Comparative Study of Numerical Skills of 5th Grade Students Enrolled in Non-Formal Educational Institutions of Basic Education Community Schools (BECS) and National Commission for Human Development (NCHD)

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Abstract

The purpose for this study was to investigate and compare the numerical skills of fifth grade students signed up for non-formal two types educational institutions of Basic Education Community Schools (BECS) and feeder schools of the National Commission for Human Development (NCHD). The fundamental objective of this study was to research and examine the essential numerical skills of students of the both institution and to analyze the performance of school students. The Quantitative research design with survey method was used based on pilot testing. The study's sample comprised of 84 students currently enrolled of both males and females genders at the fifth grade level from four haphazardly chosen schools of the previously mentioned organizations which are situated in Islamabad capital of Pakistan. The purposive random sampling method was used and collected data from the sample individuals through a self-created achievement test. The findings of the study showed that the students of BECS were more capable and have improved results than the students of the feeder schools of NCHD. The study suggested that the students of both BECS and feeder schools of NCHD may similarly be dealt with. The instructors might be given opportunity and trainings for their continuous professional development. The numerical skills development program might be created in light of the society's necessities as well as on present trends globally.

Keywords: Basic Education Community Schools (BECS), National Commission for Human Development (NCHD) and Numerical Skills.

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Introduction

Non-formal education is one of the best and every now and frequently practicing approaches to conferring education to further develop the acquiring abilities and levels of students, adult people and so forth. Whether the point is to show essential literacy abilities or skills in numeracy, the non-formal education system perhaps a useful device to convey education to the students who can't afford through the conventional methods of education. Non-formal education is a significant elective strategy for schooling to further develop education rates, particularly in emerging nations. Pakistan is likewise confronting the extraordinary test of a low proficiency rate in fundamental schooling (Latchem and Latchem, 2018). It is likewise mentionable that endeavors have been in progress to mitigate both neediness and an absence of assets to wipe out ignorance, particularly among kids, yet the circumstance might not have improved significantly. Pakistan has a lower education rate than that in its adjoining nations. The dropout proportion in the essential education area is practically 22.7% (Jafree, 2023). There are around 22.6 million kids who are still out of school in Pakistan (Farooq et al., 2017). To further develop the proficiency proportion in Pakistan, the State head's Education Bonus Islamabad set up Non-Formal Basic Education Schools (NFBES) in 1996 (Abdullah et al., 2022).

Few fundamental education local area schools have been laid out in our country. Around 3 million out-of-younger students have been instructed starting around 2006 by BECS and around 6 million are selected. BECS urges female students to enlist at schools and furthermore selects female educators to provide learning at its schools (Affolter & Valente, 2020). That is the reason, at these schools, 80% of educators and 60% of students are female in BECS. NFBES are one-room based schools, having a single room for the school which comprises of grades from I to V where the local community gives a "building" to the school, without charging any hiring charges and so on. (Badar & Artisan, 2020).

Somewhere around 30 students age groups from 4 years to 16 years are expected to be enrolled at each Basic Education Community School. Just a single educator teaches (I-V grades) at these schools. In light of coordinated educational plans, multi-grade showing strategies are utilized (Nasir et al., 2021). The public authority of Pakistan gives course readings, showing materials, and an instructor's honorarium. As of now, the Directorate General of Basic Education Community Schools (BECS) is running around 12,304 non-formal primary level schools in four regions including Azad Jammu and Kashmir, Gilgit-Baltistan, and Islamabad (Sibieta, 2020). The principal objective of BECS is to work on the non-formal way to deal with supplement formal education, to limit illiteracy and connection the accomplishment of Universal Primary Education (UPE), conceptualized in 1973, with the Constitution of Pakistan (Article 25-A). The

Millennium Development Goals (MDGs) give free and simple essential education facility for those having no access, who have no admittance to help education through formal education (Farooq, 2018).

In July 2002, National Commission for Human Development (NCHD) was set up by the government of Pakistan under Presidential Ordinance No. XXIX of 2002 as an autonomous body under the cabinet division. NCHD set up a stage to speed up the finishing the hole in friendly area conveyance with a way to deal with advancing through encounters from both general society and confidential areas at the public and global levels determined to distinguish the prescribed procedures and duplication of energy since the change of the social area in Pakistan (Khan & Niazi, 2016). Numerical skills refer to the capacity to utilize, comprehend and impart numerical data to solve real-world problems. These incorporate the ability to grasp and test fundamental math solving abilities, for instance, expansion, deduction, division, and multiplication of fifth grade students from the two frameworks of schools (Aunio & Rasanen, 2016).

Literature Review

Literacy and Numerical Skills

Literacy implies having ability to read, write and communicate one's thoughts in an in all actuality justifiable language. Literacy is the expertise to read, write, understand, and express oneself. Literacy and numerical skills showing make up the vital parts of learning academically that assists with to reduce poverty (Mihai et al., 2015). Numerical skills are the capacity of a student to compose numerals and make numbers for addition and subtraction (Veraksa et al., 2021). As indicated by national circumstances, it incorporates courses that show basic education for out-of-school students, literacy of adult proficiency, fundamental abilities courses, work abilities courses, and general culture. Non-formal school education programs frequently don't basically follow conventional achievement methods and might not have similar lengths. Generally, testaments are not an issue after performance academically (Martinez, 2020).

Non-Formal Basic Education System, Literacy and Numerical Skills

In the non-formal education system, all learning and preparing exercises happen outside the school. Emerging nations, including Pakistan, have embraced non-formal basic education (which incorporates various NGOs like NCHD, BECS, and so forth) as a practical framework to cover the unreached school children. Around 1.24 million students are signed up for this school system with 30,653 instructors (Butt and Park, 2024). Non-formal education can happen inside and outside proper school education and affect individuals of various ages (Grajcevci and Shala, 2016).

Recent Studies

In one of the new studies because of slum communities, poverty, it is seen that parents will generally get their youngsters out of school, which causes an expansion in child labor, or a few guardians set their youngsters to work and help them. Geologically, rural regions and urban slums are high-risk regions with over 70% of current enrolment and huge pockets of currently out of school students not signed up for any educational institution (Razzaque et al., 2023).

In one more late concentrate on the improvement of mathematical abilities through a non-formal education system, slum residents live in poverty, hunger and a deficiency of facilities, which have been brought about by numerous variables, for example, family perspectives, non-specialized and low professional abilities, low literacy, and restricted income resources, and so on which prompts to low education and early dropouts (Khan and Naseer, 2023). There is 47.3% literacy among the population matured 15-24 age in slum areas. The youngsters in these slum areas can possibly find out about literacy and mathematical abilities assuming they go to non-formal schools (Farhat, 2024).

Relevant Studies related to the instant study

In one of the important studies, it has been called attention to obviously that formal education can't oblige a wide range of students, particularly the people who come from poor financial backgrounds. As indicated by this specific study, it should be recognized that proper instruction can't meet the objectives of school graduates and different students who miss the formal education system. Non-formal schooling is a potential chance to move toward education technique (Mbilu, 2019).

As per this specific relevant research study, non-formal and local area education for practical turn of events, similar to formal education, should be significantly more than information, correspondence, awareness improvement, or even the headway of mindful and talented way of behaving (Tumwine, 2020). Essentially, another study, which features how mathematical abilities ought to be shown through non-formal education, centers around the job of the government and NGOs in such manner (Balkar, 2022). Moreover, another study investigates the verifiable presence and progress in the field of non-formal education for numerical skills by calling attention to that throughout the long term; some education programs for non-formal have been started. These projects incorporate the town help program in 1953, the literacy plan in essential popular governments in 1964-69, the experimental experimental pilot program in 1977-78, Quran Education Undertaking (1992-94), Roshni Schools (1987-89) and the Iqra pilot project in 1987 (Jafree, 2023).

Research Gaps identification

There is a sheer lack of research on the compelling or incapable role of non-formal educational systems, particularly as far as the abilities of students in the 5th grade. Completing point by point and explicit research that considers the effect of non-formal school systems on the mathematical abilities of students at the 5thgrade level is profoundly significant. The central point of interest is that no institutional association has been made between formal learning courses and non-formal learning courses. Research has been carried on a few distinct parts of the literacy skills of students at the school level, however not a lot is accessible in that frame of mind of academic research on the improvement of mathematical abilities at the degree of 5thgrade students. Mathematical abilities are not quite the same as proficiency abilities in light of their attributes as well as due to their application in day to day existence. Research should be done on the performances of students who are being shown through a non-formal school system.

There was no research work accessible on the correlation of the productivity of showing mathematical abilities in any two non-formal educational systems. There is a lot of research available on the advancement and performance of students connected with mathematical abilities at the degrees of classes 1 and 2, however there is a gap in the accessible research literature about the mathematical abilities of classes 4 and 5. It would be appropriate to call attention to that there is not a lot accessible as far as research work that could draw comparisons between the learning of mathematical abilities with respect to students, even in formal schooling systems. The circumstance of the work in research related to mathematical abilities at the 5th grade level in the non-formal school system is far and away not in a more good way.

Also, no dependable information is accessible to feature whether any two given non-formal educational systems are successful or inadequate in creating mathematical abilities in students. For this reason the momentum research was completed for the most part founded on the genuine studies; work in the field, and the constant outcomes and performances of students in regards to their mathematical abilities.

Ultimately, with regards to the exploration on mathematical abilities, in any case, the accessible studies focus around the mathematical abilities of exceptionally youthful students, or they concentrate on literacy abilities of students. The need is to concentrate of concentrates on the numerical abilities of fourth and 5thgrade students as opposed to thinking about the more extensive range of education abilities as it were. Simultaneously, there is likewise a need to break down how the students at a non-formal school learn and work on their numerical abilities. The need is additionally to ensure that the study is relative and far reaching so the outcomes are carefully ready with however much precision as could reasonably be expected.

Alongside the exhibition of student's in numerical abilities, the gap likewise exists as an absence of information on how proficient the general scholarly climate and the showing philosophy are at non-formal schools. What this obviously calls attention to is that the need is to explicitly zero in on the mathematical abilities of students and the information that non-formal schools are completing to enhance the mathematical abilities of students.

Researcher's Perspective of Method Description

This research will involve the quantitative method as its applied structure to do the research and find out how viable or insufficient non-formal education is concerning its conveyance of mathematical abilities. Creswell and Creswell, (2017) showed that the quantitative method is a method for testing objective theories by looking at the relationship among factors. To measure the mathematical abilities of fifth grade students at BECS and NCHD, the research utilized the descriptive method. Generally, a quantitative method is connected with the positivist paradigm. A quantitative technique includes the counting and estimation of occasions and the statistical analysis of a group of numerical data and consequently comprises the essential research approaches to deal with this investigation for the time (Hartas, 2015). The main purpose of laying out community schools was to work on the nature of non-formal education as well as accomplish the most extreme focuses of the primary schooling system in Pakistan (Halai, and Durrani, 2020).

Objectives of the Study

1. To find out the numerical skills attained by 5th grade students learning under non-formal Basic Education Community Schools (BECS).
2. To find out the numerical skills attained by 5th grade students learning under feeder schools of the National Commission for Human Development (NCHD).
3. To compare the numerical skills attained by 5th grade students of BECS and feeder schools of NCHD.
4. To explore the reasons for the difference between the numerical skills attained by BECS and feeder schools of NCHD.
5. To suggest measures to improve the numerical skills of 5th grade students of BECS and feeder schools of NCHD at the required level.

Research Questions

1. What are the numerical skills attainedby 5th grade students of BECS?
2. What are the numerical skills attainedby 5th grade students in feeder schools of NCHD?

3. What are the reasons behind the difference in numerical skills attained by 5th grade students of BECS and feeder schools of NCHD?
4. What are the possible measures for the improvement of numerical skills of 5thgrade students of BECS and feeder schools of NCHD?

Research Design

In this research study, the researcher used a quantitative research design in which survey method is used for the data collect the required data. This design is mostly used to compare two or more groups. The study was descriptive in nature.

For this purpose, non-formal educational institutions of BECS and feeder schools of NCHD located in Islamabad were selected. The population's ages between 9-16 years who have completed their primary school grade 4th and are currently studying in 5th grade were taken for the study purpose. The numerical skills of 5thgrade students were tested concerning the competencies proposed in national curricula, using the content of 4thgrade textbook of mathematics for test construction and with the help of mathematical experts and class teachers.

Population

The population of the study was eight four (84) 5thgrade students of four non-formal educational schools affiliated with BECS and its counterpart feeder schools of NCHD out of 272 institutions: 232 BECS and 40 feeder schools of NCHD, respectively.

Sample and sampling techniques

For the study, a purposive random sampling technique was used to select the sample. The researcher took eighty-Four students from targeted population as a sample based on same characteristics (age, gender, skills and knowledge) whose ages were 9-16 years.42 students comprising (male and female)from two Basic Education Community School (BECS) near Mohallah Shah Allah Ditta (U.C.49), Golra Sharif and Gulshan Colony near Bilal Masjid Tarnol, (U.C.47),Islamabad, and also 42 students (male and female) from two feeder schools of the National Commission for Human Development (NCHD), Mohallah Shah Allah Ditta, (U.C.49), and NCHD and Mohallah Noorpur Shah, Bari Imam (U.C.02), Islamabad, who have completed 4th class and were studying in 5thclass at primary level.

Research Instrument

The instrument used in this research work a numerical skills achievement test taken from students in 5th grade and a demographic information questionnaire from both system of schools students. The student's achievement test consisted of numerical skills i.e.

addition, subtraction, multiplication, and division (based on M.CQ's, short and real-life problems). The test was developed by mathematical experts, concerned teachers, and the textbook Mathematics of 4th class based on Single National Curriculum 2020.

Instrument Development

The student's achievement test consisted of two sections. Section A is consists of demographic information-type questions. This section is consisted of 15 questions and their answers in the form of Yes and No. In this section, the researcher is tried to investigate demographic conditions of 5thgrade students enrolled in two systems of non-formal educational institutions: BECS and feeder schools of NCHD. The section B, Students achievement test is consisted of four parts, i.e. addition, subtraction, multiplication, and division. Each part carried 12 &13 marks. 12 marks for addition and multiplication skills whereas, 13 marks for subtraction and division skills respectively. The total items were 40 SLO-based M.CQ's, short questions and real-life problems. Each M.CQ's type item carried one mark, while short and real- life problem items carried two marks respectively.

The student's achievement testis comprised of four parts, i.e., addition, subtraction, multiplication and division for primary-level students. The numerical skills test was developed by the researcher from textbook Mathematics Grade 4 based on Single National Curriculum 2020 and Student Learning Outcomes (SLO's).

Validity and Reliability of the Instrument

After the development of the sample test, it was validated by 5-6 mathematical and other subject experts and concerned school teachers. This tool was improved in the light of their valuable guidance. The validity and reliability of the tool were checked by applying Cronbach's alpha reliability test. Cronbach's alpha is a way of accessing reliability by comparing the amount of shared variance, or covariance, among the items making up an instrument to the amount of overall variance.

The reliability of the test and pilot test was administered by the researcher himself. The solved tests were assessed and examined, and their results were analyzed and computed on SPSS 16.0. The scale's reliability was assessed and it was 0.712 which showed the good internal consistency of the test.

Pilot Testing

To further check the validity of the achievement test used in the study, a pilot test was conducted on a sample of 20 male and female 5th grade students from two non-formal educational institutions of (BECS) and feeder schools of (NCHD) other than the target

institutions. Hence, for pilot testing, the researcher selected two other schools, i.e.one from BECS (Raja Saleem Kiryana Store Sohan, Islamabad) and one from the feeder school of NCHD (Madrasa Azad Masjid, Col. Amman Ullah Road Baharakoh, Islamabad). The research instrument or test was modified in the light of the results of the data from pilot testing.

Data collection

Before data collection, the researcher obtained permission from the authorities of both non-formal educational institutions, BECS and NCHD. The researcher personally visited the targeted population of the study area to collect the data. Data was collected from four non-formal educational institutions of BECS: Mohallah Shah Allah Ditta, Golra Sharif (U.C.49), and Gulshan colony near Bilal Masjid Tarnol (U.C.47), as well as the counterpart feeder schools of NCHD, Mohallah Shah Allah Ditta (U.C.49), Golra, and Mohallah Noorpur shah Bari Imam, (U.C.02), Islamabad. For this purpose, the researcher took a numerical skills test with 5th grade targeted non-formal school students who had completed 4th grade primary education. The researcher also filled out the demographic information questionnaire with concerned students to check and analyze their socioeconomic conditions.

Analysis and Interpretation of Data

After data collection, the data collected from 5thgrade students of BECS and feeder schools of NCHD was arranged, tabulated, and analyzed by applying descriptive and inferential statistics, i.e. Mean Standard Deviation and t-test using Microsoft Excel, Statistical Package for Social Science (SPSS) 16.0, and Microsoft Word formats.

Demographic information of the students of BECS and feeder schools of NCHD

The demographic information of the students is shown in Table 4.1. It represents the students' data about the institute, gender and other demographic factors. The data was collected from 5th grade students of four non-formal educational institutions (BECS) and feeder schools (NCHD) through a questionnaire.

Table 1

Demographic Information of 5th grade students of BECS and feeder schools of NCHD

Category	Frequency	Percentage
Institute		
BECS	42	50%
NCHD	42	50%
Gender		
Male	48	57%
Female	36	43%

The table 4.1 shows thatthere are total 84 students who filled out the questionnaire: 42 students (50%) from BECS and 42 students (50%) from feeder schools of NCHD. BECS had 18 students (43%) and 24 female students (57%). Similarly, male students from feeder schools of NCHD were 30 (71%) and females were 12 (29%).

Overall Students' Numerical Skills of Students BECS Schools of NCHD

Table 2

Overall Numerical skills of 5thgrade students' comparison between BECS & NCHD.

Variable	Group (Schools)	N	Total Score	Mean	SD	T	Df	F-Value	Sig. (2-tailed)
Numerical Skills	BECS	42	50	38.9762	7.07964	4.372	82		
								3.406	0.000
	NCHD	42	50	32.9762	5.38511	4.372	76.545		

*p<0.05

The table 4.2 shows the overall results of the numerical skills of the BECS and NCHD school systems. Since the calculated value p=0.000 that is much smaller than our default p value=0.05, the results are significant. Hence, the alternative hypothesis is accepted and the null hypothesis is rejected. It indicates there is a significant difference between the overall numerical skills of BECS and NCHD feeder schools. The mean value of BECS is much better than NCHD feeder schools. However, its standard deviation of 7.08% is slightly higher than that of NCHD feeder schools i.e. 5.38%. The results showed that there is a significant difference in the performance of the two gro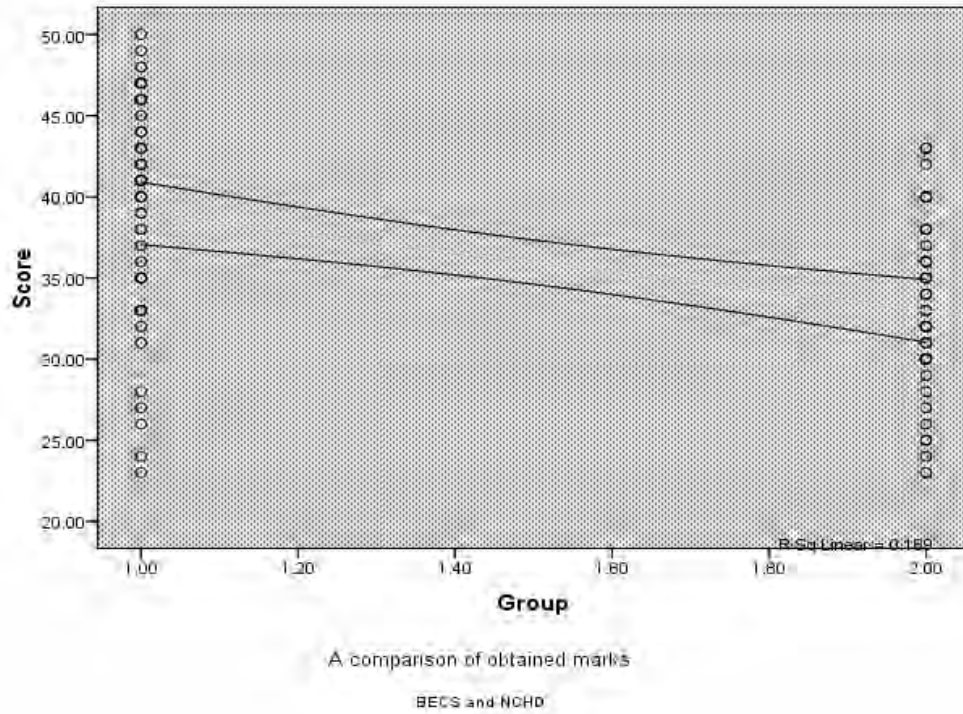ups of learners at the two non-formal schools of the system. The results showed that there is a significant difference in the performance of the two groups of learners at the two non-formal schools of the system.

Figure 1. Graphical presentation of overall numerical skills of BECS NCHD

The above figure 4.1 Scatter dot graph compares the numerical skills of BECS and NCHD feeder schools. In the Scatter dot graph, 1.00 shows results for BECS and 2.00 shows results of NCHD. The black line shows the upper and lower 95% confidence interval of the obtained marks, while yellow corresponds to the mean scores. The highest marks obtained by BECS students were 50 and lowest were 23 out of total marks 50, while highest marks of NCHD feeder schools students were 43 and lowest were 23. The mean obtained scores of both schools lie between 39 and 36 respectively. Therefore, the overall numerical skills performance of schools of BECS is better than NCHD schools.
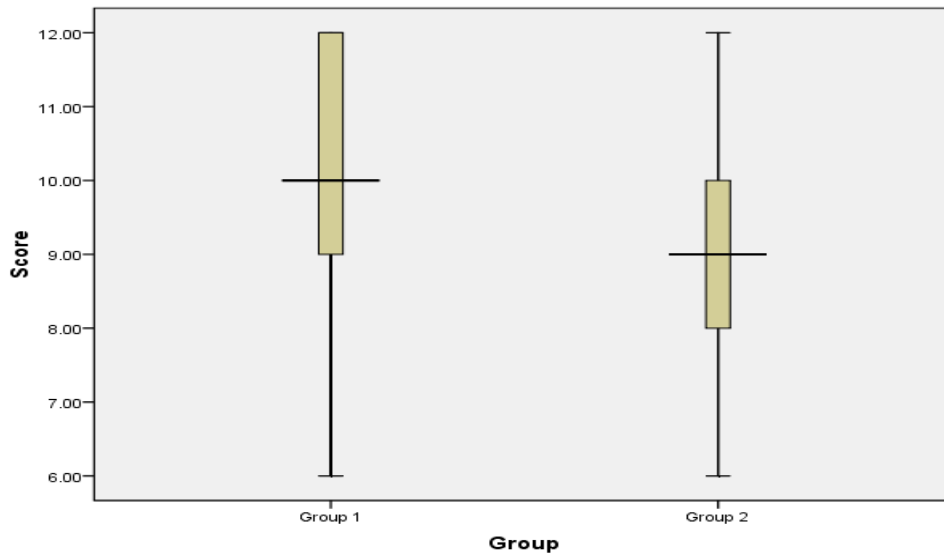
Students' addition Skills of BECS Schools of NCHD

Table 3

Addition skill-based comparison between Non-Formal schools of BECS and NCHD

Variable	Group (Schools)	N	Total Score	Mean	SD	t	Df	F-Value	Sig. (2-tailed)
Addition Skills	BECS	42	12	10.2143	1.76048	3.598	82		
	NCHD	42	12	8.9286	1.50435	3.598	80.053	1.422	0.001

*p<0.05

Table 4.3 shows the results of addition skills of BECS and NCHD feeder schools. The table above shows that the results are significant, as the p-value is less than 0.05. It means there is a significant difference between the addition skills of BECS and NCHD feeder schools. The above results also show group statistics of addition skills in both school systems. The average value of BECS schools is 10.2143 which is higher than average value of NCHD feeder schools, which is 8.9286. The variation in results of BECS is slightly higher than NCHD schools as shown by their standard deviation. The result analysis of overall numerical skills showed that the BECS learners scored a mean value 38.9762 and SD= 7.0796. So, BECS learner's overall numerical skills are quite better than the learners of NCHD.

A comparison of addition numerical skill between group 1 (BECS) and group 2 (NCHD) students

Figure 2. *Graphical presentation of addition skills of BECS and Feeder schools of NCHD*

Figure 4.2 (Box Whisker Graph) shows a comparison of the addition skills of BECS (Group 1) and NCHD feeder schools (Group 2). The upper and lower horizontal lines of box show Q3 and Q1 values, while the middle line passing through the mid of the box show median values. The vertical lines originating from the box show the maximum and minimum values.

The above graph shows BECS students performed better than NCHD feeder school students. Students from both groups obtained highest score of 12. The lowest obtained scores are also amazingly same at 6. But the median value of both groups is different, for BECS it is 10 and for NCHD it is 9. However, the proportion of their obtained marks were different as shown by Q3 (12 and 10) and Q1 (9 and 8) values

(Figure 4.2). Therefore, the result of the addition skill performance of Basic Education Community Schools (BECS) is very good as compare to feeder schools of the National Commission for Human Development (NCHD).

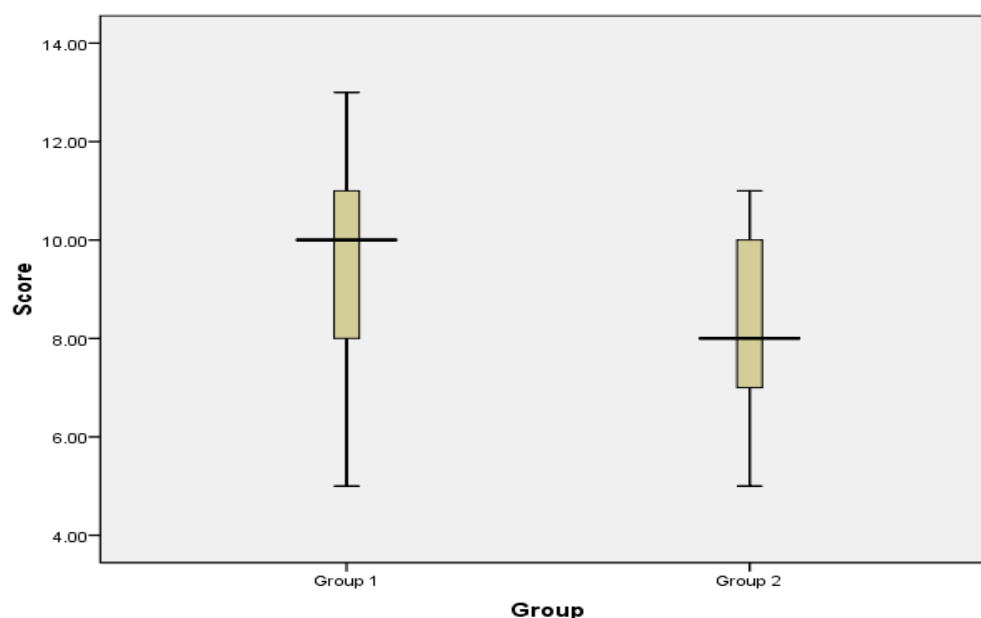**Students' subtraction Skills of BECS Schools of NCHD**

Table 4

Subtraction skill comparison between Non-Formal school of BECS and NCHD

Variable	Group (Schools)	N	Total Score	Mean	SD	T	Df	F-Value	Sig. (2-tailed)
Subtraction Skills	BECS	42	13	9.6905	1.95670	2.001	82	2.851	0.049
	NCHD	42	13	8.9286	1.50435	2.001	76.919		

*p<0.05

      Table 4.4 shows that the p-value of subtraction skills is slightly lower than the default value of 0.05, showing significance of results. Hence, we reject our null hypothesis and accept the alternative hypothesis that there is a significant difference between subtraction skill of BECS and NCHD feeder schools. The mean value of BECS 9.69 which is better than that of NCHD feeder schools 8.92, but its standard deviation is higher than that of NCHD feeder schools indicating its higher variation in average marks of subtraction skills as compared to NCHD schools.

A comparison of subtraction numerical skill between group 1 (BECS) and group 2 (NCHD) students

Figure 3. *Graphical presentation of subtraction skills of BECS and Feeder schools of NCHD*

Figure 4.3 (Box Whisker Graph) shows the comparison of subtraction skills between BECS (Group 1) and NCHD feeder schools (Group 2). The upper and lower horizontal lines of box the show Q3 and Q1 values, while the middle line passing through the mid of the box shows median values. The vertical lines originating from the box show the maximum and minimum values.

The graph indicates BECS students performed better than NCHD feeder school students. Students of BECS obtained highest score of 13, and Students of NCHD obtained highest score of 11. The lowest obtained scores obtained by both schools are 5. The median value of both groups is different; for BECS it is 10 and for NCHD, it is 8. The proportion of their obtained marks was different, as shown by Q3 (11 and 10) and Q1 (8 and 7) values (Figure 4.2).Therefore, the result of subtraction skill performance of Basic Education Community Schools (BECS) is better than that of feeder schools of the National Commission for Human Development (NCHD).

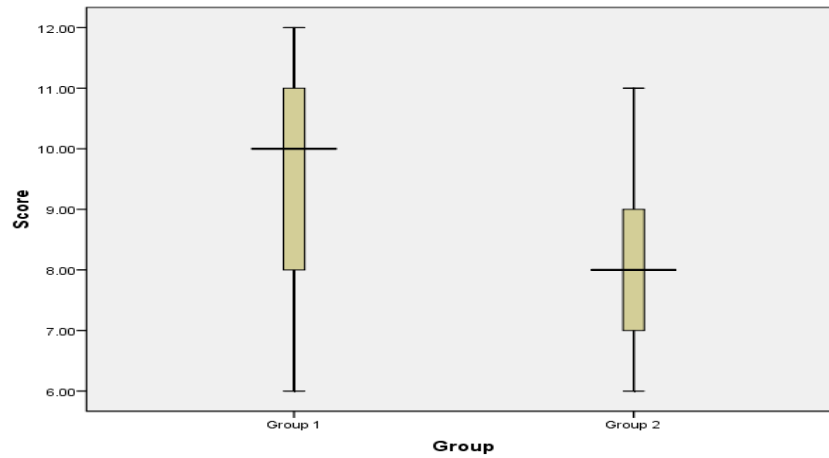**Students' Multiplication Skills of BECS Schools of NCHD**

Table 5

Multiplication skills comparison between Non-Formal schools of BECS and NCHD

Variable	Group (Schools)	N	Total Score	Mean	SD	t	Df	F-Value	Sig. (2-tailed)
Multiplication Skills	BECS	42	12	9.3333	1.81681	3.736	82	2.699	0.000
	NCHD	42	12	8.0000	1.43136	3.736	77.742		

*p<0.05

The table 4.5 shows results for multiplication skills of the students of BECS and NHCD feeder schools. The significant p-value of 0.000 in the above table shows there is a significant difference between the multiplication skills of BECS and NCHD feeder schools. Hence, the alternative hypothesis is accepted and the null hypothesis is rejected. The average score for multiplication in BECS is higher than that in NCHD feeder schools, showing BECS students are better at performing multiplication skills. The standard deviation of BECS is also higher than that of feeder schools, showing higher variation in its results.

A comparison of multiplication numerical skill between group 1 (BECS) and group 2 (NCHD) students

Figure 4. *Graphical presentation of multiplication skills of BECS and NCHD*

Figure 4.4 (Box Whisker Graph) shows a comparison of the multiplication skills of BECS (Group 1) and NCHD feeder schools (Group 2). The upper and lower horizontal lines of box show Q3 and Q1 values, while the middle line passing through the mid of the box shows median values. The vertical lines originating from the box show the maximum and minimum values.

The graph 4.4 above shows BECS students obtained the highest score of 12 and Students of NCHD obtained the highest score of 11. The lowest obtained scores obtained by both schools are 6. The median value of both groups is different, for BECS it is 10 and for NCHD it is 8 which show BECS students are better at performing multiplication skills. The proportion of their obtained marks were different as shown by Q3 (11 and 9) and Q1 (8 and 7) values (Figure 4.3). Therefore, the result of subtraction skill performance of Basic Education Community Schools (BECS) is better than that of feeder schools of the National Commission for Human Development (NCHD).
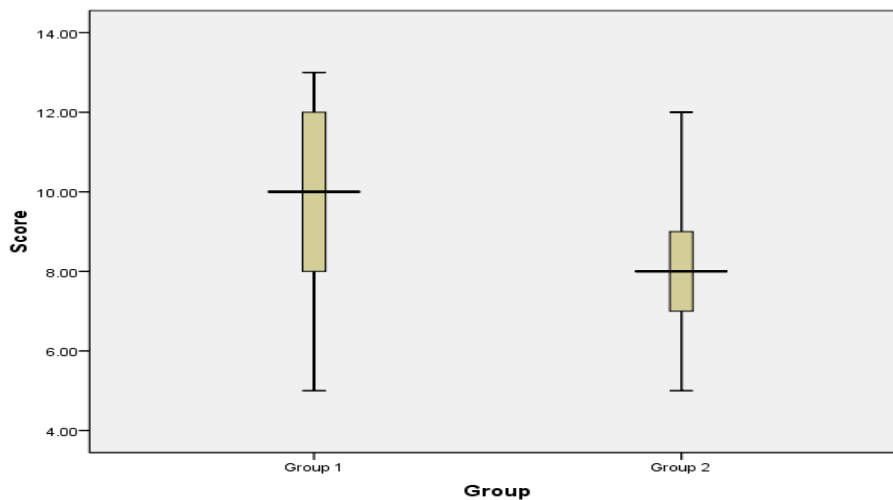
Students' Division Skills of BECS Schools of NCHD

Table 6
Division skill-based comparison BECS and Schools of NCHD.

Variable	Group (Schools)	N	Total Score	Mean	SD	t	Df	F-Value	Sig.(2-tailed)
Division Skills	BECS	42	13	9.7381	2.03697	5.012	82	4.104	0.000
	NCHD	42	13	7.7381	1.59358	5.012	77.511		

*p<0.05

Table 4.6 above shows that the p-value of results 0.000 is lower than the default value of $P<0.05$. Hence, the results are significant. It shows that there is a significant difference between the results of division skills of BECS schools and NCHD feeder schools. On the basis of the results we reject our null hypothesis and accept our alternative hypothesis. The group statistics of division skills show that the mean value of BECS schools 9.738, which is much higher than that of NCHD feeder schools, which is 7.738. Also, the variation in results of BECS is greater than that of NCHD feeder schools, as indicated by their standard deviations.

A comparison of division numerical skill between group 1 (BECS) and group 2 (NCHD) students

Figure 5. *Graphical presentation of Division skills of BECS and schools of NCHD*

Figure 4.5 (Box Whisker Graph) shows a comparison of the division skills of BECS (Group 1) and NCHD feeder schools (Group 2). The upper and lower horizontal lines of box show Q3 and Q1 values, while the middle line passing through the mid of the box shows median values. The vertical lines originating from the box show the maximum and minimum values.

The graph shows BECS students obtained the highest score of 13 and Students of NCHD obtained the highest score of 12. The lowest obtained scores obtained by both schools are 5. The median value of both groups is different; for BECS it is 10 and for NCHD, it is 8 which show BECS students performed better in division skill. The proportion of their obtained marks were different as shown by Q3 (12 and 9) and Q1 (8 and 7) values (Figure 4.3). Therefore, the result of division skill performance of Basic Education Community Schools (BECS) is better than that of feeder schools of the National Commission for Human Development (NCHD).

Discussion

The purpose of the study was to investigate the weaknesses and inefficiencies in the current non-formal education systems at BECS and feeder schools of NCHD located in suburbs of Islamabad Capital Territory (ICT) and to explore the potential options for improvement and uplifting the standard of the education system. Since these schools are situated in the rural areas of the federal capital Islamabad and they have meager resources for use in teaching-learning process and also they get students admitted from lower classes of society. However, the I.Q. level of learners in both BECS and feeder schools of NCHD is quite high which is comparable to the learners in the formal education system in ICT Islamabad. The results of the study pointed out that the learners of BECS and NCHD have reasonable numerical skills; however, learners of BECS have shown far better results as compared to NCHD learners. The results in the four numerical skills have shown that the learners at BECS are far better equipped with numerical skills and that the learners at NCHD still need to improve their numerical skills. In the case of overall performance, we may compared the differences in their mean scores i.e. the BECS mean is 38.9762, while the feeder schools of NCHD mean value is 32.9762 as revealed by (Table 4.2). A study conducted by Walgermo et al., (2018) shows that reading and numerical skills among learners may be improved through repetition. The same is true for the learners at both BECS and feeder schools of NCHD. These learners may improve further if they work more consistently on these skills. Similarly, Piper, et al., (2014) stated in their research findings that through repetition, non-formal students have shown improvements in reading skills. This means both groups of learners' may even further improve their performance at numerical skills through repetition of these skills in the form of weekly, fortnightly or monthly test series. This also means that the learners of feeder schools of NCHD may minimize the difference in performance between them and the learners at BECS if they are provided with a modern teaching environment such as guidance, supervision, and audio-video tools for instruction.

Conclusions

1. The numerical skills of BECS students and feeder schools of NCHD students are significantly different in the categories of addition, subtraction, multiplication, and division. So it is concluded that BECS learners are quite better in overall numerical skills as compared to feeder schools of NCHD.
2. It is clear that BECS students are superior in performing numerical skills as their mean value is higher than that of the students at the feeder school of NCHD.
3. The skill of addition as exhibited by the learners at BECS and the feeder school of NCHD is significantly different from each other. BECS students are better than feeder schools of NCHD students in performing this particular skill. The

standard deviation of the learners at BECS is higher than that of the feeder school students, which shows as high variation in skill of addition of BECS students as compared to the same skill of the feeder school learners of NCHD. So it is concluded that teaching of addition skills is quite good at BEC Schools.

4. It is also clear that, BECS students are quite better in performing the skill of subtraction as compared to the feeder school of NCHD students as shown by their average value. BECS learner's results are less consistent as compared to the feeder school of NCHD, which is shown by their standard deviation. Hence, it is concluded that, BECS learners have good performance in subtraction skills as compared to feeder schools of NCHD learner's.

5. The results of the skill of multiplication show that BECS students are better at performing multiplication skills as compared to the performance of feeder schools learners of NCHD. The standard deviation of BECS students is higher than the feeder school of NCHD students. So it is concluded that, BECS learners have quite better performance in multiplication skills as Compared to feeder schools of NCHD students.

6. The result in the skill of division category shows that the learners of BECS and the feeder school of NCHD are significantly different from each other. BECS students are more efficient in performing the numerical skill of division as compared to the performance in the same category of numerical skill by the feeder school learners of NCHD. The standard deviation of BECS is higher than that of NCHD students showing greater variation in their results of BECS students. So it is concluded that, BECS students are performing well regarding division skills as compared to feeder schools of NCHD.

Recommendations

On basis of the findings and conclusions drawn from the data of the research study, here are some suggestions and recommendations for BECS and feeder schools of NCHD.

For BECS

1. At BECS, the numerical skills of the learners may be enhanced and improved even more through the use of education technology. BECS may use educational apps and online resource to reinforce numerical skills.

2. BECS must also be arranged for workshops and teachers training focusing on innovative teaching methods for numerical skills.

3. BECS must ensure that the learners may feel even more motivated to produce even better results in numerical skills.

4. BECS may encourage parents in their students learning by organizing workshops or meetings and also providing resources to support their children's numerical skills development at home.

For feeder schools of NCHD

1. The administration of feeder schools at NCHD may have taken some necessary steps to improve numerical skills of their students. For this purpose, implement small-group instruction strategies to provide personalized attention to the learners.
2. The professional training of teachers must be carried out in feeder schools of NCHD to enable teachers to polish their skills efficiently. For this purpose, establish mentorship programs and courses, where experienced teachers may guide and support them.
3. Proper assignments and quiz systems must be launched systematically, so that the numerical skills of students may improve even more and be evaluated from time to time.
4. NCHD may establish local community involvement programs to raise awareness about the importance of mathematics and numeracy skills in our daily lives.

References

Abdullah, M., Bhuttah, T. M., Mahmood Aasy, M. T., Hassan, M. K., Khalid, M. F., & Zaffar, A. (2022). Role Of Non Formal Basic Education In Promoting Literacy In District Rajanpur. *Webology*, *19*(2).

Aunio, P., & Rasanen, P. (2016). Core numerical skills for learning mathematics in children aged five to eight years–a working model for educators. *European early childhood education research journal*, *24*(5), 684-704.

Badar, F. B., & Mason, J. (2020, November). Numbers are Alarming, Solutions are Scant: Out of School Children in Pakistan. In *International Conference on Sustainable Development* (pp. 1-16). International Conference on Sustainable Development.

Balkar, B. (2022). An investigation of distance education activities of non-governmental organizations (NGOs) in Turkey during the COVID-19 pandemic. *Asian Journal of Distance Education*, *17*(1).

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Farooq, M. S. (2018). Millennium development goals (MDGs) and quality education situation in Pakistan at primary level. *International Online Journal of Primary Education*, *7*(1), 1-23.

Farooq, M. S., Feroze, N., & Kaı, Y. T. (2017). Public vs Private quality education at primary level in Pakistan. *International Online Journal of Primary Education*, *6*(2), 1-23.

Martinez, D. (2020). Educacion formal, no formal y informal. *Webgune honetatik berreskuratua: https://www. researchgate. net/profile/Deiby-Sanchez/publication/ 345710193_Educacion_formal_no_formal_y_informal/links/5fab69b2299b f18c5b64bf73/Educacion-formal-no-formal-y-informal. pdf*.

Grajcevci, A., & Shala, A. (2016). Formal and non-formal education in the new era. *Action Researcher in Education*, *7*(7), 119-130.

Halai, A., & Durrani, N. (2021). School education system in Pakistan: Expansion, access, and equity. In *Handbook of education systems in South Asia* (pp. 665-693). Singapore: Springer Singapore.

Hartas, D. (Ed.). (2015). *Educational research and inquiry: Qualitative and quantitative approaches*. Bloomsbury Publishing.

Sibieta, L. (2020). 2020 Annual report on. *The Institute for Fiscal Studies*.

Nasir, M. S., Majeed, A., & Ahsan, M. Q. (2021). Evaluating the Role of National Commission for Human Development and Primary Education in Khyber Pakhtunkhwa, Pakistan. *Utamax: Journal of Ultimate Research and Trends in Education*, *3*(1), 48-57.

Jafree, S. R. (2023). Literacy, Skill Development, and Social Policy for Women of Pakistan. In *Social Policy for Women in Pakistan* (pp. 149-179). Cham: Springer Nature Switzerland.

Khan, N. A., & Naseer, N. (2023). Enhancement of Literacy Skills of Adult Learners Through Teleschool Program. *International Journal of Distance Education and E-Learning*, *8*(2), 19-32.

Khan, S., & Niazi, H. K. (2016). Study of universal primary education (UPE) program of National Commission for Human Development (NCHD) in Pakistan to improve primary education in Pakistan. *The Dialogue*, *11*(4), 372-372.

Latchem, C., & Latchem, C. (2018). *Open and distance non-formal education* (pp. 11-17). Springer Singapore.

Farhat, M. (2024). Exploring Health-Seeking Behaviors and Coping Strategies: A Qualitative Study of Women in Urban Slum Areas of Lahore, Pakistan. *Sociological Research And Innovation*, *2*(1), 02-21.

Mbilu, E. M. (2019). *Non-Formal Education and Quality Basic Education for All in Tanzania: A study of the Effectiveness of Non-Formal Education Programs for Children of School-going Age in Korogwe District* (Master's thesis).

Mihai, M., Țițan, E., & Manea, D. (2015). Education and poverty. *Procedia Economics and Finance*, *32*, 855-860.

Butt, M., & Park, S. (2024). The Influence of Cultural and Social Factors on Education in Pakistan. *International Journal of Academic Research in Progressive Education and Development*, *13*(2).

Piper, B., Zuilkowski, S. S., & Mugenda, A. (2014). Improving reading outcomes in Kenya: First-year effects of the PRIMR Initiative. *International Journal of Educational Development*, *37*, 11-21.

Tumwine, S. (2020). *Non-Formal Adult Education and Community Development: An Assessment Of The Contribution Of An Ngo Implemented Program In Southwestern Uganda* (Master's Thesis, University Of Agder).

Affolter, F. W., & Valente, A. A. (2020). Learning for peace: Lessons learned from UNICEF's peacebuilding, education, and advocacy in conflict-affected context programme. *Children and peace: From research to action*, 219-239.

Razzaque, A., Chowdhury, M. R., Mustafa, A. G., Mahmood, S. S., Iqbal, M., Hanifi, S. M. A., ... & Reidpath, D. D. (2023). Urban health and demographic surveillance system in slums of Dhaka (North and South) and Gazipur City Corporations, Bangladesh.

Veraksa, A., Balaguer, C., Christiansen, S., & Meaney, T. (2021). Evaluating numeracy apps in different cultural contexts. *Sustainable mathematics education in a digitalized world*, 247.

Walgermo, B. R., Frijters, J. C., & Solheim, O. J. (2018). Literacy interest and reader self-concept when formal reading instruction begins. *Early Childhood Research Quarterly*, *44*, 90-100.