IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 7.047 ⁜ Vol. 10, Issue 2, February 2022

DOI: 10.17148/IJIREEICE.2022.10211

Review on Error Analysis In Mathematics And It's Applications

Mr Rewant Vikram[1], Mr. V. V. Mehtre[2]

Department of Electrical Engineering, Bharati Vidyapeeth (Deemed to be University)

College of Engineering, Pune- 411043, Maharashtra, India[1]

Professor, Department of Electrical Engineering, Bharati Vidyapeeth (Deemed to be University)

College of Engineering, Pune- 411043, Maharashtra, India[2]

Abstract: The paper analyzed the correctness of the problems that students had to solve using math problems. It revealed that the most common type of error that the students made was OPERATIONAL ERROR. Other errors that were commonly made were conceptual errors and principal errors.

INTRODUCTION

Mathematics education has a significant role, because mathematics is a fundamental science that is used widely in various areas of life. Corder (1967) considered errors as the evidence of the learners' inherent syllabus which demonstrated how first and second language learners advance an independent system of language. Therefore, the analysis of errors has turned to be an imperative arena of linguistics. Due to the nature of the errors that people make, the analysis of them has become an integral part of linguistics. This field of study carries out various procedures to identify and explain the errors that people make.

WHY IS ERROR ANALYSIS IMPORTANT?

Identification of specific errors is especially important for students with learning disabilities and low-performing students.Students with difficulty learning math typically lack important conceptual knowledge for several reasons, including an inabilty to understand mathematical concept.

DIFFERENT TYPES OF ERROR

There are different types of maths errors that students make, and understand them and how to learn from them is essential.

1) CARELESS ERRORS
2) COMPUTATIONAL ERRORS
3) CONCEPTUAL ERRORS

1) CARELESS ERRORS: They make careless errors just because they are not paying attention, or are working too fast.Examples include:

- Copying the problem wrong to begin with
- Writing a wrong number
- Dropping a negative sign
- Sloppy handwriting
- Not following the directions
- Typing it wrong into their calculator

2) CONCEPTUAL ERRORS : Conceptual errors occur because kids have misunderstood the underlying concepts **or have used incorrect logic. This is the most difficult type of error to identify at first glance. This is also the most difficult type of error for students to recognize, but it is the** most important **to catch and correct.**

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 7.047 ⁜ Vol. 10, Issue 2, February 2022

DOI: 10.17148/IJIREEICE.2022.10211

3) COMPUTATIONAL ERRORS : The second type of mistake is computational. This means somewhere in the process they **incorrectly added, subtracted, multiplied or divided**.Making one computational mistake in a multi-step problem means the rest of their work will be wrong and the final solution wrong.

GENERAL ERROR FORMULAE

In general,

$$y_{n+1} = y_n + h f(x_n, y_n), \quad n = 0, 1, \ldots, N-1$$

$$Y(x_{n+1}) = Y(x_n) + h Y'(x_n) + \frac{h^2}{2} Y''(\xi_n)$$

$$= Y(x_n) + h f(x_n, Y(x_n)) + \frac{h^2}{2} Y''(\xi_n)$$

with some $x_n \le \xi_n \le x_{n+1}$.

We will use this as the starting point of our discussion of the error in Euler's method.

In particular,

$$Y(x_{n+1}) - y_{n+1} = Y(x_n) - y_n + h\,[f(x_n, Y(x_n)) - f(x_n, y_n)] + \frac{h}{2} Y''(\xi_n)$$

CAUSES OF OCCURRENCE IN ERRORS

They were found to stem from carelessness, poor basic knowledge, such as the inability to divide and multiply whole numbers, difficulty assimilation of integer concepts since they have grown accustomed to whole numbers, and rule mix-up which is also to blame for errors.

REMEDIES TO MINIMISE ERRORS

1. Be careful with minus signs – the single most common source of error.
2. Don't try to do too much in one step – break it down into smaller steps.
3. If your workings become overly complicated, check back in case you've made a slip.
4. Always feel free to check any calculation using your calculator.
5. In many questions, especially algebra, you can do checks on your answer to make sure you have got it right before moving on.
6. Ask yourself, using estimates and common sense – does this answer look right? If not, then re-check your work. This will heavily help in reducing silly mistakes in your maths paper.
7. Give answers to the correct degree of accuracy as requested e.g. to 2 decimal places.
8. Make sure you answer the question you've been asked – check this before moving on.
9. If you have enough time, recheck all steps and your final answers.

CONCLUSION:

The analysis of errors made by the IEC students in their term paper writing provides insights into how the academic language proficiency of students reflects important issues in academic writing namely their writing challenges and progress made in learning various academic English Skills.

REFERENCE

https://en.wikipedia.org/wiki/Error_analysis_(mathematics)

https://iris.peabody.vanderbilt.edu/module/dbi2/cresource/q2/p07/