

CONTENT ANALYSIS OF 5TH GRADE MATHEMATICS (SNC) FOR
PROBLEM-SOLVING ACTIVITIESTamanna Shabir^{*1}, Dr Muhammad Sohail², Dr Saqib Shehzad³¹MPhil scholar, Department of Education, Abdul wali khan university, Mardan²Lecturer in Education, Abdul Wali Khan University Mardan³Associate professor of Education, Abdul Wali Khan University, MardanDOI: <https://doi.org/10.5281/zenodo.17513042>**Keywords**

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Abstract

This research paper is about the content analysis of the 5th grade Mathematics developed by Khyber Pakhtunkhwa text book board under the auspices of the Single National Curriculum (under Federal ministry of education and training) for the checking the relevancy of the Problem-solving activities at the end of each exercise and lesson. For this purpose, the Content analysis manual method was used in which codes and patterns were constructed to uncover the data. For this purpose, the content analysis model of Kirchendorff (2004), was adapted in which replicable and inferences from texts are derived at. After the analysis of the 5th grade Mathematics of Khyber Pakhtunkhwa text book board, following findings were listed. (i). The exercises were given which do not match the SLOs that are pre-defined. (ii). The exercises target just the lower level of cognitive level of skills (iii). The exercises did not emphasize the upper levels of Bloom's taxonomy (iv). The problems solving activities in the 5th grade Mathematics have unevenly distribution of mathematical domains.

1. INTRODUCTION

Curriculum development in Pakistan had always remained under furious attitude from academia, social media activists, teachers, and parents. The reasons behind this phenomenon, is the process of development, which had been always kept hidden. In fact, the main stakeholders are not on board while preparing the curricula for Pakistani schools. (Siddique, 2022)

After passing the 18th constitutional amendments in 2010, education was completely devolved to provinces. However, the provinces are so far failed to make their own educational policies and develop curricula according to their needs. Except, the province of Sindh, where some development has been undertaken so far for example establishing provincial Higher Education Commission, allocation

of funds to it, making the provincial language as medium of instruction, and other reforms explains a different story from that of other provinces. (Khadim, 2022)

The Khyber Pakhtunkhwa text book board, after approval from the Directorate of Curriculum and Techer Education in aligning with the prescribed Single National Curricula (2020), has developed all text books for primary, elementary, secondary and higher secondary level. In this regard the 5th grade mathematics was also prepared and published for implementation.

The research scholar, took 5th grade Mathematics to be taken for study, on checking weather, the new book fulfills all the requirement of Bloom's taxonomy of cognitive development or not? One of

the finding of the Annual statistics report (ASER, 2022) prepared by the Elementary and secondary education in Khyber Pakhtunkhwa, was that 5th grade students' academic performance, described as below than 28 %. There are multiple reasons for this annoying result. (i). The quality of curricula, which most of the studies, concluded as, above the level of students. (ii). Poor quality of mathematics teacher, having old mode academic record and with no fresh knowledge, particularly after the change of medium from Urdu to English. (iii). Lack of resources, particularly the orthodox methods of teaching and no use of technology integration.

This result is alarming. As far as the aforementioned first conclusion is concerned, this particular study was aimed at to focus on the issue. The part of arithmetic that directly involves the questions or statement been given, are too easy to be solved for students of 5th grade. Similar is the case with Algebraic expressions, the direct questions' skill for solution has low difficulty level. But for the questions, where statement is involved, students are reluctant to answer or find solutions to them. In the 5th grade Maths, a major portion belongs to the questions that involved the statement or having problems. The current study focuses on the questions involved with problem statements.

OBJECTIVES OF THE STUDY

1. To identify the problems solving activities in 5th grade Mathematics
2. To diagnose the cognitive development stage with the problem-solving activities of 5th grade Mathematics
3. To determine the alignment of the problem-solving activities and the tasks given in the 5th grade mathematics of the Khyber Pakhtunkhwa text book board

QUESTIONS OF THE STUDY

1. What are the problem solving activities in 5th grade Mathematics of Khyber Pakhtunkhwa Textbook board (SNC)?
2. What are the cognitive development stages with respect problem solving activities of 5th grade Mathematics?

3. How the problem-solving activities are aligned with the tasks given in the 5th grade mathematics of the Khyber Pakhtunkhwa Textbook board?

DEMILMITATION OF THE STUDY

The study was delimited to the 5th grade mathematics of the Khyber Pakhtunkhwa textbook board and its contents that is approved from Single National Curriculum, Directorate of curriculum and teacher education Khyber Pakhtunkhwa. It was also delimited to the problem-solving activities, cognitive domains of the students, and the strategies that are involved in the teaching learning process.

LITERATURE REVIEW

1) In spirit, readers often outline the possibility and arrangement of mathematical topics to be deliberate, the varieties of coursework that must be completed, and the probabilities that students are given to progress their problem-solving skills. (Valverde et al., 2002).

To establish whether it is possible to help young students physique problem-solution skills, the main details of how the SNC is distorted into the fifth-grade one while observing to the math curriculum and additional text standards will be assessed.

2) Since of the impact of various theoretic outlines, problem-solving and mathematics education are meticulously related. Constructivism is demonstrated through the idea that students actively create their information by likeness and capability. Learners can involve in this active creation over problem-solving by disabling unique conditions and participating the developed knowledge by earlier plans (Piaget, 1970; Vygotsky, 1978). The Cognitive Load Theory (Consciousness of Employed Retention) tourist attractions the boundaries of occupied memory and suggests that effective problem-solving exercises should be created to simplify learning in the short term and progress it in the extended route (Sweller, 1988).

Besides, the dispute being resolute may serve as a critical association between mathematical systems and practical presentations. Through appointment, students can involve in meaningful tasks that help them understand the value and utility of mathematics (Boaler, 1993). This connection can

serve as a catalytic agent and develop the interest and implication of the mathematical education process.

3) The historical "program investigation" is an orderly process of attractive into account and assessing the gratified, project and construction of the curriculum that is skilled in an academy. It is important because it huts light on how well instructional supplies fit into the before outlined learning objects. (Tyler, 1949).

There are many ways to examine the curriculum, reaching from assessable practices that measure the incidence and delivery of exact program elements (what mathematical ideas are covered, how many problem-solving exercises there are, etc.) to qualitative methods that speech the countryside and quality of the subject factual in a curriculum (e.g., the cognitive demand of a task, how well the theoretical empathetic of a student leftovers understood). A more thorough grasp of the curriculum is providing by the diverse methods approach, which mergers numerical and qualitative procedures (Creswell & Plano Clark, 2017).

When showing curriculum analysis, a research method called content analysis is frequently laboring. It contains a methodical analysis of letter resources, such as textbooks, curriculum texts, or valuation resources, in order to classify movements, phrases, and meanings (Krippendorff, 2018). The coverage of specific mathematical topics, the cognitive level of tasks given to a student (such as memorizing proofs, put on them, intellectual, and solving problems), and the way mathematical questions are offered in the edition, graphs, and examples are some features of the curriculum that can be inspected over content analysis. (Stein, Smith, Henningsen, and Silver, 2000).

To confirm that the curriculum is well decoded into classroom life and that the valuation used in the assessment trials the envisioned learning, it is decisive to assess these three components and make assured they are related. It has been exposed that misalignment forces obstruct students' knowledge and make it more stimulating to device the true influence of the platform (Anderson, 2002).

FINDING

This learning observed at how fifth-grade students' perilous thoughtful and mathematics problem-

solving abilities were exaggerated by problematic-based learning (PBL) in assessment to outmoded instruction. According to test data, scholars who exploited PBL outclassed those who used traditional learning in terms of post-test marks. It can be held that PBL is an effective way to motivate basic school scholars' attention in mathematics. This could be the effect of the problem-based learning model's institute, where student-centered education was intended to improvement students' responsibility and active involvement in the learning technique. Additionally, the plans and trials were applicable to the children's ordinary life.

The instructor's continual formation of attractive and pleasing learning through group consultations may be the cause why students' problem-solving aptitudes are civilizing. Pupils are continually assumed the coincidental to enquire questions that are relevant to the course content and connection it to their ordinary lives in a student-centered learning environment. As a outcome, the procedure of learning strength encourage pupils to recover their ability to solve problems.

It may be said that PBL has been successful in helping fifth graders develop their math problem-solving and critical thinking abilities. Initially, this study mainly looked at how PBL affected a few specific mathematical subjects: distance, speed, and discharge. Therefore, long-term research is required to examine how pupils' performance develops over time. Additional, this study observes completely fifth-grade students' critical thinking and problem-solving abilities.

CONCLUSION

The purpose of this study was to regulate whether mathematics is implicit as a topic with poor academic performance at the primary level. The researcher conducted a detailed investigation of the wonder of matching the SLOs with the exercises provided in the Grade 5 Math textbook. The common of the SLOs were in line with the Khyber Pakhtunkhwa Textboard's fifth grade math textbook and the exercises and activities provided at the end of each chapter. Throughout the entire book, only one SLO was unaligned with activities.

RECOMONDATION

The curriculum expert completely disregarded the level of complexity of the SLOs and activities, even though the majority of them matched the activities at the end of each chapter.

The alignment of SLOs with mathematical activities does not imply that they can be accomplished. In order to fulfill the demands of the students and their skill to grasp the concept, the curriculum expert may freely assume research on the curriculum's development.

theory: Exploring the social processes of leadership and organizing. The leadership quarterly, 17(6), pp.[654-676](#).

REFERENCES

Gheyle, N. and Jacobs, T., [2017](#). Content Analysis: a short overview. Internal research note, 10.
Forman, J. and Damschroder, L., [2007](#). Qualitative content analysis. In Empirical methods for bioethics: A primer (pp. [39-62](#)). Emerald Group Publishing Limited.

Neuendorf, K.A. and Kumar, A., [2015](#). Content analysis. The international encyclopedia of political communication, pp.[1-10](#)

Valchev, H.I., [2018](#). What Is Conceptual Analysis?. Balkan Journal of Philosophy, 10(2), pp.[131-142](#).. Chalmers, D.J. and Jackson, F., [2001](#). Conceptual analysis and reductive explanation. The Philosophical Review, [110](#)(3), pp.[315-360](#).

Fleming, S.M. and Lau, H.C., [2014](#). How to measure metacognition. Frontiers in human neuroscience, 8, p.[443](#).

Fleming, S.M., Massoni, S., Gajdos, T. and Vergnaud, J.C., [2016](#). Metacognition about the past and future: quantifying common and distinct influences on prospective and retrospective judgments of self-performance. Neuroscience of Consciousness, [2016](#)(1), p.niw[018](#).

Kyngäs, H., [2019](#). Inductive content analysis. In The application of content analysis in nursing science research (pp. [13-21](#)). Cham: Springer International Publishing.

Assarroudi, A., Heshmati Nabavi, F., Armat, M.R., Ebadi, A. and Vaismoradi, M., [2018](#). Directed qualitative content analysis: the description and elaboration of its underpinning methods and data analysis process. Journal of research in nursing, 23(1), pp.[42-55](#).

Uhl-Bien, M., [2006](#). Relational leadership

