows that the knowledge levels related to the Teaching of Second Language Acquisition (SLA) among students in the BS program across two semesters (7th and 8th) and is segmented by gender. **7th Semester:** 2 males and 12 females (total 14). In this semester, a majority of females are represented in the average and high knowledge categories, while males have a lower presence, particularly in the higher levels of knowledge. **8th Semester:** 5 students (2 males and 3 females). The number of students with low knowledge levels decreases compared to the 7th semester, indicating some improvement in understanding. **Knowledge Levels in the 7th Semester:** A significant portion of females (5 out of 12) possess an average knowledge level, while very few males reach the higher knowledge levels. **Knowledge Levels in the 8th Semester:** There is an increase in the average level of knowledge, and the low level decreases significantly, indicating progress among students.

4.6.2. ***B.Ed (Hons) 7th and 8th semester prospective teachers Knowledge level towards the subject of "Teaching of second language Acquisition"***

Knowledge level related to Teaching of *second language Acquisition*

Program	Semester		Gender		Total
			Male	Female	
B.ED	7	Low level of teaching SLA	1	6	7
		Average level	2	7	9
		High level of teaching SLA	2	2	4
	Total		5	15	20
	8	Low level of teaching SLA	1	4	5
		Average level	1	3	4
		High level of teaching SLA	0	4	4
	Total		2	11	13

Interpretation

The table presents the knowledge levels related to the teaching of Second Language Acquisition (SLA) among B.Ed students, categorized by semester (7th and 8th) and gender (male and female). 7th Semester**:** 5 males and 15 females (total 20). In this semester, the majority of students are female, and most students fall into the average knowledge level category. 8th Semester**:** 2 males and 11 females (total 13). In this semester, the number of students at the low level decreases, and there is a notable increase in females achieving the high level. Knowledge Levels in the 7th Semester: The majority of students are in the average knowledge level, with a substantial number (7 out of 20) at the low level, indicating a need for improvement. Knowledge Levels in the 8th Semester: There is a decrease in the low knowledge level category and a significant increase in females achieving the high level (4 out of 11), suggesting overall progress in knowledge related to teaching SLA.

4.7. Relationship between graduate prospective teachers' aptitude towards teaching and their subjects of teaching methods.

Correlations

		knowledge level	Mathematics	Science	History & geography	Second Language Acquisition
knowledge level	Pearson Correlation	1	.022	.060	.089	.188
	Sig. (2-tailed)		.876	.671	.530	.181
	N	52	52	52	52	52
Mathematics	Pearson Correlation	.022	1	.107	.382**	.452**

	Sig. (2-tailed)	.876		.452	.005	.001
	N	52	52	52	52	52
Science	Pearson Correlation	.060	.107	1	.370**	.484**
	Sig. (2-tailed)	.671	.452		.007	.000
	N	52	52	52	52	52
History & geography	Pearson Correlation	.089	.382**	.370**	1	.679**
	Sig. (2-tailed)	.530	.005	.007		.000
	N	52	52	52	52	52
Second Language	Pearson Correlation	.188	.452**	.484**	.679**	1
Acquisition	Sig. (2-tailed)	.181	.001	.000	.000	
	N	52	52	52	52	52

**. Correlation is significant at the 0.01 level (2-tailed).

Interpretation

The table presents the correlation coefficients among four variables: overall knowledge level, mathematics, sciences, history and geography, and second language acquisition (SLA), based on a sample size of 52 participants.

Correlation Coefficients

Knowledge Level:

- Correlation with math: **0.022** (not significant, p = 0.876)
- Correlation with sciences: **0.060** (not significant, p = 0.671)
- Correlation with history: **0.089** (not significant, p = 0.530)
- Correlation with SLA: **0.188** (not significant, p = 0.181)

Interpretation: Overall knowledge level has weak positive correlations with math, sciences, history, and SLA, but none are statistically significant, indicating no strong relationship between overall knowledge level and these subjects.

Major findings and Discussion

The study sample included 52 individuals, with 53.8% (28 participants) from a Science background and 46.2% (24 participants) from an Arts background, indicating a diverse representation of educational backgrounds.

Knowledge Levels in Mathematics:

1. 42.3% (22 individuals) demonstrated a low level of knowledge in teaching mathematics, suggesting challenges in conveying mathematical concepts.
2. 28.8% (15 individuals) exhibited an average level of knowledge, while another 28.8% (15 individuals) showed a high level of proficiency in teaching mathematics, indicating a need for targeted improvement [8].

Knowledge Levels in History and Geography

1. 36.5% (19 individuals) had a low level, 30.8% (16 individuals) had an average level, and 32.7% (17 individuals) possessed a high level of knowledge, suggesting that many may require additional support.

Low level of knowledge: The fact that a substantial portion of students (36.5%) falls into the low knowledge category raises critical concerns about their preparedness to engage with the subject matter effectively. This trend is consistent with recent studies indicating that students often struggle with critical thinking and analysis in subjects like History and Geography, which are essential for understanding societal contexts and geographical issues (Levesque, 2022; Duffy & Pritchard, 2021).

Factors contributing to low knowledge levels may include insufficient instructional strategies, lack of engagement with the material, or inadequate prior knowledge foundations.

Average Level of Knowledge: The 30.8% of students categorized at an average knowledge level suggests a need for targeted interventions. Students in this category may have grasped basic concepts but lack deeper understanding or the ability to apply knowledge critically. According to research by Smith and O'Donnell (2023), students often benefit from active learning strategies, such as project-based learning and collaborative tasks, which can enhance their engagement and understanding.

High Level of Knowledge: While 32.7% of students demonstrated a high level of knowledge, it is essential to ensure that these students are adequately challenged to further develop their skills. Providing enrichment opportunities, such as advanced coursework or independent research projects, can help maintain their interest and deepen their understanding (Hattie & Donoghue, 2016). However, a high-performing segment of students does not negate the pressing need for support for those struggling.

Knowledge Levels in Second Language Acquisition (SLA)

1. 36.5% (19 participants) had a low level of knowledge in SLA, 38.5% (20 participants) had an average level, and 25% (13 participants) achieved a high level, indicating varied understanding among prospective teachers.

The varied levels of understanding in SLA highlight a critical aspect of teacher education: the importance of targeted training and resources to enhance educators' competencies in language instruction. The substantial proportion of participants (36.5%) with a low level of knowledge raises concerns, as a strong foundation in SLA is crucial for effective teaching and learning processes. Research indicates that teachers' knowledge and beliefs about language acquisition significantly influence their pedagogical practices and, consequently, student outcomes (Ellis, 2016; Liu, 2021). This suggests that addressing the gaps in SLA knowledge is essential for improving educational quality. He/she distribution of knowledge levels has important implications for teacher training programs. Teacher education curricula should prioritize SLA theories, methodologies, and practical applications to equip future teachers with the necessary skills and knowledge to support their students effectively. Studies have shown that professional development and ongoing training significantly enhance teachers' confidence and competence in language instruction (Graham, 2017). Institutions may need to consider incorporating more comprehensive SLA modules or workshops that focus on contemporary theories and evidence-based practices. The presence of a considerable number of participants with an average level of knowledge (38.5%) suggests that while some foundational understanding exists, there is still significant room for improvement. It may be beneficial for teacher education programs to implement differentiated instruction and support systems that cater to the diverse needs of prospective teachers. Research indicates that mentorship and collaborative learning opportunities can foster deeper understanding and skills in SLA (García & Wei, 2014). Furthermore, integrating technology and innovative teaching strategies could enhance engagement and understanding of SLA concepts among prospective teachers.

Trends across Semesters:

1. In the 7th semester, 55% of students, particularly females, exhibited low knowledge levels in mathematics. By the 8th semester, there was a marked improvement, especially among female students, with an increase in those achieving high knowledge levels [3].

The analysis of knowledge levels in mathematics across the 7th and 8th semesters reveals significant trends, particularly in the context of gender differences. In the 7th semester, 55% of students demonstrated low knowledge levels, with a notable prevalence among female students. This finding is consistent with existing literature that highlights the challenges female students often face in mathematics education, including societal stereotypes and a lack of confidence in their mathematical abilities (Steele, 2010; Wang et al.,

2020). The transition from the 7th to the 8th semester shows a marked improvement in knowledge levels, especially among female students. This change can be attributed to various factors, including the implementation of targeted educational interventions and supportive learning environments. Research indicates that tailored instructional strategies and mentorship programs can significantly enhance female students' confidence and performance in mathematics (Graham et al., 2013; Hill et al., 2010).

Correlation Analysis

1. Overall knowledge levels showed weak positive correlations with subjects such as mathematics, sciences, history, and SLA, but none were statistically significant, indicating no strong relationships between overall knowledge level and these subjects.
2. These findings underscore the need for targeted interventions to enhance the teaching aptitude and knowledge levels of prospective teachers, particularly in mathematics and SLA.
3. These findings highlight the necessity for targeted interventions to enhance the teaching aptitude and knowledge levels of prospective teachers, particularly in mathematics and SLA, to ensure they are well-equipped to meet the educational needs of their future students.

The weak positive correlations observed in the study (with correlation coefficients near zero) indicate that while there may be a slight tendency for overall knowledge to relate to specific subject knowledge, this relationship is not robust. For example, a study by Reddy et al. (2020) found that teacher efficacy is often linked more closely with specialized subject knowledge rather than overall knowledge levels. The lack of statistically significant correlations implies that a holistic understanding of various subjects may not be adequately integrated into teacher training programs. Consequently, educators may not be fully prepared to deliver content effectively across subjects. Given the findings, there is a pressing need for targeted interventions aimed at enhancing the teaching aptitude and knowledge levels of prospective teachers, particularly in mathematics and SLA. Research by Wilson et al. (2021) emphasizes that focused professional development can significantly improve teachers' instructional practices and, subsequently, student learning outcomes. Implementing specialized training workshops, mentoring programs, and collaborative teaching models could help bridge these gaps. By emphasizing pedagogical content knowledge, teacher education programs can foster a deeper understanding of how to teach complex subjects effectively, which is particularly important for subjects like mathematics and SLA that require specific strategies for effective teaching.

Conclusion

1. **Gender Disparities:** Female students in the B.Ed program generally exhibit higher knowledge levels compared to male students, particularly in subjects like Science and Second Language Acquisition.
2. **Knowledge Distribution:** A significant number of students across various subjects demonstrate low to average knowledge levels, highlighting the need for improvement in teaching competencies, especially in Mathematics and Science.
3. **Semester Performance:** There is a noticeable increase in knowledge levels from the 7th to the 8th semester, indicating that students improve their understanding as they progress through their program. However, the presence of students with low knowledge levels remains a concern.
4. **Correlation Analysis:** The weak positive correlations between overall knowledge levels and specific subjects suggest that while some relationship exists, it is not strong enough to imply that overall knowledge directly influences proficiency in individual subjects.

Recommendations:

1. Teacher education programs should incorporate comprehensive training modules that focus on developing both teaching aptitude and effective teaching methods.

2. Establishing mentorship programs that pair prospective teachers with experienced educators can provide valuable support and guidance.

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Evaluation Criteria	Yes	No	Comments
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Does abstract accurately reflect the content?	✓		The abstract is excessively detailed and includes information that is not essential.
Is theoretical and practical content of the study clearly identified?	✓		
Is the literature cited correctly and up-to-date?	✓		Although the literature is cited appropriately, the manuscript contains bolded words within sentences and inconsistent font styles that should be revised.
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Are the findings concluded in appropriate manner?	✓		
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Is the overall writing, Clear and unambiguous?	✓		
Is the manuscript written according to APA?	✓		he running references, table titles, and the reference section at the end of the article should be revised to comply with APA guidelines.

Final Comments and Recommendations:

The article may be accepted following the incorporation of the suggested corrections.

Dr. Mahvish Fatima
Lahore College for Women University

Manuscript Review

(181 Article)

Article: ***Prospective teacher's aptitude towards teaching and their subject of teaching methods: A correlational study***

Evaluation Criteria	**Status**	**Comments**
Title of the manuscript appropriate?	Yes	The title is clear, specific, and directly reflects the content of the study.
Does abstract accurately reflect the content?	Yes	The abstract summarises the aims, methodology, results, and key conclusions effectively.
Is theoretical and practical content clearly identified?	Yes	Both theoretical grounding and practical implications are well-defined throughout the manuscript.
Is the literature cited correctly and up-to-date?	Yes	Most references are recent and relevant; literature is appropriately cited.
Is the Method clearly stated and appropriate?	Yes	The descriptive correlational design is clearly explained and appropriate for the objectives.
Is the procedure clearly and appropriately stated?	Yes	Procedures for sampling, instrument development, validation, and analysis are adequately described.
Are the ethical guidelines	No	Although not explicitly stated, the study involves

followed?		standard educational research with no ethical concerns evident.
Are the results appropriately described?	Yes	Results are logically presented with correct interpretations.
Are the appropriate statistical procedures used?	Yes	Pearson correlation and descriptive statistics were appropriate for the research questions.
Are the tables and figures as per APA Guidelines?	No	Tables contain necessary information, though a few formatting improvements may further enhance clarity.
Are the findings concluded in an appropriate manner?	Yes	The conclusions align well with the results and address research questions.
Are the findings appropriately interpreted in discussion section?	Yes	The discussion connects well with existing literature and interprets findings effectively.
Is the overall writing clear and unambiguous?	Yes	The manuscript is generally clear, though minor grammar improvements could be helpful.
Is the manuscript written according to APA?	Yes	Citations and structure generally follow APA guidelines, with room for minor refinements.

Final Comments and Recommendations

The article titled "Prospective teacher's aptitude towards teaching and their subject of teaching methods: A correlational study"presents a well-structured and meaningful study relevant to teacher education. It demonstrates strong methodological rigour, clear reporting of findings, and appropriate statistical procedures. The introduction and literature review are well-grounded in current scholarship. The results and discussion sections are coherent and aligned with the research questions. A few minor areas such as APA formatting consistency, grammar refinements, and explicit ethical considerations could be enhanced. Overall, the article is **suitable and recommended** for publication.

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