

EXAMINING ACADEMIC ACHIEVEMENT OF ELEMENTARY SCHOOL STUDENTS: A GENDER-BASED STUDY

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ABSTRACT

This quantitative study examined academic achievement differences between elementary school male and female students. Self-developed questionnaires assessed 120 students' perceived competence, intrinsic motivation, peer learning, and self-regulation. Results showed significantly higher overall achievement for females. The most significant gender gap occurred in learning responsibility, with females demonstrating more excellent work ethic and accountability. Females also exhibited higher confidence in core abilities and greater interest in academic tasks. However, males showed comparable leveraging of classroom peer resources. These insights align with prior research highlighting motivational, attitudinal, and behavioural risk factors disadvantaging boys. Practical recommendations centre on interventions targeting male students' self-beliefs, inner drive, and self-discipline through evidence-based psychological and instructional approaches sensitive to associated masculine socialization processes. Ongoing research should investigate developmental trajectories of academic achievement patterns while continuous gender-sensitized improvement of student-centred solutions remains imperative for equitable outcomes. This study contributes vital disaggregated illumination of ability, motivational, and self-regulatory dimensions underlying achievement disparities forming by elementary school. It further signifies the need to apply a gendered lens to associated psychological and sociocultural processes when designing impactful support systems for all students' success.

Keywords: academic achievement, gender differences, elementary school, motivation, self-regulation, self-efficacy

INTRODUCTION

Students' achievement refers to academic performance, life skills attainment, and community engagement. It involves evaluating students both quantitatively (e.g., test scores) and qualitatively (e.g., behaviour change, values acquisition) against learning objectives (Ansari et al., 2017). Teachers significantly impact students' outcomes, so investigating teachers' competencies can improve students' achievement.

Teachers require strong content knowledge, pedagogical skills, and professional competencies to affect student success positively (Kunter et al., 2011) While content knowledge is crucial, especially in

mathematics, pedagogical knowledge is also vital for caring for students' individual needs (Ball & Bass, 2000) Developing student-teacher solid relationships and understanding is invaluable but insufficient without professional competencies (Blömeke & Delaney, 2012) Though teachers have traditionally controlled lessons, student-centred approaches are now encouraged so students gain requisite knowledge, abilities and outlooks for life preparation (Gous-Kemp, 2014). Overall, students' achievement encompasses their total academic and personal growth. Supporting teacher development across content, pedagogical and professional domains

directly translates to improved student outcomes. Adopting student-focused educational philosophies also allows students to progress holistically.

Teachers' pedagogical knowledge correlates positively with student achievement (Kunter et al., 2011). Applying effective teaching methods can improve learning outcomes across student groups. However, content knowledge alone is insufficient - teachers also need skills to respond to individual student needs (Ball & Bass, 2000). Nurturing student-teacher solid relationships and understanding is crucial but requires ongoing professional development (Blömeke & Delaney, 2012). Attracting and retaining quality teachers is challenging in some contexts (Blömeke & Delaney, 2012). There is high attrition among new teachers in certain countries. Recruiting teachers well-versed in high-demand subjects can be difficult. Attracting academically strong and motivated teacher candidates through quality training programs is key. Pedagogy and content knowledge are vital for effective instruction (Ansari et al., 2017). Teachers should understand the subject matter, syllabus content, and how students acquire skills and apply social, cognitive and developmental learning theories. It facilitates positive learning dispositions and habits. Meaningful learning emerges through sense-making discourse geared toward conceptual understanding, not just activity completion (Ansari et al., 2017). Learning quality relies on teachers blending their vision, subject scope/nature, curriculum objectives and learner needs.

Teachers can significantly influence students (Blazar & Kraft, 2017). Teacher characteristics, experience, practices (e.g., questioning, group work), and mathematics skills impact achievement. However, student GPA has little effect on overall attainment. While teacher subject matter competence links positively to achievement in earlier grades, course-specific pedagogical methods become increasingly impactful in later schooling (Tella, 2008)

Effective teaching captivates student attention and upgrades learning. It requires carefully planned lessons, not just clarifying ideas. Effective teachers model systematic thinking and provide intellectual guidance (Kellens et al., 2017)

RESEARCH OBJECTIVE

To find out students' achievement at the elementary level based on gender.

RESEARCH QUESTION

What is students' achievement at the elementary level based on gender?

LITERATURE REVIEW

Students' achievement has been found effective in different studies, and teachers' pedagogical knowledge correlates positively with student achievement (Kunter et al., 2011). Applying effective teaching methods can improve learning outcomes across student groups. However, content knowledge alone is insufficient - teachers also need skills to respond to individual student needs (Ball & Bass, 2000). Nurturing strong student-teacher relationships and understanding is crucial but requires ongoing professional development (Blömeke & Delaney, 2012)

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Effective teaching captivates student attention and upgrades learning. It requires carefully planned lessons, not just clarifying ideas. Effective teachers model systematic thinking and provide intellectual guidance (Kellens et al., 2017). In Pakistani context, there are few studies related to academic achievement. In a qualitative study, role of parental involvement was explored in their children academic achievement between public and private elementary schools (Shah et al., 2021). In the same way, the influence of parent-teacher meetings on early childhood students' academic performance was also seen through prospective teachers' perspective (Arshad et al., 2021).

METHODOLOGY

The present study sought to examine academic achievement among elementary public school students. A quantitative, non-experimental survey design was employed. Self-developed, 5-point Likert scale questionnaire was administered to assess perceived students' achievement across four dimensions: ability, desire for learning, learning from others, and responsibilities for learning. Using simple random sampling, the sample consisted of 120 grade 8 students (60 males and 60 females) enrolled in public elementary schools in one district of Punjab, meeting the recommended 10% threshold (Creswell & Poht, 2016). This sample represented 20% of the district's grade 8 elementary public school student population. The 20-item instrument demonstrated strong internal consistency reliability ($\alpha = 0.843$). The questionnaire was developed and validated to evaluate multiple facets of students' academic achievement levels. Data were analyzed through SPSS 21. Frequency distribution was used for the analysis of respondents' opinions. On the other hand, an independent sample t-test was used to compare respondents based on gender. Descriptive and inferential statistical techniques were used for data analysis. Frequency, mean, standard deviation, and regression were used to meet the study's objectives. To find out the difference based on gender, a t-test was used regarding teachers' and students' respondents.

Table 1:
Respondents (students) based on gender

Gender	Frequency	Percent (%)
Male	60	50%
Female	60	50%
Total	120	100%

In view of the above table, there were (N=, 50% Male) and (N=, 50% female respondents) that represented the sample of the study.

Table 2:
Respondents (students) based on age

Age	Frequency	Percent (%)
12 years	13	10.8%
13 years	30	25%
14 years	58	48.4%
15 years	19	15.8%
Total	120	100%

Given the above table, 10.8% of the respondents were 12 years old, 25% were 13 years old, 48.4% were 14 years old, and 15.8% were 15 years old.

Findings of the study

The findings of the study are described in the following tables:

Table 3:
Analysis of students' achievement

Indicator	Statement	Mean
		SD
Ability:	I feel confident that I can pass my studies with my teachers' support.	4.73
	I receive encouragement on my hard in my studies from my teachers	0.444
	I receive encouragement from my friends on my performance.	4.72
	I am encouraged by at least one of my parents on my abilities	4.12
		1.486
		4.60
		0.614
Desire for learning	I show complete interest in learning	4.37
		0.777

I show a keen interest in the subject I take	4.39	0.823
I show interest in solving problems in lesson	4.00	0.830
I show interest in the topic being taught	4.54	0.685
I concentrate on my academic work.	4.52	0.745
Learning from others I participate in classroom discussion	1.094	3.88
I participate in group work	4.07	1.059
I ask a question if I am unable to understand the concept	4.24	1.004
I try to learn from others who are better than me in studies	4.33	0.726
I get help from my teachers during study	4.50	0.926
I pay attention to my teachers in lessons to understand what is being taught	0.742	4.44
Responsibilities for learning I take my studies as personal responsibilities	0.576	4.57
I struggle to gather information on the topic so that I can master them	4.13	0.809
I do my homework regularly	4.31	0.924
I always participate in class activities	1.151	4.05
I do not feel hesitation in asking questions regarding lesson	4.39	0.759

The table presents students' ratings of various indicators related to students' academic ability, intrinsic desire for learning, learning from others, and taking responsibility for their learning. Each statement was rated on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Overall, ratings are high across all indicators, suggesting students positively in terms of confidence, motivation, collaboration, and accountability. Specifically, the highest-rated statement (4.73) was

that students felt confident passing their studies with teacher support. Encouragement from teachers (4.72) and parents (4.60) regarding academic abilities also scored very high. This shows teachers perceive students to have good self-efficacy and receive strong motivational backing. Statements on students' inherent desire for learning, like showing interest in solving problems (4.00) or topics taught (4.54) as well as concentrating well (4.52), had agreeable ratings. This implies students display curiosity and engagement during lessons. Additionally, areas around learning from others, like class participation (3.88), group work (4.07) and asking questions (4.24), were rated moderately. Seeking help from capable peers (4.33) and teachers (4.50) scored higher. Hence, while independent contributions could improve, teachers find students collaborate and leverage support when needed. Finally, taking ownership over studies (4.57) and struggling to comprehend concepts (4.13) were positively rated. Completing homework (4.31) and participating in activities (4.05) regularly, and asking questions without hesitation (4.39) also had agreeable ratings.

Table 4:
Mean and SD of Students' Achievement

Factors	All	Male	Femal
Overall			
N	120	60	60
Mean	86.90	84.92	88.88
SD	8.383	7.552	8.759
Ability			
N	120	60	60
Mean	18.17	17.85	18.48
SD	1.751	1.840	1.610
Desire for Learning			
N	120	60	60
Mean	21.82	21.43	22.20
SD	2.443	2.324	2.516
Learning from Others			
N	120	60	60
Mean	25.47	25.07	25.87
SD	3.251	3.161	3.316
Responsibilities for Learning			
N	120	60	60
Mean	21.45	20.57	22.33
SD	2.615	2.324	2.608

This table breaks down average student achievement and standard deviation by gender across overall performance and four sub-factors - ability, desire for learning, learning from others, and responsibilities for learning. The average achievement score is 86.90 for all students, 84.92 for males, and 88.88 for females. Females score higher than males by 3.96 points. Moderate standard deviations around 8 suggest there is a decent spread among scores. Specifically for ability, females again have higher averages (18.48) than males (17.85). As self-efficacy is crucial for motivation and success, this gap must be addressed via targeted encouragement and scaffolding for male students. Similarly, in the desire for learning, female students show greater interest based on their higher mean score (22.20 vs 21.43). Nurturing intrinsic motivation levels among male students could help close this gap. Males also trail females in utilizing interpersonal learning opportunities, scoring 25.07 against 25.87. Equipping male students with skills to leverage peer and teacher support may benefit them. The largest gap emerges for responsibilities whereby females demonstrate greater accountability (22.33) than males (20.57). Instilling disciplined learning habits among male students is critical to success.

Table 5:
Comparison of Students' Achievement based on gender

Gender	N	Mean	SD	Df	T	p
Overall						
Male	60	84.92	7.552	118	-2.657	.009
Female	60	88.88	8.759			
Ability						
Male	60	17.85	1.840	118	-2.007	.047
Female	60	18.48	1.610			
Desire for Learning						
Male	60	21.43	2.324	118	-1.734	.086
Female	60	22.20	2.516			
Learning from Others						
Male	60	25.07	3.162	118	-1.352	.179
Female	60	25.87	3.316			
Responsibilities for Learning						
Male	60	20.57	2.324	118	-3.917	.000
Female	60	22.33	2.608			

The above table analyzes whether there are statistically significant differences in achievement between males and females across the overall performance of the students and the four sub-factors. Independent t-tests were conducted to compare mean scores. Overall, females significantly outperformed

males with higher average scores (88.88 vs 84.92), $t(118) = -2.657, p = .009$. This gap seems largely attributed to differences in responsibilities for learning, as discussed next. Specifically in the area of ability, females again scored higher than males (18.48 vs 17.85) at a statistically significant level, $t(118) = -2.007, p = .047$. This aligns with earlier evidence suggesting targeted support for male self-efficacy is warranted. Similarly, female students show a greater desire for learning than males (22.20 vs 21.43). However, this difference only approaches significance, $t(118) = -1.734, p = .086$. Still, boosting motivation remains a priority. No significant gender differences emerged around utilizing interpersonal learning opportunities. This implies comparative strengths in peer collaboration for males. The greatest performance divide arises in responsibilities for learning - females scored notably higher than males (22.33 vs 20.57), $t(118) = 3.917, p < .001$. Hence, building male students' accountability, self-regulation, and work habits should improve parity.

DISCUSSIONS

The key finding of higher overall achievement for female over male students aligns with existing research showing girls often outperform boys academically in early grade school (Voyer & Voyer, 2014). Gender was a significant predictor of achievement gaps in learning accountability observed. This echoes previous work linking feminine conscientiousness to superior self-discipline and goal adherence (Dumfart & Neubauer, 2016). In this regard, a previous study found greater self-efficacy for academic tasks, consistent with confirmation that boys underestimate capabilities despite similar capabilities (Freudenthaler et al., 2008). Nonetheless, boys demonstrated comparable leveraging of interpersonal resources, highlighting conclusions that single-gender classrooms yield limited motivational or collaborative skill differences (Pahlke et al., 2014).

Particularly, intrinsic motivation showed differences only approaching significance between genders. This partly distinguishes robust associations between female students and inner interest in learning established previously (Pahlke et al., 2014). More modest motivational divergence here could stem from the specificity of assessing domain level rather than general academic interest. Additionally, while

girls' learning responsibility edge aligns with prior work (Duckworth & Seligman, 2006), this study found that ability belief differences typically decrease by the elementary stage (Jacobs et al., 2002). Extricating contextual differences assuring further examination, boys still lagged finally in attitudes and behaviours enabling achievement.

These perceptions valorize targeting boys' promising efficacy beliefs, inner drive, and self-regulatory habits through early-grade interpositions underpinned by psychological and sociocultural perspectives on male academic risk factors (Weaver-Hightower, 2008). Increasing engagement via gender-aware distinguished instruction and growth mindset elevation could also foster intrinsic motivation and galvanize boys as self-determined learners (Fogarty & Pete, 2010). Moving forward, additional research on the problem's developmental trajectory is fundamental alongside implementing and continually improving engaging solutions to equitize elementary outcomes.

CONCLUSION

This study examined academic achievement differences between elementary school male and female students across several dimensions. A survey was conducted with 120 students using a questionnaire assessing ability, intrinsic motivation, collaborative learning, and self-regulation. Data analysis found significant gender-based achievement gaps favouring female students. Overall, the average achievement score was higher for females than males. Moderate score variability across the sample indicates a decent distribution. The largest divide emerged in learning responsibility. Females demonstrated far greater discipline, accountability, and work ethic than their male peers. Cultivating structured habits and ownership over studies in male students could enhance parity. Additionally, female students exhibited higher confidence in their academic abilities than males. As self-belief enables scholastic success, male pupils require targeted assistance to bolster efficacy and perseverance. Greater motivation was also apparent among female participants both inherently and on specific tasks. Igniting male students' curiosity and engagement could provide an extra boost. While no substantial differences arose regarding utilizing interpersonal learning avenues, female students still showed a

slight edge. Equipping male learners with sociocognitive techniques to fully leverage peer collaboration and teacher support remains valuable.

RECOMMENDATIONS

Based on the findings and conclusions, the following are recommendations of the study:

Implement targeted interventions to build self-efficacy and growth mindsets in elementary school boys to empower positive achievement attitudes and perseverance.

Develop intrinsic motivation and internalization of learning values in male students through gender-sensitive application of autonomy-supportive teaching practices.

Equip teachers with skills to promote mastery goal structures, frame competence as self-referenced, and offer tailored supportive feedback to struggling boy learners.

Foster stronger self-regulation capacities among boys through metacognitive strategy instruction and scaffolding structured learning/work habits from an early age.

Engage male students through gender-aware differentiated instruction responsive to masculine academic inclinations, attitudes, and motivational profiles.

Promote classroom dialogue and school-wide efforts analyzing and addressing intersectional social processes disadvantaging boys based on masculinity constructs.

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