

PERCENTAGE OF STUDENTS' LEARNING DIFFICULTIES IN BUFFER SOLUTION LEARNING MATERIAL

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Abstract

Student learning outcomes that still need to be higher or that many students need to achieve maximum completeness in the buffer solution material are caused by the inability of students to understand the questions. This study aims to determine the percentage of senior high school students' learning difficulties in the buffer solution material of chemistry. The research method used is bibliometric analysis by collecting literature results from Google Scholar with the keywords: Learning Difficulty, Buffer Solution. The results showed that the level of students' learning difficulties ranged from 67.33% to 85.85%, internal factors causing learning difficulties included motivation and interest, and external factors, including family, teachers and school. Thus, it is hoped that students will deepen their knowledge about buffer solutions and hold discussions with the teacher and their friends to overcome this problem of learning difficulties.

Keywords: Chemistry, Learning Difficulty, Buffer Solution

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INTRODUCTION

Chemistry is a science that studies the properties, structure and composition of matter as well as changes in matter and energy. (Purnama & Fadhillah, 2016). According to (Djangi, 2021), the difficulties students face in learning chemistry stem from difficulties in understanding concepts, abstract chemical concepts and numerical calculations. In addition, the many basic chemical concepts that are prerequisites for chemistry and affect other concepts that students must acquire in a relatively limited time must be transformed into a pattern that unites various ideas.

The chemistry department is included in the natural science departments created specifically for SMA/MA/SMALB students. Chemistry has the following characteristics: (1) Most concepts are abstract, simple, layered, and structured. (2) is the science of solving problems and explaining facts and events (Nurhujaimah et al., 2016). One of the goals that we must achieve when studying chemistry is to help students master the chemical concepts they learn. Therefore, focusing on acquiring terminology in chemistry classes is very important. (Mokuan et al., 2017). High school chemistry material contains many concepts that are difficult for students to understand because they relate to chemical reactions and calculations, as well as concepts that are difficult for students to understand because they are abstract and relatively new material (Ristiyani et al., 2016). (Ana Marsita et al., 2010) They also stated that complex and abstract chemical concepts make students view chemistry as a difficult subject.

This condition can affect learning ability because learning disabilities cause learning disabilities that prevent students from learning adequately (Afifah, 2020). Students who experience learning difficulties do not achieve optimal learning outcomes. Students' learning difficulties are caused by low intelligence and other psychological factors such as students' interests, motivation, health and talents. In addition, students' learning difficulties can also be caused by environmental influences, such as B. Influence of the family, school and social environment. Learning difficulties also occur in chemistry subjects. (Sanjiwani, 2018). Learning about buffer solutions requires understanding other materials, such as the concept of moles, acids and bases, solutions, stoichiometry, and chemical equilibrium (Wulandari & Sholihin, 2020). More mastery of supporting concepts can help in understanding background material. These difficulties can be seen in the results of mid-term exams, final semester exams, quizzes and questions given by teachers during the learning process. A weak understanding of one of the concepts needed to answer questions makes it difficult for students to solve the questions. To overcome this, it is necessary to know which buffer solutions are rugged for students, and by knowing the complex concepts or subconcepts, teachers can take preventive actions and prepare the necessary materials and methods. (Firdaus et al., 2022)

In principle, every student has the right to get the opportunity to achieve satisfactory academic performance (Suryani, 2016). However, in reality, each student has differences in intellectual ability, physical ability, family background, habits and learning approaches that are sometimes very striking between one

student and another. (Yuberti et al., 2020). Students in class must appear differently (Nurhujaimah et al., 2016). Logically, students with good grades have the most minor learning difficulties and students with bad grades the most. However, students still need to understand the supporting material and have difficulty learning. (Amberwati, 2018)

Students learning difficulties in supporting material need to be analyzed to find the dominant learning disabilities at each stage of the learning material (Sariati et al., 2020). The aim is also to explain the factors that complicate learning supporting material. These factors can be used as material for improving the learning process to improve student learning outcomes. Analyze students' learning difficulties and new concepts needed to develop learning so that student difficulties and failures can be minimized and provide students with new things to accelerate learning. (Ramadani, 2022). Based on the existing problems, the researcher is interested in analyzing students' learning difficulties in the Buffer Solution material. Thus, the researcher raised the title: "Analysis of Students' Learning Difficulties in Buffer Solution Material". The purpose of this study is to determine the level of difficulty experienced by students in the buffer solution material.

RESEARCH METHOD

The method used in this article is bibliometric analysis by collecting literature results from Google Scholar with the keywords "Learning Difficulties, Buffer Solutions". Based on the search results, 17 research journals were obtained, which were then exported in *.ris format using the Mendeley Desktop application and processed using VOSviewer. Below is a bibliographic map of the results of processing a collection of journals using VOSviewer (Effendy et al., 2021). Based on the bibliographic map Figure 1, variables such as learning difficulties, buffer solutions, and students were found to be analyzed. Furthermore, the relationship between these variables can be determined so that a review analysis can be carried out to improve chemistry learning outcomes on Buffer Solutions.

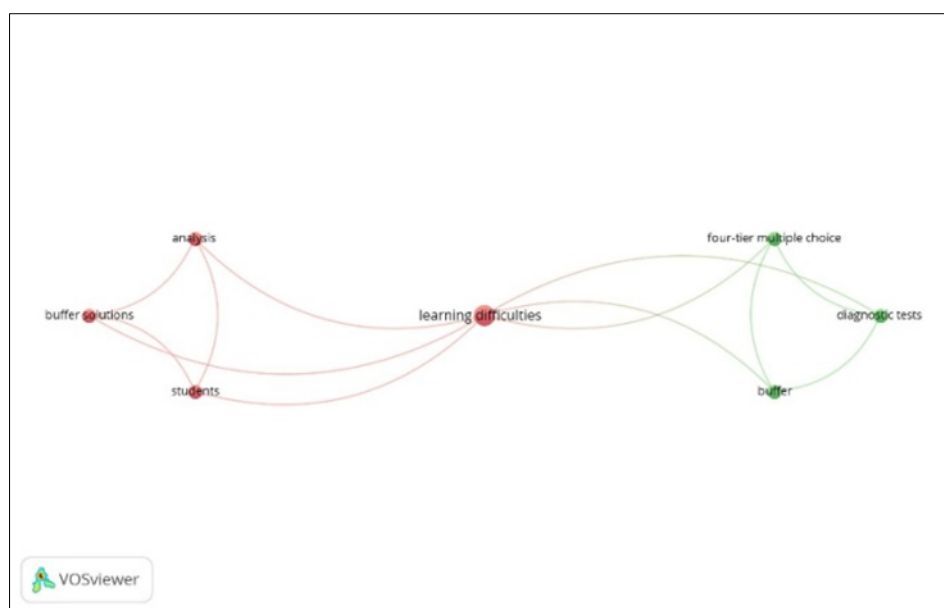


Figure 1. Vos Viewer map

RESEARCH RESULTS AND DISCUSSION

Of the 16 articles, three were obtained per the title topic that the author proposed. The articles with the variables Learning Difficulties, Buffer Solutions and Students were displayed and analyzed. The data display can be seen in Table 1. From the 3 articles, research data was obtained which can be seen in Table 2.

Table 1. Data Display for analysis

No	Author name	Year of Publication	Article Title	Journal Name	Volume	Number of Pages
1.	Sanjiwani, Muderawan, dan Sudiana	2018	<i>Analisis Kesulitan Belajar Kimia Pada Materi Larutan Penyangga Di SMA Negeri 2 Banjar</i>	<i>Jurnal Pendidikan Kimia Undiksha</i>	Volume 2 Issue 2	11 Pages (77-85)
2.	Sariati, Ni Kadek, Suardana, I Nyoman, Wiratini, Ni Made	2020	<i>Analisis Kesulitan Belajar Kimia Siswa Kelas Xi Pada Materi Larutan Penyangga</i>	<i>Jurnal Ilmiah Pendidikan dan Pembelajaran</i>	Volume 4 Issue1	7 Pages (88-94)
3.	Rita Dwi Purnama, Mawardi dan Raudhatul Fadhilah	2016	<i>Analisis Kesulitan Belajar Kimia Pada Materi Larutan Penyangga Siswa Kelas Xi Ipa 1 MAN 2 Pontianak</i>	<i>Ar-Razi Jurnal Ilmiah</i>	Volume 4 Issue 2	7 Pages (129-135)

Table 2. Research Result Data

No	Article	Learning Difficulties (%)
1.	1 st Article	74,57%
2.	2 nd Article	85,85%
3.	3 rd Article	67,33%

Based on the data above, the three articles show the percentage of students with learning difficulties in buffer solution materials. Article 1 shows that 74.57% of students have learning difficulties, article 2 shows that 85.85% have learning difficulties, and article 3 shows that 67.33% have learning difficulties. Based on research data from the three journals above, it can be proven that students' learning difficulties in buffer solution materials are very high.

This can be caused by students needing help solving buffer solution questions, marked by the large percentage of students' learning difficulties in buffer solution material. In addition, external and internal factors can also be the cause of the high percentage. The internal factors are motivation and interest, while the external factors are family, teachers and schools. Low interest in learning is the cause of students' learning difficulties. Most students must be more active in learning and consider buffer solution material challenging to understand. The chemistry teacher who taught also said that students' interest in learning chemistry material needed to be improved; students also never trained themselves and made preparations before learning began.

In addition to interest, low student motivation is also a factor causing learning difficulties. If students do not understand the material presented, most are reluctant to ask the teacher or their friends. Students also do not have special time to study; some students even never study. Some students say they only study when there are assignments and tests. In addition, when given an assignment by the teacher, most students copy their friends' answers without trying to do it themselves. Support from the family is also essential, especially in terms of providing facilities and infrastructure to support the success of student education. Likewise, the quality

of teachers and school facilities are also the cause of students experiencing difficulties in learning, especially in the material on buffer solutions, which requires a higher understanding than other materials.

CONCLUSION AND RECOMMENDATION

A. Conclusion

Based on research data from 3 journals that have been analyzed, students experience high learning difficulties in buffer solutions material caused by many factors, both internal and external. The high percentage of students with learning difficulties evidences this.

B. Recommendation

Based on the research that has been done, the researcher would like to give suggestions to the next researcher so that when conducting the research later, they will be more careful in calculating the percentage of learning difficulties. Many errors occur, so the data and the results obtained do not match.

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