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APPRAISING THE EFFECTIVENESS OF CURRICULUM-BASED TEACHING METHODS ON STUDENTS' ACADEMIC ACHIEVEMENT

[1] Tahira Aslam
MPhil Scholar, National College of Business Administration and Economics (NCBA&E), Lahore, Punjab-Pakistan
tahiraaslam431@gmail.com
[2] Haq Nawaz
Phd,Associate Professor, Department of Education NCBAE&E Lahore, Punjab-Pakistan
drhaqnawaz@ncbae.edu.pk (Corresponding Author)*

Abstract

Curriculum-based teaching methods enhance students' learning outcome that provides empirical evidence to reform the education system. A quantitative correlational study employed a survey design to collect data from respondents. The sample of the study consisted of 312 teachers selected through a simple random sampling technique to collect data. The validity was ensured by experts, and the reliability of the questionnaire was calculated using Cronbach's alpha score of .882. Descriptive statistics mean, standard deviation, and inferential statistics of Pearson correlation and multiple regression analysis were employed to explore the phenomenon. The results of the Pearson correlation analysis indicated a moderate relationship among the dimensions of curriculum-based teaching methods and students' academic achievement. Furthermore, there was a moderate relationship among curriculum-based teaching methods and students' academic achievement. The results of multiple regression analysis indicated a moderate effect of the dimensions, inquiry, problem solving, and discussion, while the rest of the dimensions of group work and question answering, have a weak effect on students' academic achievement. Furthermore, the results of multiple regression analysis showed a moderate effect of curriculum-based teaching methods on students' academic achievement. The study results concluded that effective implementation of curriculum-based teaching methods is essential for optimizing students' achievement. Based on the results of the study, it was recommended that policymakers, curriculum developers, teachers, and other relevant stakeholders play their role to strengthen instructional practices to improve the teaching learning process.

Keywords: Appraising, academic achievement, effectiveness, curriculum-based teaching methods

Introduction

An effective education system of any country contributes to enhancing students' learning outcomes. Students' learning outcomes provide a basis for instructional practices to enhance academic achievement. The curriculum is a comprehensive plan of learning briefly consisted of objectives, content, teaching methods, evaluation, and learning materials. Curriculum effectiveness depends on the alignment among curriculum goals, teaching activities, and assessment practices to ensure coherence in the learning process (Creemers & Kyriakides, 2012; Wiggins & McTighe, 2005). Appraising refers to the evaluation of how well teaching methods are aligned with the curriculum document to ensure a standardized teaching-learning process. It involves judging the extent to which curriculum-based teaching methods support improved academic outcomes for students (Glatthorn et al., 2018). Effectiveness in education refers to the extent to which teaching practices, instructional methods, and assessment strategies achieve desired student learning outcomes (reference). Effectiveness in education provides the foundation for learning and guides students toward expected outcomes (Wiliam, 2011). Effective teaching is acquisition of behavioral skills to improve theoretical pedagogical knowledge that integrates objectives, suitable instructional strategies, assessment,

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and a positive classroom environment to maximize students' academic achievement and holistic development. Effective teaching is characterized by clarity, purpose, responsiveness, and alignment with curriculum (Marzano, 2003). Teaching effectiveness refers to how well teachers facilitate learning that leads to measurable student outcomes. Teaching effectiveness included teacher competence, instructional strategies, classroom practices, institutional support, curriculum alignment, students' support for learning activities, and assessment methods. These factors enhance students' learning outcomes (Killen, 2016). Effective teaching promotes critical thinking, problem-solving, and knowledge application (Marzano, 2003). Ultimately, teaching effectiveness ensures the translation of curriculum into students' meaningful learning and academic achievement. Research has highlighted that teaching becomes most effective when it is systematically aligned with standards, objectives, and meaningful assessment practices (Hattie, 2009).

Curriculum-based teaching methods are structured instructional strategies aligned with curriculum standards. Within this framework, teachers plan, teach, and assess content in a coherent and goal-oriented manner, ensuring relevance and instructional clarity (Popham, 2009). Curriculum-based teaching methods included problem-solving, inquiry, discussion, group work, and question–answer methods, which are emphasized in the general science curriculum at the elementary level (Government of Pakistan, 2022). When applied effectively these methods effectively help to maintain instructional clarity, support mastery learning, and improve academic outcomes (Schmoker, 2018; Hattie, 2009).

Academic achievement refers to measurable outcomes reflecting students' progress in knowledge, skills, and attitudes as described in the curriculum. These outcomes are typically assessed through standardized tests, classroom assessments, and performance-based tasks. At the elementary level, academic achievement is foundational, as early learning success strongly predicts future academic development and long-term educational progress (Brookhart, 2013; Darling-Hammond et al., 2020). Elementary education forms the core structure of formal schooling by developing foundational skills in literacy, numeracy, and scientific thinking. These early competencies prepare learners for advanced academic learning in later stages. Although curriculum alignment is emphasized in educational reforms, research attention has remained more focused on secondary education, leaving limited empirical evidence on curriculum-based teaching methods at the elementary level (National Research Council, 2001). There are limited empirical and divergent results of studies on curriculum-based teaching methods and achievement. A gap exists in context, subject, teacher preparedness, professional development, research designs, and measures of academic achievement. This study aims to address gaps through exploring the effectiveness of curriculum-based teaching methods across core subjects, and exploring how teacher preparedness and capturing deeper learning influence academic achievement. The study aims to determine best practices, identify existing gaps in implementation, and contribute to the enhancement of teaching and learning processes. The findings of this study are expected to support evidence-based decision-making for improving curriculum implementation and fostering academic achievement among students.

Statement of the Problem

Curriculum-based teaching methods are pivotal for translating curriculum intentions into meaningful learning outcomes. National curricula emphasize learner-centered, activity-based, and outcome-oriented teaching methods to enhance students' academic achievement. However, despite many curricular reforms, persistent concerns remain regarding students' low academic performance, limited conceptual understanding, and overreliance on rote memorization in many developing countries like Pakistan. Existing practices reported that teaching methods are less aligned with the intended curriculum, as teachers may rely on traditional, teacher-centered teaching methods that less address curriculum objectives, learner

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diversity, and higher-order cognitive skills. Consequently, the expected improvements in students' academic achievement envisioned by curriculum framework are less consistently realized. This gap among intended curriculum, implemented teaching methods, and attained academic outcomes raises critical questions about the actual effectiveness of curriculum-based teaching methods. Moreover, previous studies focused on general teaching methods with limited empirical attention given to appraising how curriculum-based teaching methods influence students' academic achievement. Additionally, variations in teachers' preparedness, instructional resources, and assessment practices further complicate the relationship between curriculum-based teaching and academic achievement. Therefore, there is a pressing need to appraise the effectiveness of curriculum-based teaching methods on students' academic achievement. Such a study is essential to identify current instructional practices, provide evidence-based insights for curriculum implementation, and inform policymakers, curriculum developers, and teachers on how teaching methods align with curriculum to enhance students' academic achievement.

Objectives of the Study

1. To identify the existing level of the effectiveness of curriculum-based teaching methods on students' academic achievement.
2. To find out the relationship between curriculum-based teaching methods and students' academic achievement.
3. To evaluate the effect of curriculum-based teaching methods on students' academic achievement.

Significance of the Study

The results of the study may be helpful for policy makers, curriculum developers, Punjab Education, Curriculum, Training and Assessment Authority (PECTTAA), institutional heads, and teachers to provide insights into the effectiveness of curriculum-based teaching methods. The study offers empirical evidence that may assist policymakers in evaluating the effectiveness of curriculum implementation strategies. The results of the study are helpful for curriculum developers and instructional designers, who may benefit from this study by gaining evidence-based feedback on the implementation of curriculum frameworks, ensuring that curriculum-based teaching methods are responsive to learners' academic needs and contextual realities. The study results may support the educational administrators and school leaders to make informed decisions regarding teacher training, classroom supervision, and instructional monitoring. The study may provide a baseline for future research by identifying gaps in curriculum implementation and instructional effectiveness.

Literature Review

This study's literature review focused on evaluating curriculum-based teaching methods and their impact on academic achievement at the elementary level, particularly in general science. It also examines instructional strategies and their alignment with curriculum objectives to enhance learning outcomes.

General Science

PECTAA offers twelve subjects at the elementary level in Punjab, Pakistan (Government of Pakistan, 2025). General Science is an arts group central subject to study fundamental concepts and principles across various scientific disciplines, including physics, chemistry, biology, and earth sciences, aimed at developing students' scientific literacy and critical thinking skills (Bybee, 2014). It plays a pivotal role in elementary education by fostering curiosity, problem-solving abilities, and an understanding of natural phenomena, which form the foundation for future academic learning and lifelong inquiry. In the context of this study, General science serves as a subject through which curriculum-based teaching methods can be applied to enhance students' academic achievement. By integrating structured

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lesson plans, inquiry-based learning, and problem-solving activities aligned with curriculum objectives, teachers can effectively promote conceptual understanding, practical application, and higher-order thinking skills among elementary students (Hofstein & Lunetta, 2004).

Bridging Role of General Science

General Science is an important subject as it develops scientific literacy, critical thinking, and problem-solving skills in students, which are essential for understanding and interacting with the natural world (Bybee, 2014). It encourages curiosity, exploration, and inquiry, allowing students to connect scientific concepts with everyday life, thereby fostering meaningful learning experiences. Furthermore, general science lays the foundation for higher-order cognitive skills and application, which are important for academic achievement across subjects (Hofstein & Lunetta, 2004). Through implementing the teaching methods, teachers can enhance conceptual understanding, improve retention of knowledge, and foster academic achievement in learners.

General science serves a bridging role by connecting students' prior knowledge and everyday experiences with formal scientific concepts, preparing them for advance learning (Bybee, 2014; Hofstein & Lunetta, 2004). It fosters observation, inquiry, problem-solving, and critical thinking skills, which are essential for understanding complex scientific principles in higher stages. General science helps to develop scientific phenomena and encourages active exploration, bridging the gap between curiosity-driven learning and implementing curriculum-based teaching methods to maximize students' engagement, understanding, and academic achivement at the elementary level.

Curriculum

Curriculum refers to a written plan to facilitate the teaching-learning process within education settings to achieve desired educational, social, cultural, and economic purposes. Curriculum is a framework of learning to promote holistic development of learners and respond to societal needs (Ornstein & Hunkins, 2018). Curriculum is a dynamic process that integrates why to taught, what is taught, how it is taught, and how learning outcomes are evaluated. Curriculum as a process emphasizes how knowledge is constructed through classroom interactions, teaching strategies, learning experiences, and assessment practices (Marzano, 2003; Ornstein & Hunkins, 2018). Curriculum serves as a roadmap to ensure consistency and continuity across standards and expectations for learning across various grade levels. It establishes the basis for planning assessment that measures whether students have achieved intended learning outcomes (Wiggins & McTighe, 2005).Curriculum as a product focuses on competencies, attitudes, behavioral changes, and the students' academic achievement. A well-structured curriculum enables teachers to implement evidence-based teaching methods, such as inquiry, problem-solving, and discussion, in a systematic manner. This alignment between curriculum content, teaching methods, and assessment helps to fosters mastery of content, supports higher-order thinking skills, and reduces learning gaps. Therefore, the curriculum is not just a document but a complete standardized guideline package for the education system.

Curriculum-Based Teaching Methods for General Science

Teaching effectiveness refers to the extent to which teachers successfully facilitate students' learning and enhance academic achievement. The factors influencing teaching effectiveness are teacher subject command, pedagogical skills, and assessment. Effective teaching of general science relies on strategies that engage students and align with curriculum objectives. Curriculum-Based Teaching Methods (CBTMs) are rooted in a curriculum framework to align teaching methods with content to enhance achievement (Government of Pakistan, 2025; Hattie, 2009; Marzano, 2020; Tomlinson, 2014; Wiliam, 2011).They allow differentiation, teaching variability, and access to core knowledge but may limit creativity and adaptation (Robinson, 2011).

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Inquiry: The inquiry is an instructional approach in which students learn through observation, experimentation, interpretation, drawing conclusions, and reflection. Inquiry-based teaching encourages students to explore the real world, make observations, and construct knowledge through active investigation. This strategy promotes critical thinking, creativity, and problem-solving skills by allowing learners to engage directly with scientific phenomena. Additionally, inquiry-based learning aligns closely with curriculum objectives by guiding students through structured exploration and reflection, helping them develop a deeper conceptual understanding of scientific concepts. It also fosters learner autonomy, encourages collaboration during investigations, and allows teachers to identify and address misconceptions in real time. In the context of this study, implementing inquiry-based strategies in General Science is expected to enhance students' academic achievement by promoting active engagement, critical reasoning, and application of knowledge in meaningful contexts (Llewellyn, 2013).

Problem-solving is a teaching method in which students learn through engaging with real-life problems that require the application of scientific concepts to find solutions. Learners are encouraged to think critically, analyze, find solutions, and apply knowledge to new contexts. This method promotes deep understanding and independent learning. This method enhances cognitive skills and enables students to connect theory with practice through understanding and retention of knowledge. Through solving practical problems, learners begin to understand the relevance of science in everyday life, which increases motivation and engagement.

Teachers used this method to evaluate students' understanding through observing students' deeper understanding and accurate application of concepts (Killen, 2016; Jonassen, 2011).

D**iscussion method** is an interactive teaching method in which learning occurs through the exchange of ideas, opinions, and experiences between the teacher and students. It promotes active learning, critical thinking, meaningful understanding, collaborative learning, and reflective understanding. This method promotes communication skills and a deeper comprehension of scientific concepts, supporting retention and collaborative learning while helping teachers identify misconceptions and guide instruction. It helps students develop intellectual, social, and communicative competencies essential for academic and real-life success. The teacher used group work through planning the discussion, selecting a topic, assisting, providing feedback, and summarizing the discussion (Mercer & Howe, 2012).

Group work is a teaching method that fosters active learning, collaboration, and social development. It enhances academic achievement and prepares students for cooperative work in real-life contexts. This method develops teamwork, interpersonal skills, and self-confidence while allowing peer-to-peer learning (Johnson, Johnson, & Smith, 2014). Working in groups helps students share ideas, discuss different approaches, and learn from each other's perspectives. It promotes responsibility and accountability, as each member contributes to achieving a common goal. Group activities make learning more engaging and interactive, helping students apply concepts in practical situations and reinforcing their understanding of scientific principles. The teacher used group work through planning the activity, form groups, assigning roles, instructions, monitoring, facilitation, presentation, sharing, feedback, and evaluation (Johnson, Johnson, & Holubec, 2013).

Question-Answer: The question-answer method facilitates immediate feedback and assessment of students' understanding during learning. Teachers identify gaps in knowledge, reinforce learning, and encourage active participation through asking thought-provoking questions and guiding students to provide answers. This method helps students think critically and articulate their reasoning, strengthening comprehension and verbal skills. It also keeps learners attentive and involved, as they anticipate and respond to questions throughout the lesson. By engaging students in dialogue, teachers can clarify misconceptions and adapt instruction to meet learners' needs. When applied consistently, the question-answer method

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supports a deeper understanding of scientific concepts and contributes to improved academic achievement (Chin, 2006).

Academic Achievement in Elementary Education

Academic achievement refers to the extent to which students learned intended curriculum SLOs measured through assessment. The curriculum is considered as a foundational determinant of the academic achievement of the learners. Well-aligned curriculum content with teaching methods enhances students' learning experiences and lead to improved academic outcomes. It reflects the mastery of students in a specific subject curriculum (Darling-Hammond et al., 2020; Marzano, 2003). The results of the studies showed that curriculum-aligned teaching enhances engagement, understanding, and results of learners.

Curriculum-based methods demonstrate better retention, deeper conceptual understanding, and improved ability to transfer knowledge across subjects. Academic achievement provides the foundation for higher-order thinking, problem-solving, and application of skills in later grades. It is also associated with motivation, confidence, and positive attitudes toward learning, which influence students' continued success. Therefore, fostering academic achievement in elementary education requires aligned teaching methods consistent with the curriculum (Wiliam, 2011; Tomlinson, 2014).

Previous studies regarding appraising the effectiveness of curriculum-based teaching methods on students' academic achievement were reported below.

A study was structured by Erdem and Kaf (2023) to evaluate the meta-analysis study how learning styles influence students' academic achievement in Turkey. The study utilized a quantitative meta-analytic design, synthesizing data from previous studies across primary, secondary, and higher education levels. The selected studies were analyzed using effect size calculations to determine the impact of learning-style-aligned instruction. Findings revealed that personalized instruction according to students' learning styles had a moderate positive effect (0.59), differentiation strategies also showed a moderate effect (0.55), whereas general instruction without adaptation had a weak effect (0.38). The results of the study reported that aligning instructional strategies with learning preferences moderately improved student achievement. It was recommended that teachers adapt teaching methods to suit learners' preferred styles and provide differentiated tasks to optimize learning outcomes.

A study was framed by Chaudhary and Singh (2022) to analyze a meta-analysis in India on how factors affect teaching and student learning in higher education. The study followed a quantitative meta-analytic approach, analyzing peer-reviewed studies to identify the effectiveness of various teaching strategies. The selected studies were used to measure effect size and comparative analysis. The results revealed that feedback had a strong effect (0.72), active learning had a moderate to strong effect (0.64), teacher clarity had a moderate effect (0.58), collaborative learning had a moderate effect (0.53), and passive instruction showed a weak effect (0.41). The results of the study described that active, engaging, and curriculum-aligned teaching methods enhance learning outcomes in higher education.

A study was designed by Abid and Masood (2024) to explore the effectiveness of activity-based teaching techniques to improve students' performance at the primary level in Pakistan. The study was quantitative, based on a survey design to collect data through structured questionnaires from primary school teachers. Using a descriptive and evaluative approach, the researchers aimed to understand how activity-based teaching strategies impact student learning outcomes. The sample was selected using convenience sampling, and data were analyzed with descriptive statistics and effect size calculations. The results revealed that activity-based engagement significantly improved student participation (effect size = 0.68), practical application of concepts moderately enhanced understanding (0.61), and interactive learning had a moderate positive effect (0.54). The results of the study reported that activity-

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based teaching strategies substantially enhance student performance by promoting engagement and retention.

A study was structured by Iqbal and Afzal (2022) to assess the influence of activity-based teaching on elementary students' academic achievement in Pakistan. The study was a quantitative quasi-experimental study with an experimental and control group design. Elementary general science students were selected through a convenience sampling technique and the data were collected through pre-test and post-test. The collected data were analyzed using paired-sample and independent t-test. The results of the study showed that the experimental group achieved a 32.8% improvement in post-test scores, compared to 13.5% for the control group, demonstrating a significant positive effect of activity-based teaching. The study concluded that hands-on, activity-based strategies effectively enhance student understanding, engagement, and overall academic achievement.

Research Methodology

The current study was a quantitative correlational employed survey design to collect data from respondents focusing on the effect of curriculum-based teaching methods on students' academic achievement. A sample of 310 public sector teachers from District Hafizabad, Punjab-Pakistan was selected through a simple random sampling. A self-construed questionnaire comprised of thirty items. Content validity was confirmed through expert review, and a pilot study was conducted with 50 teachers to refine the questionnaire, which was not included in the final data. The researchers personally visited the selected schools to collect data. Ethical considerations of informed consent, volunteer participation, confidentiality, and anonymity were maintained for the study. The reliability of the questionnaire was ensured through Cronbach's alpha score of .882. Descriptive statistics mean, standard deviation, and inferential statistics of Pearson correlation and multiple regression analysis were employed to explore the phenomenon.

Data Analysis and Interpretation

The collected data were entered in the SPSS and analyzed according to the study objectives using descriptive statistics, mean, and standard deviation, inferential statistics, correlation, and regression analysis to explore the phenomenon.

Table 1

Relationship between the dimensions of curriculum-based teaching methods and students' academic achievement

Variables	*1*	*2*	*3*	*4*	*5*	*6*
Problem Solving	-					
Inquiry	.306**	-				
Discussion	.411**	.491**	-			
Group Work	.553**	.376**	.423**	-		
Question Answer	.429**	.421**	.457**	.459**	-	
Academic Achievement	.442**	.491**	.433**	.351**	.311**	-

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

Table 1 showed that Pearson correlation analysis was applied to evaluate the correlation between the dimensions of curriculum-based teaching methods and students' academic achievement. The results indicated a moderate relationship of all the dimensions of curriculum-based teaching methods with students' academic achievement, with r scores of .442, .491, .433, .351, and .311, respectively. It reported a moderate association of all the dimensions of curriculum-based teaching methods with students' academic achievement.

Table 2

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Relationship between curriculum-based teaching methods and students' academic achievement

Variables	*1*	*2*
Curriculum-Based Teaching Methods	-	
Students' Academic Achievement	.406**	-

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

Table 2 showed that Pearson correlation analysis was applied to evaluate the correlation between curriculum-based teaching methods and students' academic achievement. The results of the study indicated a moderate relationship of curriculum-based teaching methods with students' academic achievement, with r score of .406. It stated a moderate association of curriculum-based teaching methods with students' academic achievement.

Table 3

Effect of all the dimensions of curriculum-based teaching methods on students' academic achievement

DV	*IV*	*S.E*	*B*	*t*	*p*
Students' Academic Achievement	(Constant)				
	Problem Solving	.19	.41	2.11	.00**
	Inquiry	.15	.52	3.37	.01*
	Discussion	.12	.36	3.02	.00**
	Group Work	.11	.22	1.89	.04*
	Question Answer	.09	.16	1.70	.01*

Table 3 shows the prediction of all dimensions of curriculum-based teaching methods on students' academic achievement. The results of multiple regression analysis indicated a moderate effect of the dimensions such as inquiry, problem solving, and discussion, while the rest of the factors, such as group work and question answer, had weak effect on students' academic achievement with the beta value of .41, .52, .36, .22, and .16, respectively.

Table 4

Effect of curriculum-based teaching methods on students' academic achievement

DV	*IV*	*S.E*	*β*	*t*	*p*
Students' Academic Achievement	(Constant)				
	Curriculum-Based Teaching Methods	.13	.334	2.42	.00**

Table 4 demonstrated the prediction of curriculum-based teaching methods on students' academic achievement. The results of multiple regression analysis indicated a moderate effect of curriculum-based teaching methods on students' academic achievement, with the beta value of .334.

Results

The results of the study exhibited that respondents were satisfied with all statements related to problem solving, inquiry, discussion, group work, and question–answer teaching methods. The results indicated a moderate relationship among all dimensions of curriculum-based teaching methods and students' academic achievement. Inquiry, problem solving, and discussion showed a moderate effect on academic achievement, while group work and

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question–answer had a weak effect. Overall, curriculum-based teaching methods demonstrated a moderate effect on students' academic achievement.

Discussion

The study appraised the effectiveness of curriculum-based teaching methods on elementary students' academic achievement, highlighting the alignment of teaching methods with curriculum SLOs. The results revealed a moderate positive relationship between all dimensions of curriculum-based teaching methods, such as inquiry, problem-solving, discussion, group-work, and question–answer, with students' academic achievement. The inquiry, problem solving, and discussion teaching methods demonstrated a moderate effect on academic achievement, whereas group-work and question–answer methods showed a weak effect, indicating that active and cognitive-engaging strategies contribute more significantly to student learning.

The results of the current study were aligned with previous studies emphasizing the benefits of curriculum-based teaching on the academic achievement of students. For instance, Hattie (2009) reported that curriculum-based teaching strategies promote engagement, feedback, and clarity that enhance students' academic achievement, while Ullah et al. (2023) demonstrated that curriculum-based collaborative and interactive strategies improve students' understanding and achievement in science subjects. Similarly, Iqbal and Afzal (2022) reported that activity-based teaching enhances elementary students' academic performance, supporting the current findings that inquiry-focused teaching methods are more effective than passive teaching. The study stated that curriculum-based teaching promotes higher-order thinking skills, such as application, analysis, and evaluation, particularly in subjects like general science that require conceptual understanding and problem-solving abilities. Moreover, the results suggested that traditional methods were insufficient alone to improve academic achievement without integrating more cognitively demanding strategies. Overall, the results reinforce the constructivist approach that active engagement and meaningful interaction with content enhance learning outcomes. Policymakers, curriculum planners, and training institutions prioritize teaching strategies that not only transmit knowledge but also develop critical thinking, problem-solving, and inquiry skills to optimize elementary students' academic success.

Conclusion

It is concluded that the respondents agreed with curriculum-based teaching methods. Moreover, there was a moderate relationship of all the dimensions of curriculum-based teaching methods and students' academic achievement, and overall, there was also a moderate association between curriculum-based teaching methods on students' academic achievement. Whereas, there was a moderate effect of the teaching methods dimensions such as inquiry, problem-solving, and discussion rest of the teaching methods, such as group-work and question-answer had a weak effect on students' academic achievement. Additionally, there was a moderate effect of curriculum-based teaching methods on students' academic achievement.

Recommendations

Based on the results of the study, it is recommended that policymakers, curriculum developers, teachers, and other relevant stakeholders contribute to improve the teaching–learning process by focusing on curriculum-based teaching methods. Teachers use curriculum-based teaching methods such as inquiry, problem-solving, discussion, group work, and question-answer methods to enhance students' engagement and academic achievement. Teachers provided curriculum-based training and resources to align curriculum-based teaching methods with students' academic achievement.

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