

Inadequate exposure to mathematics in the B.Ed. program: An analysis of the Indian context

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Abstract

This study investigates the deficiencies in mathematical understanding that have been present in the B.Ed. curriculum from the year 2015. Teachers Educational Institutions have the potential to grow a nation and play a vital part in the process of bringing about changes in the educational system. A Teacher Training Institute is more accurately described as a Teacher-Making Factory. For a very long time, it has been one of the most significant contributors to the development of a nation and a nation. In this location, future educators in a variety of pedagogy fields receive their training. As an illustration, Bengali, Sanskrit, English, History, Geography, Biology, Education, Physics, Mathematics, and Chemistry, etc. are all examples of such subjects. One of these subjects is mathematics. Students are required to study a variety of disciplines, in addition to Pedagogics, for the course of the two years that they are enrolled in the Bed. course. The coursework for a Bachelor of Education degree typically lasts for two years and can be broken down into three distinct parts: the theory component, the practicum, and the internship. The West Bengal State University (WBSU) and the West Bengal University of Technology and Science (WBUTPA) are the two universities that serve as the focal point of this research project, which focuses on the application of mathematical knowledge and practical work. The approach of the study is a mixed kind, which includes an interpretation, interview, observation, and study of secondary sources. These secondary materials include books, papers, journals, theses, university news, expert opinion, and websites, among other things. Finally, suggestions that are actually helpful are provided.

Introduction

Today's two-year Teacher Education curriculum places a significant emphasis on the study of mathematics. Mathematics is a subject that contributes to the development of a person's mental, practical, and socially appropriate attitude over time. Despite the fact that the vast majority of people recognise the utility and significance of mathematics, a significant number of individuals experience fear, mental confusion, and anxiety when faced with mathematical challenges. 1. A Bachelor of Education, sometimes known as a B.Ed., is an undergraduate professional degree that students get after completing four years of study. This degree prepares students to serve as Teachers in schools. The Teacher Education Policy in India has developed over the course of time in response to the shifting environment, and it is founded on the suggestions found in a variety of Education Committees, Commissions, and Reports. In India, individuals who are interested in pursuing a career in secondary or higher secondary teaching are required to complete a Bachelor of Education (B.Ed.) programme that lasts for a minimum of two years. The National Council for Teacher Education, also known as N.C.T.E., is a statutory agency in India that is responsible for regulating the various courses in Teacher Education. The National Content Framework for Teacher Education (NCFTE) recommends humanistic and liberal teacher education programmes that include reflective practises. By an Act of Parliament passed in 1993, the NCTE (National Council for Teacher Education) was made into a statutory body with the responsibility of upholding the norms and standards of teacher education. Since then, they have published two National Curriculum Frameworks on teacher education, in the years 1998 and 2009. There shall be 16 full-time faculty members for a total student body size of 200, which corresponds to an intake of two basic units with a total of 50 students each. The distribution of faculty members across the various subject areas of the curriculum is as follows: i. Principal/Head of Department (One), ii. Perspectives in Education (Four), iii. Pedagogy subjects (Maths, Science, Social Science, Language) (total of eight faculty), iv. Health and Physical Education (One), v. Fine

Arts (One), vi. Performing Arts (Music/Dance/Theatre) (One). In 2017, Kothari mandated that there should be a minimum of eight full-time faculty members teaching pedagogical courses. These subjects include mathematics, science, social science, and language. The members of the mathematics faculty here play a significant part in the development of that curriculum. The success of a programme for the education of teachers is mostly dependent on the effective application of teacher training in actual classroom settings, as well as on the appropriate use of experiences and applications. 3. In 2017, R. G. Kothari elaborated on a few problems pertaining to the field of educator training, including the importance of practical activities and the qualifications of educator trainers. The efficient curriculum framework for teacher education places an emphasis on the professional development of Pre-Service Teachers and offers specialised training for the areas that they will teach in the classroom. The curriculum is broken up into three sections, which are respectively referred to as the Theory Part, the Practicum, and the Internship. Perspectives in education, pedagogic studies, and curricular studies are going to be taught in the section devoted to the theory. Tasks, Assignments, and Workshops are all a part of the Practicum portion of the course. Additionally, the internship is a sub-component of the practicum. The researcher concentrated their efforts on the mathematical requirements of the practical component.

Objective of the study

The following are the objectives of the study:

- i. Investigate the Mathematics-related activities that Teacher trainees participated in while they were in the programme.
 - ii. Investigate the work that was done at the B.Ed. practicum. Curriculum.
 - iii. Investigate the mathematical applications of the work being done.
 - iv. Find out the difficulties and obstacles associated with including mathematics in the B.Ed. programme.
- Investigate the roles and responsibilities of mathematics educator professionals.

Methodology

This research makes use of an interpretative methodology, which entails the collection and examination of qualitative data through the study of relevant documents. The researcher gathered information from students (Trainee Teachers) and instructors (Educators), conducted interviews with senior instructors and department chairs, and conducted document analysis on programme and policy materials. This study relied on secondary sources, such as books, papers, journals, theses, news from universities, opinions of experts, and websites, among other things.

Population: The demographic that was studied contained a few individuals with a B.Ed. students from the 2015 session who enrolled in the two-year Bachelor of Education programme. programme offered through The West Bengal University of Teachers' Training Education Planning and Administration and The West Bengal State University (WBSU, Barasat) (WBUTTEPA), Kolkata.

Selection of the Sample: A stratified random sampling approach was used in order to produce a survey sample that was representative of the whole. In addition to this, we are utilising a purposive sampling approach in order to acquire purposive samples.

Purpose of study: The purpose of this study is to conduct an in-depth analysis of the practical activities associated with mathematics and to look for new ways to bring mathematics together. This research was carried out with the following considerations in mind: i. The existing practicum curriculum ii. Involving mathematical procedures and concepts. iii. A Roll of Those Who Teach Mathematics. iv. Challenges in Applying Mathematics and Possible Solutions

The scope of the study was restricted to the Bachelor of Education (B.Ed.) programmes offered by WBSU and WBUTTEPA in the state of West Bengal.

The study has a number of limitations, as does the research methodology that was used. Only a few trainee teachers and faculty members participated in the B.Ed. program's questionnaires, therefore the amount of information gathered from them is rather limited.

Findings, and Discussion

The Bachelor of Education programme typically lasts for two years, however it can be broken up into three distinct segments if necessary. Which includes a portion that focuses on practical application. The practical implications of mathematical concepts were the primary area of emphasis for the researcher. Here are some of the more applicable regions that can be used in a variety of ways. Take, for instance, the presentation at the seminar, the workshop, the assignment, etc. Students finish their education by applying all of these different applications that are put into practise. Work experience that students can get through a variety of teaching methods, including the following:

Table-1: Mode of Transaction involve in different practicum work in B.Ed.

Mode of Transaction			
Discussions	Lectures.	Group Discussions	Pair and Share
Audio-Video	Field visits & sharing experiences	Symposium	Panel discussions
Film Show	Problem Solving	Case Study	Assignment
Creative literature	Games	Exercises	Round table study
Reflective questioning	Writing diary	Project work	Field trip
Seminar	Demonstration	Workshop	Slide/film show
Action research	School visit & sharing experiences	Practical work	Reflecting writing
Meditation	Anecdotes	Role play	One act play
Story-telling	Lab work	Observation	Web surfing
LCD projection	Designing WBI	-	-

The various modes of instruction that were discussed earlier are how students get their practical work experience. There is a connection between hands-on work and all of the pedagogical subjects and the overall curriculum. Some of the more specialised types of practical work involve less rigorous forms of mathematics. Despite the fact that mathematics education is deeply intertwined with mathematical understanding. There is some work to be done in the real world here: 1. Participatory action research. ii. The instruction of mathematics. iii. Qualitative data analysis. iv. The interpretation of statistical data v. The Preparation of Graphs and Other Items

Importance of Mathematics:

These practical works just cannot be completed in their entirety without the application of mathematical principles. Students taking the B.Ed. course do not all belong to the mathematics department. There are many different disciplines, and the students who study them come from many different backgrounds. However, each and every one of them is required to seek the assistance of mathematics. Therefore, everyone needs to be able to do maths. A variety of mathematical procedures, including addition, subtraction, division, and multiplication,

are utilised on a consistent basis. In this case, in addition to the statistical procedure, the usage of other statistical concepts such as the standard deviation, mean, mode, tally mark, and quartile is seen. There is no such thing as the subject area not being tied in some way to mathematics. The discipline of mathematics is often referred to as the "queen of science." With mathematics - language, science with mathematics, mathematics with sociology, and mathematics with sociology and mathematics social science all have close links with one another. Since each of these fields contains elements of mathematics, it stands to reason that there is also a connection between mathematics and the practical applications of each of these fields. One can make the argument that calculation is required in order to ascertain a person's mental age, for instance, if that person wants to know how old they are mentally. On the other hand, if there is a historical time period or an analysis of the judgments of a king's reign, then it is necessary to seek the assistance of a time-graph, which is a part of mathematics. This is because it is impossible to determine the historical time period or the judgments of a king's reign without this assistance.

Problems that arise in the application of mathematics:

The primary issue is that everyone wants to steer clear of mathematical work. The curriculum does not include any time for students to master the various subfields of mathematics. Take, for instance, the possibility of employing it in the operational parts of geographical research. The determination of a location's longitude from its latitude requires the utilisation of mathematics. In addition, if we wish to transform qualitative data into quantitative data, we will need the assistance of someone who is knowledgeable in mathematics. Students need to be presented with challenges in a variety of subject areas for which there is no established curriculum for them to be able to understand this important application of mathematics. As a direct consequence of this, the students developed an unhealthy phobia of mathematics. There is a shortage of mathematical knowledge among the kids since there is not a suitable mathematics teacher. [Cause and effect] There is a strong connection between mathematics and all other fields of study. Students are unable to develop a mathematical mindset since there are not enough maths teachers in the classroom. In terms of the composition of the curriculum, this class does not include any kind of practical activity that could lead to practical work involving mathematics. Although mathematics is used in a roundabout way, direct application of the subject is neglected. There is a lack of fresh occurrences, traits, talents, and knowledge, as well as math-lab and math TLM spaces, among other things. At the present time, a high-quality education and curricular experience are not available to each and every student. In addition to the more procedural components of mathematics, the cognitive side also holds a significant amount of weight in its overall significance. Without a solid understanding of mathematics, it is impossible to perform any task in an accurate manner. The mathematical participation is extremely limited, although the B.Ed. curriculum does contain some hands-on experience with the subject. The primary concern for the educator is how he will integrate mathematical concepts into the various different types of practical work. It goes without saying that the lesson plan needs to be updated. The difficulties associated with teaching mathematics in a school internship are particularly concerning. 3. If we examine the institutions that are responsible for the training of teachers, we will notice that the results are not up to par. In addition, there is a shortage of qualified teacher educators in this area 4.

Discussions:

It is not easy to realise that there are a lot of tasks that are practical, but the math connection to those activities is not particularly strong. In this particular scenario, only teachers can assist in making connections between mathematics and other scenarios. However, if it does not add to it in the appropriate manner, it is not feasible to apply mathematics in the way that it would be with the curriculum. In none of the B.Ed. programmes that last for two years, mathematics has been provided with clear criteria. This will result in an attitude in which math is not taken seriously. There is a shortage, not only of adequate curricula but also of suitable educators for teachers. Independent pupils and teachers have no guidance on reading and writing as well as training. Acceptance of the NCTE rules and acknowledgement that the university's approved coursework may serve as a text. What kind of mathematical instruction is provided for kids who have special educational needs or students who have special educational needs? Mathematics can be made more engaging and relevant to other subjects if teachers provide students with road maps and guideposts to follow. Nevertheless, it ought to be included in the course outline. There are a lot of different modes of transaction, but there aren't any correct methods or formats.

Conclusion

The simulation activity in the classroom inhibits students' ability to think creatively about mathematical activities. The curriculum for teaching mathematics at the secondary and higher secondary level is comprised of three primary components: training that is specific to the domain, educational knowledge (teaching methods), and practical activities. In point of fact, there is never going to be a time when mathematics will be specified. Mathematical knowledge is necessary but will not be utilised in this course. The subject of mathematics does not appear anywhere in the curriculum at any point. Students will be given a greater amount of importance in mathematics if both mathematical knowledge and the application of mathematical concepts are included in the curriculum. Students will have a greater interest in mathematics if it can be shown to them how technology may be used to solve mathematical problems. If the experimental work and the practical fields that are covered in the syllabus are connected with one another, the curriculum will become more robust.

References

1. Hembree R. (1990). #The nature, effect, and relief of mathematics anxiety.# Journal for Research in Mathematics Education, 21(1), 33-46.
2. Yadav S. (2016). #Professional preparation of teacher educators in India: a perspective.# Innovative Journal, 1, 32- 34.
3. Das K. (2019). #Present issues trends and challenges in teaching mathematics for two year B. Ed. Internship programme in west Bengal: an overview.# Book, Blossom books, Kol-700050, 237-245. ISBN: 978-81-934724-1-5.
4. Das K., Roy D. and Biswas P. (2019). #SWOT Analysis of Teacher Educators in B.Ed. Department under West Bengal State University in West Bengal, India.# Research Review International Journal of Multidisciplinary. ISSN: 24553085, 04(06).
5. Lithner J. (2008). #A research framework for creative and imitative reasoning.# Educational Studies in Mathematics, 67(3), 255-276.
6. NCTE. (2014). #Gazette of India.# New Delhi: NCTE.
7. MHRD. (2016). #National Policy on Education 2016: Report of Committee for evolution of the New Education Policy.# Government of India, New Delhi.