

Comparative Analysis Of Students' Learning Achievements In Formal And Non-Formal Education Settings

Waqas Akbar

PhD. Scholar, Department of Education, Islamia University of Bahawalpur,

Email: waqasarian2904@gmail.com

Nasreen Akhter

Professor of Education, Chairperson Department of Special Education & Dean
Faculty of Online and Distance Education, The Islamia University of Bahawalpur,

Pakistan Email: drnasreenakhtar01@gmail.com, nasreen.akhtar@iub.edu.pk

ABSTRACT

Education is a central pillar of society which provides knowledge, skills, and social norms to individuals for personal development and societal contribution. Education mainly consists of three modes, informal, non-formal and formal. The current study, entitled “Comparative analysis of students' learning achievements in formal and non-formal education setting” was a comparative study of formal and non-formal system of education in Pakistan, regarding students' academic learning achievement. This study aimed to analyse the subject-wise academic learning achievements of students in formal and non-formal education system across core subjects and to compare the overall average academic learning achievements of students in formal versus non-formal systems of education. This study is important for policymakers, educationists, and researchers to conduct further research on other parameters. The study was descriptive and quantitative method was used. The population comprised of all SSC and HSSC qualified students from formal and non-formal education systems. The study was delimited to Southern Punjab. Simple random sampling technique was used to select 300 students (150 each from formal and non-formal mode). A learning achievement test was used to measure learning achievement in core subjects including Math, Islamic Studies, General Knowledge, English, and Urdu. Test was validated through expert opinion and reliability was measure by using Cronbach's Alpha. Data were analysed by using SPSS 27 by applying descriptive statistics (frequency, percentage, mean and standard deviations) and inferential statistics including independent samples t-tests. The results showed that formal and non-formal education serve complementary roles rather than a hierarchical one: formal education showed better performance in structured academic subjects (Mathematics, English, and Urdu), while non-formal education showed better performance for value-oriented subjects (Religious and Ethical studies). General Knowledge showed consistent performance in both educational systems. This result call for incorporated, flexible, and inclusive educational policies that recognize the strengths of both systems and magnify non-formal education opportunities for both rural and urban population.

Keywords: Formal Education, Non-Formal Education, Learning Achievement, Religiosity, English

INTRODUCTION

Education is necessary for personal development and societal contribution, as a central pillar of society, give opportunity to individual to get knowledge, skills, and social norms (Smolentseva, 2023). Education system is comprised of mainly two systems; formal and non-formal education, each have distinct paths to learning each have its own strengths and limitations (Johnson & Majewska, 2022). Non-formal education have flexibility in place, curriculum and structure such as vocational training, adult literacy programs, and online courses (Saleumsouk et al., 2020), while formal education needs all of these (Tagbo & Nwanwa, 2024).

Understanding the comparative impact of these two distinct modes of education on a student's holistic development is important for many stakeholders such as educators, policymakers, and learners similarly. Formal education is a systematic and structured education system, which started from the childhood and completed in higher education institutions as indicated by Tudor (2013). It have a predetermined curriculum, formal assessments, and recognized qualifications that serve as benchmarks for academic and professional success (Hussien, 2024). While the individual merits and characteristics of formal and non-formal education are well documented, a critical but vital gap remains in understanding their specific and comparative impacts on two key students' outcomes: learning achievement (academic and cognitive improvement). The existing literature often discusses the structures of these systems (Cervone & Pervin, 2022; Kurniawati et al., 2023) or how non-formal education fosters practical life skills and autonomy (Sydorenko et al., 2020). However a well synthesized comparison of their effectiveness in holistically grooming a student is less frequently addressed in Pakistani context.

The respective contributions of formal and informal education to academic achievement continue to be at the core of contemporary scholarly debate. Understanding which mode or combination of modes best fosters cognitive development is necessary for optimizing educational strategies in the 21st century (Gull et al., 2024). Chisholm (2020) indicated that concept of education and learning faced controversy over the past decade by educationists and policy makers at national and international level. The shift from industrial to post-industrial societies in Pakistan, where knowledge development is crucial to wealth and economic progress, is the cause of this discriminating concern (Baethge, 2000). In knowledge-based society, new perspectives on what education ought to be like are gaining traction. The basic components of education now consists of self-regulation of learning, lifetime learning, formal and non-formal learning.

In the context of Pakistan, this comparative study is particularly relevant. Programs such as NAVTTC commonly known as the National Vocational and Technical Training Commission focus on technical non-formal skills to bridge the gap between traditional learning and labor market requirements, as indicated by Ashraf et al. (2021). Souto-Otero (2021) stated that Ehsaas scholarship program supports formal education system for neglected students. It is highly considerable that effectiveness of these parallel systems in shaping the holistic development of students, as well as their

grades and personality limitedly explored. Furthermore, the development of technology based hybrid models in education e.g., Virtual University (VU) of Pakistan mixed both education systems such as formal and non-formal, demanding a clearer understanding of the foundational impacts of each mode as described by Khan and Waqar (2020). Therefore, this context provides a solid ground to conduct a comparative study. By exploring the strength and limitation of each system, this study seeks to determine how each mode precisely and exclusively participates to a student's academic learning achievement.

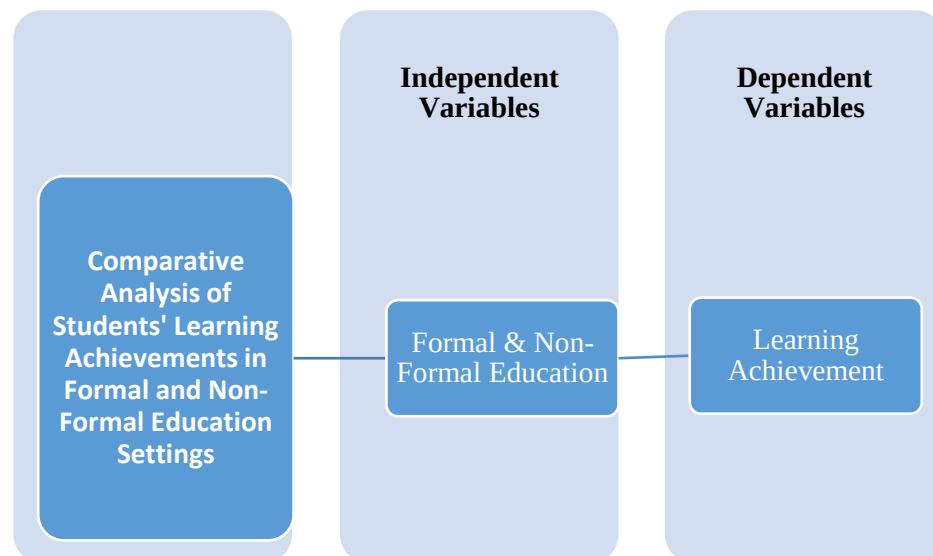


Figure 1 Variables of the study

Statement of the Problem

Main purpose of education is to equip students with life skills or knowledge (Schuluz, 2008). Formal and non-formal are two basic modes of education in a country (Tudor 2013). Formal education system generally have a structured, organized curriculum, and a well-organized assessment system. On the other hand, non-formal education system have an organized learning system but outside the formal education system and primarily focused on life skills through vocational training. In this modern world, education system mainly focuses on holistic development of students, and stakeholders consistently debate which mode is more effective .for students' academic learning achievement (Rafique et al., 2020). However, many studies conducted to find the strengths and limitations of each system but limited study conducted to compare them, and found a gap in Pakistani education system for comparative study of each system to explore it in sense of students learning achievement using various geographical division related data. Especially, it is unexplored whether the academic learning achievements of students completing non-formal education significantly differ from those, who completing formal education. This create a significant research gap for all stakeholders, including researcher, government, policymakers, educationists and curriculum developers to conduct an empirical study to take practical decisions, make policies and curriculum accordingly.

Research Objectives of the Study

To analyse the subject-wise academic learning achievements of students in formal and non-formal education systems across core subjects.

To compare the overall average academic learning achievements of students in formal versus non-formal education system.

Research Questions of the Study

What difference exists among learning achievements scores of students in formal and non-formal education systems regarding core subjects?

Do any significant difference exists among average scores of students in formal versus non-formal education system?

Null Hypotheses of the Study

There is no impact of any mode of education on learning achievement of students regarding core subjects

No significant difference exists between average scores of students in formal education versus non-formal education system.

Significance of the Study

The study holds significant implications for multiple stakeholders within the educational landscape, including researchers, government, educationists, policymakers, and curriculum developers. Researchers can take guidelines to conduct future research accordingly. Educationists can understand the aspects of academic learning and focus on quality teaching. For educators, it plays a guiding role for developing required skills and expertise. The government can take guidelines to develop educational policies as well as implement them and achieve educational goals in the light of results of this study. Curriculum-developing institutes such as textbook boards and curriculum developers can use this study findings to develop a quality curriculum. Moreover, it is beneficial for teacher training institutes to organize well-structured and need-based training that has a long-lasting effect. This study is also important theoretically, as it enriches comparative education studies by challenging the unspoken favoring of formal education over non-formal education with regard to students' academic learning achievement and clarifies the strengths and limits of each system. With regard to methodology, this study addresses a significant gap in educational inquiry, which has conventionally examined cognitive and affective outcomes.

LITERATURE REVIEW

Education is a basic tool for socio-economic development, providing intellectual foundations for individual and collective development. As, Shahid et al. (2021), said that Pakistan have two basic education systems, as formal and non-formal to meet the distinct learning demands. Formal education have a standardized curriculum, formal assessments and recognized certificates, as well have regular and systematic progress (Farooq, 2020). Non-formal education is distinct but align with formal education to some extent. It has flexibility, and based on community adaptability (Hussien, 2024).

Zaidi (2019) described that BECS and NCHD type programs is included in non-formal education in Pakistan. While formal education emphasizes academic rigor, non-formal education give preference to practical, context-relevant learning. Understanding these characteristics is critical for comparing their effectiveness in subject-specific knowledge delivery, as indicated by Tudor (2013).

Constructivist learning theory and cognitive learning theory provides the basic framework to assess the academic learning achievement of students. These theories explained that how students get subject knowledge, process it and retain it in different situations and educational environments. Constructivist theory deep rooted in Piaget, Dewey, and Vygotsky concepts of learning, as Bada and Olusegun (2015) said that learners actively construct knowledge through interaction between existing cognitive framework and new stimuli, improving subject-specific outcomes (e.g., English, Math, and sciences) through experiential problem solving. Each system have differentiation. Formal education have structured curriculum, while non-formal have flexibility in curricula. Constructivist learning theory framework adopted from the study of Wang et al. (2023) helpful in this study as interpret it different subject performance across both education systems. This framework mainly and strictly focus on how each environment effect cognitive academic skills measured via standardized learning achievement tests.

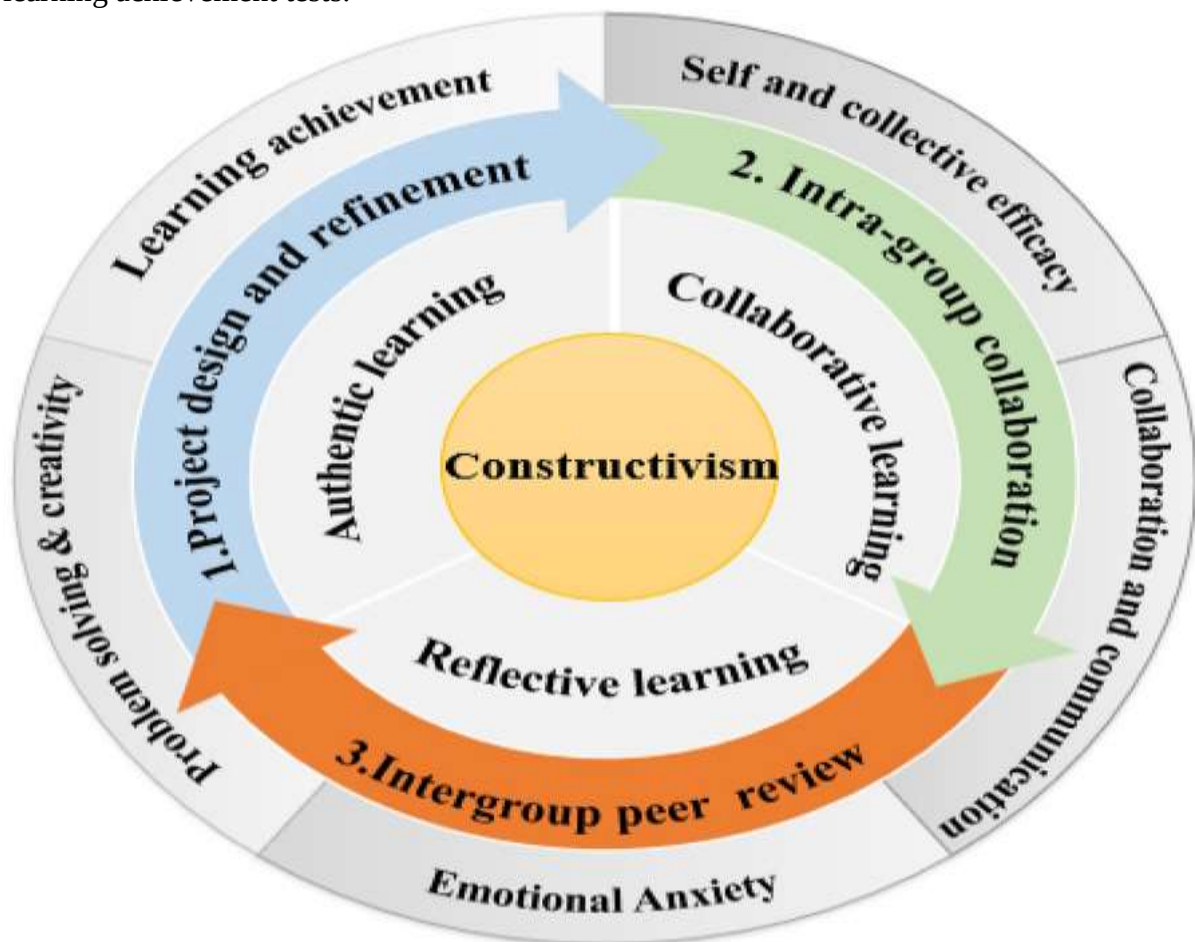


Figure 2 Constructivist Learning Theory (Wang et al., 2023)

Another theory which is helpful in this study is cognitive theory. It played a complementary role in this study within constructivist learning theory. It deals with process, memory, and schema formation, which provides a basics to analyze subject-wise knowledge retention and revise it (Mayer, 2003). It depended upon effective academic learning and on organized information, practices and retrieved, as process explained by Celikoz et al. (2019). Formal education mainly focused on repetition, structured homework, and fixed syllabi to give strength to cognitive schemes in foundational literacy and numeracy subjects (English, Urdu, and Mathematics). Controversially, non-formal education system based on hands-on skills and contextual memory. This theory is helpful to analyze the specific gaps observed between both types of modes of education.

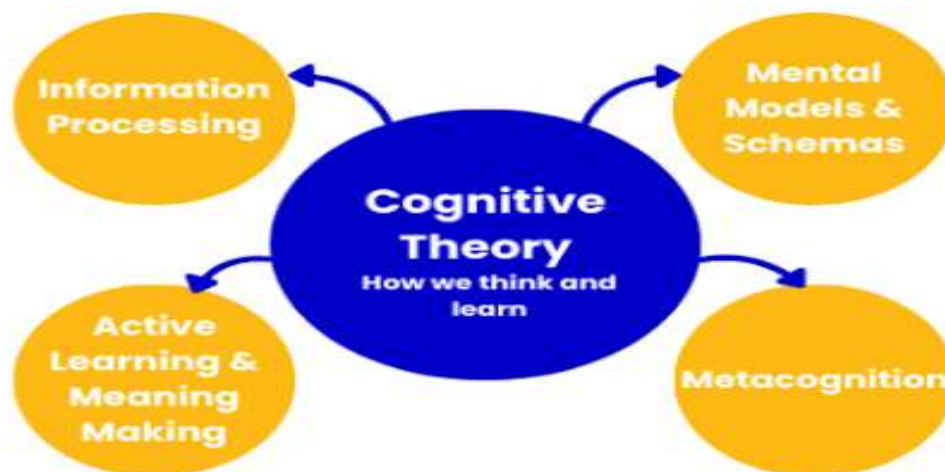


Figure 3 Cognitive Learning Theory (Mayer, 2003)

At international level many studies conducted to compare the formal and non-formal education system. However, findings of study mainly depends upon ground roots such as subject domain, demographic and contextual factors (Alves & Azeiteiro, 201).

Theoretical subjects such as Mathematics, English, Urdu and Science demonstrated outstanding performance through certified specialists, dedicated time, formative assessments, and systematic scaffolding (Malik et al., 2020; Gillani et al., 2022). While, non-formal education demonstrated outstanding performance in Religious studies and Ethics (Cultural and value oriented subjects) as it is mainly based on community and social environment (Rafique et al., 2020; Kanwal et al., 2025). With regards to academic learning achievement formal education system performed better in abstract content, while non-formal in context-rich, as findings of the study revealed conducted by Zaiadi (2019).

Each system of education (formal, and non-formal) have its own strength and limitations, but comparatively no one said that which one is better to other across all domains (Mehdi et al., 2025). It is needed to conduct a comparative study to underscore the basic need for an integrated educational approach that leverages the structured accuracy of formal education for core cognitive subjects or skills such as Math and languages (i.e., English and Urdu). Comparatively, Non-formal education have contextual flexibility for community based knowledge and ethical demonstration (Alves & Azeiteiro, 2018). However, it is drawback for Pakistani researchers that

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most of the researches conducted on this topic mainly deals Western contexts, with limited empirical researches from Pakistan comparing actual subject-wise learning achievement in the form of test scores of students who have completed their SSC and HSSC from these two parallel systems (Khalid & Khan, 2006). Therefore, current study directly addresses this research gap by providing a quantitative, subject-wise analysis of learning achievement in Pakistan generally, and in Southern Punjab, Pakistan specifically.

RESEARCH METHODOLOGY

This study employed a quantitative approach to comprehensively investigate the impact of formal and non-formal education on learning achievements of students. This study was delimited to 3 divisions of Southern Punjab province of Pakistan, secondary and higher education students who passed their examination during last five years through formal or non-formal mode. Therefore, target population of this study comprised of all students who completed schooling (SSC or HSSC) from formal education schools or non-formal educational institutes within the last 5 years across South Punjab. The population was divided into two main strata; Students who passed their Matric (SSC) or intermediate (HSSC) examination from regular formal schools affiliated with the Board of Intermediate and Secondary Education (BISE) in the divisions of Bahawalpur, Multan, and Dera Ghazi Khan and those who passed their examinations from Allama Iqbal Open University (AIU) through its distance learning and non-formal mode of education across the same regions of South Punjab. Table 1 shows details about population of the study according to available records.

Table 1 Population detail of the study

Division	Formal Education	Non-Formal Education
Bahawalpur	45204	8560
Multan	62296	12421
Dera Ghazi Khan	38107	6523

Sources: <https://bisebwp.edu.pk/>, <https://web.bisemultan.edu.pk/>, <https://www.bisedgkhan.edu.pk/>, <https://aiou.edu.pk/results>

In case of current study, simple random sampling method was employed, selecting educational institutes from each division of South Punjab to ensure proportional representation. The study includes net sample of 300 students: 150 selected from formal education programs and 150 from non-formal education programs. Inclusion criteria comprised of students who had completed SSC and HSSC education within last 5 years and students who were willing to participate in the study. Exclusion criteria worked as students with incomplete SSC and HSSC certificates and not willing to participate in the study.

A standardized learning achievement test covering core subjects to objectively measure current learning levels of students from both educational modes separately or

integrated mode was developed and validated. Learning achievement test was used to collect quantitative data from participants to assess the achievement level statistically. Table 2 presents details about the content areas covered in the test.

Table 2 Structure of the Learning Achievement Test

Subject	Number of Items	Marks Allocated	Content Areas Covered
Math	10	10	Algebra, Geometry, Number System, Basic Arithmetic
Religious Studies/Ethics	10	10	Religious knowledge, Moral Values, Ethics
General Knowledge	10	10	Pakistan Studies, World Geography
English	10	10	Grammar, Vocabulary
Urdu	10	10	Grammar, Language Comprehension
Total	50	50	Comprehensive knowledge assessment

Research instrument (Test) was validated through experts review ($n = 5$) from education department, IUB. Pilot testing with 50 formal and 50 non-formal non-sampled students conducted to ensure construct validity of the instruments before collecting actual data. The Learning Achievement Test, comprising 50 items, showed internal consistency (Cronbach's Alpha = 0.882), indicating that the test consistently measures the intended knowledge domains across mathematics, religious studies, general knowledge, English, and Urdu. Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (t-test) completed by using SPSS (v-27).

RESULTS AND INTERPRETATIONS

According to the objectives of the study, data was analyzed by using a suitable statistical analysis procedure. The report is given below in the form of tables.

Subject-wise Learning Achievement

The first objective of the study was to analyze the subject-wise academic learning achievements of students in formal and non-formal education systems across core subjects (mathematics, religious studies & ethics, general knowledge, English, and Urdu) and its null hypothesis "there is no impact of any mode of education on learning achievement of students regarding core subjects" data were analyzed, and mean, median, mode, and standard deviation were calculated to evaluate the learning achievement of students in each subject ($n = 5$) and each mode of education (see Table 3, Table 4 & Table 5).

Table 3 Overall Learning Achievements of Students in the Formal Education System across All Subjects

Subject	Mean	Median	Mode	S.D
Mathematics	53.13	55	56.67, 60	8.69
Religious Studies & Ethics	51.47	54.67	54.67	9.54
General Knowledge	59.87	61	62, 60	8.31
English	57.33	55.67	54.67	4.85
Urdu	65.20	64.67	63.33, 64.67	3.60
Total	57.40	56.67	54.67, 56.67	7.82

Table 3 presents the descriptive analysis of formal education students, revealing that Urdu is the strongest subject ($M = 65.20$), with the most consistent score ($S.D. = 3.60$), followed by general knowledge ($M = 59.87$), English ($M = 57.33$), and mathematics ($M = 53.13$), while religious studies & ethics is the weakest subject ($M = 51.47$), indicating the widest performance gap ($S.D. = 9.54$). The close alignment of mean and median values across all subjects suggests that score distributions are largely symmetrical with no extreme outliers. The presence of multiple modes in mathematics, general knowledge, and Urdu indicates that students' performance tends to cluster around two common peak values rather than a single central value. Overall, the formal system produces a moderate level of achievement ($M = 57.40$), with performance being most stable in language-based subjects and least consistent in analytical and ethical studies.

Table 4 Overall Learning Achievements of Students in the Non-Formal Education System across All Subjects

Subject	Mean	Median	Mode	S.D
Math	50.90	48.67	46.67	9.74
Religious Studies & Ethics	58.93	58.33	57.00	7.28
General Knowledge	59.27	58	58.00	5.41
English	53.33	53.67	56.67	3.71
Urdu	60.73	61.33	58.00	3.86
Total	56.63	56.67	58.00	6.13

Table 4 presents the descriptive analysis of non-formal education students, revealing that Urdu ($M = 60.73$) and General Knowledge ($M = 59.27$) are the strongest subjects, while Mathematics ($M = 50.90$) is the weakest with the highest dispersion ($S.D. = 9.74$), showing severe disparities in numeracy skills. The close alignment of mean and median values across all subjects suggests that score distributions are largely symmetrical with no extreme outliers. The presence of single mode in all subjects indicates that students' performance tends to move around a single central value. Overall, the non-formal system shows a moderate overall mean ($M = 56.63$) and has close alignment with the median (56.67) and mode (58.00), indicating a largely symmetrical and balanced distribution of overall scores across all subjects.

Formal vs. Non-Formal: Overall Learning Achievements

Second objective of the study was to compare the average academic learning achievements of students in formal and non-formal education system across core subjects (Mathematics, Religious Studies & Ethics, General Knowledge, English and Urdu) and its related null hypothesis “no significant difference exists between average scores of students in formal education versus non-formal education system” data was analysed and t-value, with p-value were calculated to evaluate the learning achievement of students in each subjects (n = 5) and each mode of education (see Table 5).

Table 5 Comparison of Overall Learning Achievements: Formal vs. Non-Formal

Subject	Mean Score		t-value	p-value
	Formal	Non-Formal		
Math	53.13	50.90	2.09	0.037
Religious Studies & Ethics	51.47	58.93	-7.61	<0.001
General Knowledge	59.87	59.27	0.74	0.460
English	57.33	53.33	8.02	<0.001
Urdu	65.20	60.73	10.37	<0.001
Total (Average)	57.40	56.63	0.95	0.342

Table 5 presents the comparison of overall learning achievements. Subject-wise findings are given below.

Mathematics: The mean score comparison revealed that formal education students (M = 53.13) slightly outperformed non-formal education students (M = 50.90), with a difference of only 2.23 percentage points. Based on the criterion that a mean difference of less than 5% indicates no real difference, the verdict was no real difference between the two groups in mathematics. Although the t-test produced a statistically significant p-value (p = 0.037), the practical magnitude was negligible. Formal students outperformed non-formal students on nine out of ten questions, with significant gaps on Question 2 (44.0% vs. 12.0%), Question 3 (56.7% vs. 50.7%), and Question 7 (60.0% vs. 51.3%). Both groups demonstrated a moderate acceptance level in Mathematics.

Religious Studies and Ethics: The mean score comparison revealed that non-formal education students (M = 58.93) outperformed as compared to formal education students (M = 51.57), with a significant difference (M = 7.46), showing a modest but significant advantage for non-formal education. The result was statistically highly significant (p < 0.001). Overall, both groups demonstrated moderate acceptance levels, but non-formal students showed consistently higher performance.

General Knowledge: The mean score of the formal education system (M = 59.87), while for the non-formal education system (M = 59.27), showed the mean score comparison result as nearly identical (M = 0.60). The result was neither statistically (p = 0.460) nor educationally significant. This indicated that both education systems

were equally effective in fostering general knowledge achievement. Both groups demonstrated a moderate acceptance level in general knowledge.

English: The mean score comparison revealed that formal education students ($M = 57.33$) outperformed non-formal education students ($M = 53.33$), with a difference of 4.00 percentage points. Based on the criterion, this difference remained under the 5% cutoff, thus classified as no real difference despite a statistically significant p-value ($p < 0.001$). Formal students outperformed non-formal students on nine out of ten questions. Notably, the formal group scored above 50% on all ten questions, demonstrating consistent basic competency with a moderate acceptance level, whereas the non-formal group scored in the "Below Passing Marks" category with a low acceptance level on two questions. The largest gap appeared on Question 7, where formal students demonstrated 60.0% correct responses compared to 51.3% for non-formal students, a difference of 8.7 percentage points. Both groups demonstrated a moderate acceptance level overall, but formal students showed greater consistency.

Urdu: The mean score comparison revealed that formal education students ($M = 65.20$) outperformed non-formal education students ($M = 60.73$), with a difference of 4.47 percentage points. Based on the criterion, this difference was classified as no real difference ($p < 0.001$). Formal students outperformed non-formal students on nine out of ten questions. The largest gap appeared on Question 8, where formal students demonstrated 63.3% correct responses compared to 53.3% for non-formal students, a difference of 10.0 percentage points. Both groups demonstrated a moderate acceptance level in Urdu, with formal students showing slightly higher and more consistent performance.

Comparison: The mean score comparison revealed that formal education students ($M = 57.40$) slightly outperformed non-formal education students ($M = 56.63$), with a difference of only 0.77 percentage points. On the basis of the criteria, findings indicated that no real difference ($p = 0.342$) was present. The overall comparative analysis demonstrated that formal and non-formal education led to largely comparable learning achievement across all subjects, with both groups (formal and non-formal) showing overall a moderate level of achievement. The only exception is in the case of Religious Studies and Ethics, where non-formal education showed a small advantage. No subject reached the moderate level (8-9.9%) or threshold level ($\geq 10\%$), showing that from an educational policy perspective, no one system proved better for learning achievements as compared to each other regarding all subjects.

DISCUSSION

The study "*Comparative Analysis of Students' Learning Achievements in Formal and Non-Formal Settings*" derived multiple results related to current study related research objectives. Results indicated that multiple themes having similarity and dissimilarity comparing to existing literature. The current study indicated that formal education students comparably perform better than non-formal education but at marginal level (0.77%). This indicating parity align with the broader comparative study in education, which suggests that when curricula are loosely aligned, the

structural delivery mode whether formal education through structured curriculum or non-formal education through community-based or social-based learning, not showed inherently better academic learning achievements (Barrow, 2023).

With regards to subjects Urdu demonstrated as the strongest subject for both formal and non-formal education system, showed that Pakistan has a deeply rooted linguistic environment where Urdu as a national language serves as the basic medium of instructions in daily life communication and informal literacy, thereby reinforcing achievement irrespective of institutional setting or mode of education, as stated by Rahman et al. (2024). Conversely, numeracy subject (i.e., Math) indicates substantial intra-group disparities in numeracy skills, aligns with the findings of Khan et al. (2026), who documented that foundational mathematics instruction in Pakistan face challenges regarding pedagogical inconsistencies and rote-learning methodologies, creating a problematic achievement gaps that cut across both systems of education (formal and non-formal).

A critical analytical insight emerges from the disparity between statistical and educational significance. Findings regarding overall comparative analysis in the form of t-test indicates that Mathematics ($p = 0.037$) showing statistically significant, followed by English ($p < 0.001$), and Urdu ($p < 0.001$), while actual mean differences is 2.33%, 4.00% and 4.47% respectively remained below the significance threshold ($< 5\%$). This divergence underscores the cautionary mainly advocated by Rahman et al. (2024), as stated that large sample sizes often expand statistical significance while covering the absence of meaningful practical impact, thereby urging the researchers to give more preference to effect sizes over p-values, especially in educational studies.

The only exception observed from this pattern in case of Religious Studies & Ethics, where non-formal students significantly performed better as compared to formal education students and showing significance ($p < 0.001$). This finding is aligned with the result of Zaidi (2019) study, indicating that non-formal education is reasonably attributable to the community based nature of non-formal educational institutions, where in daily routine religious and ethical instruction given for practical life and local moral frameworks, contrasting with the more theoretical, only exam-oriented approach predominant in formal education system schooling. Moreover, the performance gap in the case of religious studies and ethics, joined with its highest dispersion among formal education students, suggests that formal curricula may lack contextual relevance in moral and ethical pedagogy, unintentionally splayed achievement disparities.

Finally, findings indicated that neither system demonstrates superior efficacy across the board, as neither group achieved beyond the moderate proficiency level in any subject or domain. Jayanthi et al. (2014) advocated in the favor and described that this striking parity suggests that from a policy perspective, efforts to raise absolute learning standards, especially in foundational literacy and numeracy (FLN) should transcend institutional boundaries and have focused only on curriculum standard, teacher professional development, and context-based sensitive pedagogical reforms applicable to both systems of education.

CONCLUSION

It is concluded that formal and non-formal education systems shows largely equivalent overall academic achievement, with formal students have only benefits of practical significance. Language based subject i.e., Urdu consistently emerged as the strongest subject for both systems of education due to Pakistan's Urdu linguistic environment and as Urdu is a national language of Pakistan. Overall comparison indicates that mathematics is weak among all five core subjects in both systems due to its pedagogical inconsistencies and rote-learning practices. Exceptional learning achievement of religious studies and ethics in non-formal education system is only due to its community oriented practical instruction as compared to formal education, which is examination oriented. English and General Knowledge showed moderate level performance in both cases. Overall, this study advocates for policy reforms transcending institutional limits, focusing on standardized curricula, teacher development, and context-based pedagogy to bridge foundational literacy and numeracy gap.

RECOMMENDATIONS OF THE STUDY

Based on the study's findings, the following recommendations are proposed to increase learning achievements of students in formal and non-formal education system across all subjects and domains and minimize the inconsistencies and disparities present in any system of education.

This study concluded that both systems of education overall showed moderate level of learning achievement, indicating that institutional structure not have any effect on learning achievement recommended that federal ministry and provincial education departments should design and implement a unified FLN enhancement policy applicable to both formal and non-formal education. This should incorporate standardized learning benchmarks, contextual-based pedagogical training, and continuous formative assessment mechanism to systematically enhance overall achievement levels.

This study concluded that non-formal education system performed better in subject Religious Studies and Ethics as compared to formal education system, indicating that formal system of education theoretical, exam-based approach lacks the contextual and cultural relevance as found in non-formal education recommended that formal education curriculum bodies (TBB) and teachers training institutes PECTAA (Punjab) should revise the Religious Studies & Ethics syllabus to integrate practical application exercises, local moral case studies and serving learning components. This pedagogical transition should adopt experiential and collaborative strategies reflecting non-formal methods to make ethical instruction relatable, reduce performance variability, and close the identified academic learning achievement gap.

This study concluded that Mathematics is the weakest domain in both education systems, indicating the highest intra-group disparities such as severe dispersions and specific conceptual failures indicating foundational pedagogical breakdowns rooted in rote-learning methodologies recommended that subject specialist in mathematics educators within both education systems should develop and deploy a targeted remedial module clearly focusing on high-error concepts identified in the assessment.

This module should focus on activity-based approaches to replace lower order thinking (LOT) practice.

This study concluded that in formal education system English subject performance is better as compared to non-formal education due to inconsistency undermines non-formal education providers and cluster head should systematically analyze and adopt the formal system's English instructional strategies, particularly structured language exercises and regular comprehension exercises, and standardized item-wise formative assessments. It is also recommended that teacher training programs within non-formal institutions should ensure minimum competency across all tested items, copying the formal system's consistency to ensure language performance better.

This study concluded that formal and non-formal both performed good in Urdu, showing a deeply rooted linguistic advantage within Pakistan's educational environment, due to linguistic strength serve as an instructional scaffold to increase performance in weaker analytical subjects, recommended that curriculum designers and subject specialist should effected Urdu proficiency by promoting Urdu-medium cross-curricular instruction for basic FLN concepts, especially in Mathematics and context oriented subject such as General Knowledge. Teacher should use Urdu as a scaffold to explain abstract analytical content thereby bridging comprehension gaps in weaker subjects.

This study concluded that a critical analytical insight emerged from the disparity between statistical and educational significance, where Mathematics, English, and Urdu produced statistically significant p-values, yet actual mean differences remained below the 5% practical significance threshold. Since this divergence underscores the caution that large sample sizes often inflate statistical significance while masking the absence of meaningful practical impact, recommended that educational researchers, policymakers, and examination boards should prioritize effect size interpretation and practical significance over p-values in educational assessments. Teacher training institutes should redesign research methodology courses to equip educators with diagnostic tools for identifying item-level weaknesses, thus preventing over-reliance on statistical artifacts in educational decision-making.

This study concluded that the overall comparative analysis demonstrated that formal and non-formal education led to largely comparable learning achievements, with no subject reaching the threshold level and neither system proving superior from an educational policy perspective. Since this striking parity implies that efforts to raise absolute learning standards should transcend institutional boundaries, it is recommended that federal and provincial education ministries, in collaboration with examination boards, should introduce a common annual diagnostic assessment system aligned with the FLN framework for both formal and non-formal sectors. This assessment should enable early detection of foundational gaps in numeracy and languages against the 5% practical significance benchmark, shifting the focus from inter-system comparisons to absolute proficiency enhancement.

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