



## Analysis of Learning Difficulties of Students Class XI in Chemistry Subjects

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### Abstract

*This study aimed to determine (1) the internal factors that cause learning difficulties in chemistry subjects for students of class XI MIA SMA Negeri 1 Tinombo Selatan, including attitudes towards learning, motivation, interest, and health; (2) the external factors that cause learning difficulties for class XI students of SMA Negeri 1 Tinombo Selatan include family, school, and community environment. This research was descriptive. The research subjects were 92 students. The collection technique used a questionnaire on the factors of learning difficulties. The data analysis technique used was descriptive with a percentage. The results showed that (1) the internal factors that caused learning difficulties were as follows: the attitude indicator towards learning was 16.44 %, the motivation indicator was 13.45 %, the interest indicator was 18.26 %, and the health indicator was 18.88 %. (2) External factors that cause learning difficulties are the family indicator was 23.23 %, the school indicator was 87.77 %, while the community indicator was 25.16 %.*

**Keywords:** Learning difficulties, chemistry subjects, high school students

### Introduction

Learning is a series of activities that are carried out consciously by a person and result in changes in him in the form of additional knowledge or semi-permanent proficiency. Many factors that affect learning can come from outside the student (extrinsic) and from within the student (intrinsic) (Gamage et al., 2021). These two factors interact both directly and indirectly in influencing the achievement achieved by students (Wahyuni et al., 2022).

Babik et al. (2021) stated that one of the factors that affect learning difficulties is the environment around the school that does not support student activities, such as playmates, as well as school conditions, low school capacity, such as a lack of books in the library, lack of students' interest in reading, lack of student intelligence, lack of emotions and attitudes, and impaired hearing or vision devices.

Some types of learning difficulties consist of simple and complex problems, so they require special help, either collectively or perhaps individually. If we observe the classroom, it will appear that of the many students, some are very successful in their learning, some are moderate, and some are lacking because they experience obstacles and learning difficulties, even though

the causes are different for each student (Krämer et al., 2021).

Chemistry is often considered a difficult subject, which sometimes discourages students from learning it further (Cardellini, 2012). Difficult impressions occur because most chemical concepts are abstract and complex, requiring a deep understanding to study them (Sihran, 2007; Tümay, 2016).

Johnson (2017) stated that the factors that affect learning come from outside the student (extrinsic) and from within the student (intrinsic). These factors can affect the focus of students' learning so that students find it difficult to learn and follow learning. That difficulty can cause students in school to meet the KKM score that has been set in their place of study. The success of students is not only influenced by the teacher as a mediator and facilitator but also by the desire and self-motivation of the students so that success can be achieved.

In addition, teachers' creativity in teaching also seems to greatly affect the success of achieving a learning goal. For example, in the process of learning chemistry in some schools so far, students feel bored and lack interest in chemistry lessons, the classroom atmosphere tends to be passive, and very few students ask the teacher even though the material taught cannot be understood (Nuha & Fathoni 2022). Learning like

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this will make them feel as if they are forced to learn and their souls will be depressed. Such a situation causes aggravation, boredom, and a stupid attitude, so that students' attention, interest, and motivation in learning are low. This will have an impact on the achievement of chemistry learning goals (Ristiyan & Bahriah, 2016).

Schools with excellent student input may not be affected by the problem of less known chemistry lessons because in terms of student intelligence, which is relatively good, teachers will not have difficulties in delivering chemistry subject matter. However, in inverse proportion to the input of students who are classified as inferior, it will be a difficult task for chemistry teachers in the school to provide more understanding for their students (Fahmi & Irhasyurna, 2017).

From the results of observations that have been carried out at SMA Negeri 1 South Tinombo, it can be concluded that in the learning process, there are difficulties that affect students' learning. Among them are students who are easy to understand and some who have difficulty absorbing chemistry lessons. This indicates that students have different characteristics in learning in the classroom, including students who only play in the back and do not pay attention to the teacher teaching and some who pay attention, possibly due to the teacher's teaching style. Therefore, students have different ways of receiving information conveyed by teachers, resulting in different student learning outcomes.

Based on the description above, it is explained that many problems can cause difficulties in learning chemistry that have an impact on student learning outcomes. If it is not anticipated as early as possible, it will have a negative effect on improving the quality of education. So with this, the researcher tries to research the causes of learning difficulties experienced by students as outlined in the title Analysis of Chemistry Learning Difficulties for Students XI SMA Negeri 1 South Tinombo.

## Methods

The research method used in this study is qualitative descriptive, namely a method that describes the data as it is and analyzes the data from the student response questionnaire with qualitative explanatory sentences (Sudjana, 2009).

The types of data in this study are quantitative and qualitative. In the form of the results of the questionnaire instrument while the source of the data collected is primary data because all data is taken directly from the research subject, namely students of class XI MIA SMA Negeri 1 South Tinombo, with a total of 92 students from class XI MIA 1, MIA 2 and MIA 3. Through a questionnaire on the factors of student learning difficulties.

The data analysis used in this study is a descriptive analysis of percentages. This

technique is used to identify a large number of presentation factors for learning chemistry, both internal and external.

The percentage formula:

$$\text{Presentasi \%} = \frac{\sum \text{skor tiap indikator}}{\text{skor maksimal}} \times 100 \quad (1)$$

The percentage results obtained are categorized according to the converse guidelines for the average percentage of each indicator of learning difficulties (Sugiyono, 2016). Table 1 shows the categories of student learning difficulties.

**Table 1.** Categories of students' learning difficulties

Percentage (%)	Category
81 – 100	Very high
66 – 85	Tall
46 – 65	Low
25- 45	Very low

## Results and Discussion

The results of this study include the results obtained from distributing questionnaires on the learning difficulties of grade XI students in Chemistry at SMA Negeri I Tinombo Selatan. Information can be obtained about the factors that affect students' learning difficulties in the subject of Chemistry. Before further elaborating on the factors that affect student learning, the factors of student learning difficulties are first grouped as Internal factors, which are factors in the individual, and external factors, which are factors outside the individual.

### Instrument validity

The instrument used in this study is a questionnaire that the research subject will fill out. The instruments used in this study have first been validated by expert validators and are considered valid.

### Data description

This type of research is quantitative descriptive research that uses data collection in the form of questionnaires. This data collection technique in the form of a questionnaire is used to find out what factors affect students' learning difficulties. This chapter will discuss the results of research on the learning difficulties of grade XI students who are taken when the chemistry subject has been completed, namely by conducting research directly at the school. The score obtained through the questionnaire sheet is processed in the form of an average of each indicator and then converted into a percent value (%); from this value, the level of learning difficulty of students for each indicator can be known.

**Table 2.** Data analysis of student learning difficulties questionnaire on internal factors

Indicators	Percentage (%)
Attitude towards learning	16.44
Motivation	13.45
Interest	18.26
Health	18.88

**Table 3.** Data analysis of learning difficulties questionnaire on external factors

Indicators	Percentage (%)
Family	23.23
School	87.77
Community	25.16

The average score of students' learning difficulties for internal factors was 16.76% with a very low category, while for external factors, it was 45.38% with a low category. The level of learning difficulty in external factors is higher than in internal factors. So it can be said that the level of learning difficulty of the two factors does not affect the learning difficulty of students too much. It's just that in the external factors of school indicators, with a percentage of 87.77 % of the category, is very high; it means that school factors greatly affect the literacy of students.

### Internal factors

The indicators measured in the learning difficulty questionnaire on internal factors are attitudes towards learning, motivation, interest and health. The questionnaire consisted of 15 statements, with a minimum score of 15 and a maximum score of 60. The criteria/categories used were disagree (1), disagree (2), agree (3), and strongly agree (4).

Based on the percentage of research results, the internal factors that cause learning difficulties are known to be an attitude indicator towards learning of 16.44 %, a motivation indicator of 13.45 %, an interest indicator of 18.26%, and a health indicator of 18.88 %. Based on these results, it can be concluded that learning difficulties in the four indicators are below the average for those who experience learning difficulties.

However, this should not be allowed; the attitude factor in learning can be interpreted that judging from the aspect of student learning readiness and the seriousness of all students in grade XI MIA, there is still a percentage that has learning difficulties. The attitude of students greatly determines the next learning process seen from the readiness of students when starting the lesson. When starting learning activities, students have an attitude of accepting that there is an emotional willingness to learn, then students will tend to try to be involved in teaching activities well (Cents-Boonstra et al., 2020). So it can be said that attitude towards learning is important in the student learning process in order to achieve the expected learning goals, so that students need to

continue to improve their attitude in learning better by better preparing everything in learning such as equipment, a sense of responsibility for the lesson so that they are serious in learning (Mazana et al., 2019).

Motivation in learning activities is a force that can be a driving force for students to utilize their potential to realize learning goals (Herpratiwi & Tohir, 2022). Motivation is everything that motivates a person to do something. Meanwhile, according to Braver et al. (2014), motivation is the internal state of the organism, both human and animal, that encourages it to do something. Based on the results of the research, there are still students who have difficulty in motivation indicators. In general, high motivation is influenced by high interest. This can be caused by other obstacles that are not in accordance with the learning objectives, such as the subject materials presented, learning media, learning strategies used by teachers, and so on. Interest in learning is a mental framework consisting of a combination of movements and a mixture of feelings, prejudices, anxieties and tendencies, all of which can lead individuals to a certain choice (Hofstein & Mamlok-Naaman, 2011). The results of research conducted by Jarut et al. (2017) stated that interest has a great influence on the student learning process because interest is the main factor that determines the degree of student activity.

Based on the research, the importance of teachers in understanding student characteristics in order to foster students' interest in learning chemistry such as creating more active learning strategies such as *problem solving*, giving homework so that students can practice independently. In addition, it can be supported by more innovative learning media so that students feel happy with the media that is usually used and find it easier to understand the material.

The results of the health factor research can be said that from the aspect of the physical condition of the students, as well as the condition of vision and hearing of students in class XI MIA SMA Negeri 1 South Tinombo when attending the lesson are in good condition, but several students experience problems in health indicators. According to Slameto (2015), the learning process will be disrupted if a person's health is disturbed. So, it is important for students to always maintain the health of their bodies and senses by consuming healthy and balanced meals so that stamina and the cleanliness of the senses are maintained so that they are not disturbed while studying. Learning difficulties that are influenced by physical factors often appear to be a learning difficulty caused by a dislike of prerequisite skills, which are skills that must be mastered first before mastering the next skill. In addition, learning difficulties that are affected by development are caused by motor disorders, language, sensory communication and others.



### External factors

The indicators measured in the learning difficulty questionnaire on external factors are schools, family environments, and community environments. The questionnaire consisted of 25 statements, with a minimum score of 25 and a maximum score of 100. The criteria/categories used were disagree (1), disagree (2), agree (3), and strongly agree (4).

The percentage of research results shows that external factors that cause learning difficulties are family indicators, 23.3 % in the low category, school indicators, 87.77 % in the very high category, and community indicators, 25.1 % in the low category. From the percentage of the results, it can be concluded that the highest rate of external factors due to learning difficulties is in school indicators.

The results of the school factor research can be said to be less supportive of teaching and learning activities. The teacher's teaching strategy can cause this; learning media, student relations with other students, classroom conditions, and the division of learning time are still not good. Poor teaching methods will affect student learning. If the strategy used is still simple, students will likely become lazy and bored with the lesson (Fauziah & Mahmudah, 2020). In addition, the learning tools are closely related to the way students learn because students also use the tools used by teachers during teaching to receive the material taught. If the teaching tools do not support the teaching and learning process, it can cause students to find it difficult to obtain the subject matter. Creating good relationships between students is necessary in order to have a positive influence on student learning. Poor student relations can cause students to be lazy in learning because they feel inferior, and this will have an impact on their learning outcomes. A classroom that does not support teaching and learning activities will also affect student learning outcomes. The availability of learning facilities and infrastructure has an impact on the creation of a more conducive learning climate (Ruhayana & Aeni, 2019). Improper division of time can also cause learning difficulties for students if students go to school when their body condition is tired/weak, for example, during the day, especially chemistry subjects that have many formulas so that students are saturated and lack concentration on the teacher who explains. This will make it difficult to receive lessons. In this case, the learning time divided may be less effective so that it has an impact on students' difficulties in receiving teacher material due to fatigue or too long a time division so that students are bored and lazy during the lesson. Based on this presentation, teachers need to create more effective teaching strategies such as *problem solving* and homework that trains students to understand chemical materials, supported by more

innovative learning media such as *Adobe Flash* or PPT, but still accompanied by direct demonstrations from teachers so that students do not feel bored. It is also necessary for teachers to supervise student relations with other students so that no division between students interferes with student concentration in learning, in addition to a more effective division of learning time, which can be carried out earlier because considering that chemistry is a subject that requires high concentration. Research conducted by Chikendu & Nkoli (2021) stated that the factors that cause learning difficulties are difficulty in managing study time (*difficulty in budgeting time*), ignorance of the standards of tasks that must be met (*unfamiliar standards of work*), and slow reading habits (*slow reading habits*).

The family environment is one of the factors that affect students' learning. This includes the attention that parents give to their children in supporting learning activities at home, the family's economic condition in meeting the needs of their children's schools, and the atmosphere at home when students study. Children need encouragement and parental understanding. If the child is learning, do not be disturbed by homework assignments. Sometimes, children experience weak spirits; parents are obliged to give insight and encourage them. Meanwhile, according to Triwiyanto (2014), the general definition of family is a small social group that generally consists of fathers, mothers, and children. The family has an important role in children's education and affects the child's personality. Based on the results of the study, it is proven that in terms of parental attention, students are less interested in paying attention to student learning, so students are less enthusiastic about learning. Family economic matters: if the student's parents are less able to meet the needs of the school, the student will be less facilitated to support their learning progress. In addition, in terms of the atmosphere of the student's home that does not support their learning activities, it can also be difficult for students to learn the material given by the teacher.

Meanwhile, the analysis of research results regarding community environmental factors is classified as low. A good community environment will also foster good habits in their lives. Society is an external factor that also affects student learning; the influence occurs because of the existence of students in society. In this case, student activities in the community will have an effect on the division of learning time with their lives in the surrounding community. If the activities in the community do not interfere with student learning activities at home, then the community activities will have a positive impact on learning and vice versa. In addition, friends are also an influential factor; good friends will have a good effect on students, and vice versa, bad

friends will definitely affect bad ones as well. So, in making friends, it is necessary to try to have friends who support students in learning. Good mass media has a good influence on students and also on their learning. In this case, it is better to be wiser in using mass media so as not to interfere with students in their learning such as television, the internet, magazines and so on so that they are not misused.

Based on the above explanation regarding the external factors that cause learning difficulties in participating in chemistry subjects, it can be said that family and school have a great influence, while community factors have less impact, so it can be concluded that students' community activities at home do not cause learning difficulties because students are less active in the community environment so that students can still learn well without feeling disturbed by the surrounding environment. Meanwhile, from family factors, students think that it interferes with their learning activities such as the atmosphere in the house is not clean, noisy, cramped and so on. Lack of parental attention, family economy that causes students to be less facilitated, and so on, as well as factors in the school environment that are less supportive such as learning media, learning strategies and less effective learning time sharing. It is necessary to make efforts from schools and especially teachers to always improve the quality in terms of infrastructure and learning facilities.

## Conclusions

Based on the results of the analysis of the research data and the discussion described: The learning difficulty factor in participating in chemistry subjects for grade XI MIA students was reviewed from internal factors of 16.76% in the very low category with an attitude indicator towards learning of 16.44%, a motivation indicator of 13.45%, an interest indicator of 18.26%, and a health indicator of 18.88%. The learning difficulty factor in participating in chemistry subjects was reviewed from external factors of 45.38% in the high category with family indicators of 23.23%, school indicators of 87.77%, and community indicators of 25.16%. Based on the above conclusions, the external factors that cause the highest learning difficulties are school indicators.

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