International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 04 ISSUE 06 PAGES: 136-139
OCLC – 1121105677

Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ijp

Research Article

A LOOK AT TYPICAL MISTAKES OF STUDENTS IN THE WORKS OF FOREIGN RESEARCHERS

Submission Date: June 14, 2024, Accepted Date: June 19, 2024,
Published Date: June 24, 2024
Crossref doi: https://doi.org/10.37547/ijp/Volume04Issue06-24

Ashirboyev Azim Azatovich
Associate professor at Tashkent State Pedagogical University named after Nizami, Uzbekistan

ABSTRACT

The article examines a review of theoretical literature on the occurrence and causes of errors in the educational process, and identifies the varieties, types and types of errors. The author analyzed studies of typical mistakes made by students when mastering geometric problems.

KEYWORDS

Typical mistakes, tasks, teaching model, error correction, student thinking.

INTRODUCTION

Students' errors in solving geometric problems are described using Newmans error analysis. Newman's procedure is a series of steps in understanding and analysis to solve a problem. Students face various obstacles in answering problems, namely reading, comprehension, conversion, processing and encoding problems [1.15-19]. Identifying students' errors is required as a guide in selecting appropriate teaching models and information technology tools based on students' spatial intelligence on geometric material. Students do not realize the mistakes they have made. In addition, students do not know where the error occurred, so they cannot reflect to correct the mistakes they made. Therefore, it is necessary to conduct a study to describe students' errors when solving geometric problems from the point of view of students' spatial intelligence [2.10]. In this vein, spatial intelligence is measured using indicators including the ability to determine the vertical and horizontal direction of an object (spatial perception), the ability to see the movement or displacement of part of a configuration (visualization), the ability to determine the results of two- and three-dimensional rotation (mental rotation), and to associate a configuration an

International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 04 ISSUE 06 PAGES: 136-139
OCLC – 1121105677

Publisher: Oscar Publishing Services

object with another object (spatial relation) and the ability to guess the image of an object from a certain angle (spatial orientation) [3.130].

Research shows that one of the most common types of errors are so-called "perception errors," which occur because students lack the ability to interpret questions and apply question-processing strategies. With this error, confusion most often occurs when choosing information, and it is difficult for students to distinguish between relevant and irrelevant information in a task [4. 555-584]. Another fairly common type of error is the "transformation error," which occurs when a student understands the essence of the problem, but cannot determine the sequence of operations necessary to solve the problem [5. 1-21]. There are also procedural errors that occur when a student can determine the sequence of operations necessary to solve a problem, but makes an error in applying the procedure [5. 4]. Finally, coding error is the last type of error that needs to be identified. This error manifests itself in the last stage of solving a geometric problem, in which students incorrectly complete the final answer. For example, when students must determine the surface area of a prism, given the known length of the base and the height of the prism, they incorrectly indicate the final answer, making a mistake when calculating the final result [5. 4].

In cases where a student has made an error or arrived at an incorrect answer, teachers' understanding of the basis of the errors is necessary for teaching purposes, which is related to the students' current understanding [6. 221-239]. Some may approach student interaction around an incorrect answer with the goal of helping the student correct the error. For example, Jacobs and Ambrose describe a set of intentional actions to support a student's mathematical reasoning [7. 260-266]. In contrast, others focused on developing students' thinking. Thus, Megan Shaughnessy and others have discussed the skills and abilities of teachers to encourage students to think when a student has an incorrect answer. In this case, if the student's thinking is sufficiently probed, the student is able to admit the mistake and revise his work [8. 335-359].

Another study presents the results of an analysis of typical (common) differentiation errors made by electrical engineering students. Possible reasons were identified that led to common mistakes and misconceptions among students when solving tasks. The results showed that students often made mistakes when solving the basic derivative formula. Some of them incorrectly differentiated functions, while others could not remember the derivative of a base function. Based on this, it was concluded that the errors may have been caused by their previous poor knowledge of basic mathematics and an over-focus on specific mathematical rules. Thus, this study identified the causes of errors associated with the quality of previous education or with their tendency to only memorize mathematical formulas; [9. 145] it is unknown what the role of external factors is that contribute to students making those mistakes, for example, gaps in educational materials or intentional traps in assignments.

Brodie and Berger argue that common mistakes empower teachers because they give them the opportunity to figure them out without blaming students or themselves. 231]. This approach also helps to create a conducive (positive) environment for learning. Maria Tulis, in her work, notes that teachers should be sensitive to students' mistakes and should create a positive error climate, which is determined by

International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 04 ISSUE 06 PAGES: 136-139
OCLC – 1121105677
Publisher: Oscar Publishing Services

the quality of everyday experiences in the classroom in situations of errors. By "positive climate," she means a learning environment with a positive error culture in which students are able to recognize their errors and therefore initiate learning processes. In contrast, a negative error management culture, which typically excludes communication and error management, occurs when students suspect that their errors are judged negatively or when students expect errors to be attributed to lack of skill [11. 56-68].

Cornell et al conducted a study that directly compared the effects of making and not making an error. They compared a condition in which the answer or target was simply given to participants without intervening error generation (no error condition) with a condition in which participants were asked to first guess the answer before giving the correct answer (error generation condition). The experiment was carefully controlled to ensure that the amount of time spent learning the correct answer was the same across conditions. Cornell and his colleagues also excluded from consideration any cases in which the person did not create the error in the error-generating condition. The study found that on the final test, participants were significantly better at remembering correct answers when they made an error than when they did not. Thus, it appears that generating errors is not necessarily bad, and that it should be avoided at all costs. In fact, generating errors appears to promote learning [12. 98].

There is broad consensus that it is important for teachers to be familiar with their students' ways of thinking about mathematical concepts, both correct and incorrect. Studying the possible causes of common (typical) mistakes and misconceptions of students can help expand the knowledge and skills of teachers. The presence of typical errors can create the opportunity to use surveys and personal interviews with students to identify their general thinking tendencies (and) or external causes of errors, which, in turn, will play a positive role in working to improve the knowledge, tools and teaching approaches of teachers, it is also possible to revise the entire education system [13. 347-364; 14. 294-296; 15.13-16; 16. 378–380; 17. 118-126],

REFERENCES

1. Allan Leslie White, 'Active Mathematics in Classrooms: Finding out why children make mistakes and thendoing something to help them' (2015) 15(4) Square One 15-19.
2. N Riastutti, I Pramudya and M Mardiyana, 'Students' Errors in Geometry Viewed from Spatial Intelligence (2017) 895(1)Journal of Physics Conference Series<10.1088/1742-6596/895/1/012029> accessed 27 January 2022.
3. Peter Herbert Maier, 'Spatial Geometry and Spatial Ability-How to Make Solid Geometry Solid?' inElmar Cohors-Fresenborg and others (eds) Selected Papersfrom The Annual Conference of Didactics of Mathematics(Osnabrueck 1996).
4. Ariyadi Wijaya and others, 'Difficulties in solving context-based PISA mathematics tasks: An analysis ofstudents' errors' (2014) 11(3) The Mathematics Educator555-584.
5. M Clements,'Analysis Children's Errors on Written Mathematical Tasks EducationalStudies in Mathematics' (1980) 11(1) Educational Studies in Mathematics1-21.
6. Karin Brodie, 'Learning about learner errors in professional learning communities' (2014) 85(2) Educational Studies in Mathematics 221–239.

7. Victoria R.Jacobs and Rebecca C.Ambrose, 'Making the most of story problems' (2008) 15(5) Teaching Children Mathematics 260–266.
8. Meghan Shaughnessyand others, 'I think I made a mistake: How do prospective teachers elicit the thinking of a student who has made a mistake?' (2021) 24 Journal of Mathematics Teacher Education335–359.
9. ZarithSofiah Binti Othman, Ahmad Khudzairi Bin Khalidand Aishah Binti Mahat, 'Students' Common Mistakes in Basic Differentiation Topics' (2018) 1974(1) AIP Conference Proceedings <https://doi.org/10.1063/1.5041709> accessed 05 February 2022.
10. Margot Berger and Karin Brodie, 'Toward a discursive framework for learner errors in mathematics'inVimolanMudaly (eds)Proceedings of the eighteenth annual meeting of the Southern African Association for research in mathematics, science and technology education. Improving the quality of Science, Mathematics and Technology Education through relevant research and a continued multi- and inter-disciplinary approach to teaching (University of Kwa-Zulu 2010).
11. MariaTulis, 'Error management behavior in classrooms: Teachers' responses to student mistakes' (2013) 33 Teaching and Teacher Education56-68.
12. Nate Kornell, Matthew Jensen Hays and Robert A Bjork, 'Unsuccessful retrieval attempts enhance subsequent learning' (2009) 35(4) J Exp Psychol Learn Mem Cogn. 989-98.
13. Nava Almogand Bat-Sheva Ilany, 'Absolute value inequalities: high school students'solutions and misconceptions' (2012) 81 Educ Stud Math 347–364.
14. Ashirbayev A., Ergashev T., Tillaeva D. Tupical Mistakes that Occur in the Process of Learning to Draft. International Journal of Progressive Sciences and Technologies (IJPSAT). ISSN: 2509-0119. General Publiic Jicense, Spanish. Vol. 17 No. 1 October 2019, pp. 294-296.
15. Ashirbayev A. Chizmachilik fanida o'quvchilar yo'l qo'yadigan tipik xatolarning oldini olishda ogohlantiruvchi vazifalardan foydalanish. "Xalq ta'limi" OAK tasarrufidagiilmiy-metodik jurnal, №4–son. 2020 y. (ISSN 2181-7839), 13-16 betlar.
16. Ashirbayev A., Ergashev T. Common Mistakes and Teir Warning in Teaching Drawing. Yeastern European Scientific Jornal. Abgabe № 5-2018. ISSN: 2199-7977 Sopyright: Kommuniikations-und Verlagsgesellschaft mbH, Dusseldorf – Germany 378-380 b.
17. Ashirbaev A.O. & Abduazizov B.I. O.G.L. (2022). Bolajak chizmachilik oqituvchilarning grafik kompetentligini muhandislik kompyuter grafikasi asosida shakllantirish metodikasi. Oriental renaissance: Innovative, educational, natural and social sciences, 2(5), 118-126.