

## Student Preferences in Choosing Chemistry as an Elective Course in Phase F of the Merdeka Curriculum

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**Abstract:** The Merdeka Curriculum differs from the 2013 curriculum regarding elective subjects. The Merdeka Curriculum has no more specialization groups such as science, social studies or language. Merdeka Curriculum allows students to choose elective subjects that suit their interests, talents and abilities when entering phase F at the Senior High School level. Schools must open at least seven elective subjects adjusted to the characteristics and human resources owned by the school. Chemistry is one of the elective subjects that students can choose in Phase F of the Merdeka Curriculum. This study aims to determine the factors that make students choose chemistry as their elective subject in Phase F of the Merdeka Curriculum. This research was conducted at SMA Negeri 17 Jakarta in the 2023-2024 academic year. The research subjects were students in chemistry specialization classes: XI-A Chemistry and XI-B Chemistry. This research uses a qualitative method with a case study research type. Sampling in this study used a purposive sampling technique with certain considerations. Sampling in this study used a purposive sampling technique with certain considerations. Data collection techniques were carried out through interviews with nine students in chemistry specialization classes, and the data obtained were analyzed qualitatively with stages, namely data reduction, conclusions, and verification. The results showed that intrinsic and extrinsic factors influence students' tendency to choose chemistry as their chosen subject. Intrinsic factors include interest in chemistry, academic value, and future study or career plans. Intrinsic factors influencing students most are future study or career plans and individual interest in chemistry. In contrast, extrinsic factors include family factors, friend factors, teacher factors, and support from schools. The extrinsic factor that most influences students is the teacher factor.

**Keywords:** Chemistry; Elective Subjects; Merdeka Curriculum.

### Introduction

According to law number 20 of 2003, the curriculum is a set of plans and arrangements regarding the objectives, content, learning materials, and steps or methods used as guidelines for learning activities to achieve the expected educational objectives [8]. The curriculum in Indonesia has undergone several changes and improvements starting from the 1947 curriculum, 1964 curriculum, 1968 curriculum, 1973 curriculum, 1975 curriculum, 1984 curriculum, 1994 curriculum, 1997 curriculum (revised 1994 curriculum), competency-based curriculum in 2004, education unit level curriculum in 2006, 2013 curriculum or kurtilas which was then revised in 2018 to become a revised kurtilas [20] until the latest, namely the Merdeka curriculum.

The Minister of Education and Culture inaugurated the Merdeka curriculum on February 11, 2022. The Merdeka curriculum carries the spirit of Merdeka learning, which includes learning plans, objectives, content and learning materials [7]. The Merdeka Curriculum is an idea to transform Indonesian education to produce a superior future generation. It is in line with what Saleh [14] stated that Merdeka Belajar is a program to explore the potential of educators and students in innovating to improve the quality of learning in the classroom. The Merdeka curriculum is a rearrangement of the Indonesian education system to welcome changes and for the nation's progress in adapting to

changing times [21]. The Merdeka Curriculum was developed to be implemented in all schools according to the readiness and conditions of each school.

The Merdeka Curriculum has several advantages when compared to the 2013 curriculum. The first advantage is that it is simpler and more in-depth because this curriculum will focus on essential material and developing student competencies in its phase. The second advantage is that there is no specialization group program for high school students. Students can choose subjects according to their interests, talents and abilities. The third advantage is that it is more relevant and interactive. Learning can be done through project activities that can provide wider opportunities for students to explore issues, such as environmental, health, and other issues, more actively to support the development of character and competence of the Pancasila Student Profile [7].

SMA Negeri 17 Jakarta, located in Jalan Mangga Besar IV/I Taman Sari District, West Jakarta, is one of the schools in Jakarta that has implemented the Merdeka curriculum and entered Phase F. In the Merdeka Phase F Curriculum, the subject structure for grades XI and XII is divided into two main groups, namely general subject groups and elective subject groups [7]. In selecting elective subjects, it is very important to consider students' interests, talents, and abilities. Education units must provide at least seven elective subjects by considering the number of educators, the number

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of classes, and other supporting facilities and infrastructure. SMA Negeri 17 Jakarta opens ten elective subjects that all students can choose Merdeka. The elective subjects provided at SMA Negeri 17 Jakarta include advanced mathematics, chemistry, physics, biology, sociology, economics, geography, advanced Indonesian, advanced English, and Informatics.

This elective subject program allows students to choose subjects focused on at the high school level. At the high school level, students no longer choose specialization groups but choose elective subjects according to their interests, talents, and abilities [7]. Therefore, students need to recognize themselves fully and deeply. This process requires a very long time in the form of exploration and learning experiences in various fields and methods so that students can recognize the learning processes that occur within themselves.

One of the elective subjects that students can choose is Chemistry. The choice of Chemistry as a specialization subject in phase F at SMA Negeri 17 Jakarta is the topic of the analysis of student tendencies studied in this study. Students' choice of chemistry as a specialization subject is only sometimes uniform. Various factors influence students' tendency to choose chemistry, and an in-depth understanding of these aspects is important to increase students' interest and participation in chemistry learning.

Therefore, the researcher tries to analyze the tendencies that students consider in choosing chemistry as an elective subject in Phase F of the Merdeka Curriculum so that the school, through chemistry teachers, can facilitate students' needs by developing learning activities to foster students' interest in learning chemistry. Thus, it is hoped that more students will be interested in continuing their studies or working in chemistry.

## Research Methods

The approach used in this research is a qualitative approach, which aims to find out or describe the reality of the events under study to obtain objective data. According to Moleong [10], qualitative research is research that intends to understand phenomena about what is experienced by research subjects, such as behaviour, perceptions, motivations, actions, etc., holistically and using descriptions in the form of words and language, in a special context that is scientific and by utilizing various natural methods.

This study uses a qualitative approach with a type of case study research. This research focuses on one particular object and studies it as a case. Case study data was obtained from teachers and students of SMA Negeri 17 Jakarta class XI or phase F who chose chemistry as one of the elective subjects. To determine the location of suitable research subjects, the first step taken by researchers is to observe chemistry learning activities, which include aspects of learning activities, classroom conditions, student conditions during learning activities, and student responses to researchers. After two observations, the researcher determined the XI-A and XI-B Chemistry classes at SMA Negeri 17 Jakarta as the location and subject of more specialized research. The technique of taking research subjects using the purposive sampling technique is selected with certain considerations and objectives [14].

The interviewed samples amounted to 9 students. The selection of 9 students as samples of this study was based on the results of observations by considering several factors such as family educational background, economic conditions, academic grades, and students' interest in learning while participating in chemistry learning activities in class as well as a personal approach to the nine students to obtain more comprehensive data.

## Results and Discussion

The Merdeka curriculum allows students to choose subjects according to their interests, talents, and abilities or what is referred to as elective subjects [7]. This study aims to analyze students' tendency to choose chemistry as a subject of choice for students in phase F of the Merdeka curriculum. The tendency can be interpreted as a person's behaviour on the volition of actions and symptoms of efforts aimed at concrete objects [6]. Thus, the tendency referred to in this study is the willingness or desire of students to choose chemistry as an elective subject in phase F of the Merdeka curriculum in accordance with their talents, interests, and abilities.

The results of interviews with students show that the factors influencing students' tendency to choose chemistry involve intrinsic and extrinsic aspects. Intrinsic factors include individual interests, academic grades in chemistry, and future study or career plans. Extrinsic factors include peer, family, and teacher influences, including learning facilities, teaching methods, and school support.

### Intrinsic Factors

Purnomo [13] states that interest is a state or interest in something followed by a sense of pleasure when making activities, a sense of wanting to know and learning seriously to benefit from what one has learned. Another opinion conveyed by Jahja [5] states that interest is a motivation that causes individual interest in certain objects, such as work, lessons, objects, and people. Slameto [17] states that the characteristics of students who are interested in the material presented are attention, the appearance of interest, a happy expression, and the willingness to learn.

The analysis of interviews with nine students in phase F shows that 7 out of 9 students (77.78%) are interested in chemistry, so this is the main reason they chose chemistry as a specialization. Students show a high personal interest in the chemistry study field and are interested in the experiments carried out in chemistry lessons. It is in accordance with the statement of student 6, who stated:

*"...I took (chemistry) because I think it's ingrained, it's fun. Because I think chemistry is fun. When I was a kid, I used to think that I would practice this substance, this substance, and that substance..."*

In addition to individual interest factors, as many as 3 out of 9 students (33.33%) chose chemistry as their elective subject in phase F because their academic grades in chemistry during grade X were quite good. It can be seen from student 9's statement, which states:

*“...I saw that my best score was chemistry. So, I chose chemistry at the top to get chemistry. ...”*

Students also chose chemistry as an elective subject in Phase F due to its relevance to their study and career plans. 7 out of 9 students (77.78%) chose chemistry because they felt that studying it would be relevant to their plans and career plans, such as wanting to become a doctor, nutritionist, or work in the chemical industry. The results of the interview analysis also show that students realize that there are many interesting job opportunities in this field, both at home and abroad. They see that the Chemical industry has bright prospects, so they want to take advantage of these opportunities by choosing Chemistry as a specialization subject. It is in accordance with student 8's statement, which states:

*“...in accordance with my dream, I want to become a doctor, and of course, the most relevant subjects to doctors are biology and chemistry....”*

From the explanation above, the tendency of intrinsic factors that influence students' decisions in choosing chemistry as an elective subject includes personal interest, academic value in chemistry, and study or career plans. The biggest intrinsic factors influencing students' decisions are individual interest (77.78%) and study or career plans (77.78%).

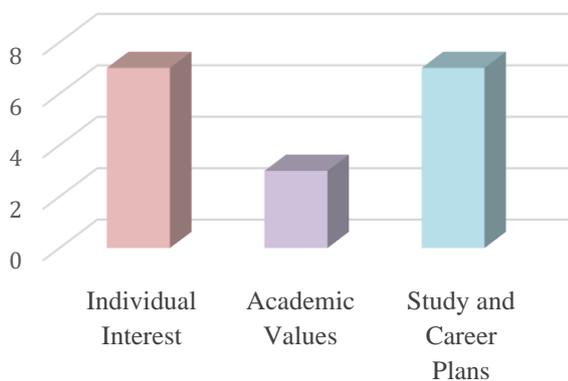


Figure 1: Trend of Intrinsic Factors.

Anderhag mentioned that this factor would considerably impact students with good academic grades in chemistry at the previous level [1]. Students who managed to get good academic grades in science subjects at the previous level will be more motivated to study science when the subject is no longer compulsory [18]. Unfortunately, according to students, chemistry is one of the most difficult subjects [3]. Students need help studying chemistry because abstract and complex concepts require a deep understanding [15]. It is what causes students' academic scores in chemistry to be still relatively low and causes students to avoid chemistry subjects at school [16]. On this basis, only a few students consider academic value as a factor that causes them to choose chemistry.

Only students interested in chemistry choose to take chemistry because they find it interesting and useful. It can be proven from the research results showing that individual student interest in chemistry is one of the biggest intrinsic factors besides study plans or future career plans [19].

Many studies have found a relationship between students' choices and their choice to take chemistry subjects, namely plans to continue their studies to the next level [12]. In his research, Bennet also found that students choose chemistry subjects because there is already a clear goal to continue their studies at universities that make chemistry a supporting subject [2]. It is what causes study or career plans to be the other biggest factor that causes students to take chemistry as an elective subject in phase F. Students choose chemistry because they already have plans to continue their studies to a higher level and need chemistry as a supporting subject.

**Extrinsic Factors**

In addition to intrinsic factors, social and environmental influences play an important role in students choosing Chemistry as a specialization. Social factors include peers, family, and teachers. Environmental factors include the support provided by schools in providing socialization regarding selecting elective subjects. There were 2 out of 9 (22.22%) students revealed that the family environment inspired them to take chemistry as an elective subject. It is in accordance with the statement of student 1, who stated:

*“...My cousins in my family mostly took engineering, so my father encouraged me to take engineering as well. That's why I took chemistry ...”*

These results align with research conducted by Mujtaba et al. [11], which states that parents and family can influence students in choosing subjects. In addition to family encouragement factors, 2 out of 9 students (22.22%) stated that they chose chemistry because of friend factors. They want to learn together and support each other. It can be seen from student 7's statement, which states:

*“...because my friends also entered chemistry on average, so I took chemistry. ...”*

In addition to family and friends, the teacher factor is also an irrelevant factor that is no less important to influence students in making chemistry their subject of choice in Phase F. 6 out of 9 students (66.67%) chose chemistry because of the teacher factor. They feel that the quality, teaching methods, and the teacher's teaching disposition are factors considered when choosing chemistry subjects. It can be seen from student 3's statement, which states:

*“...because the teacher was good at teaching, the material was clear, and the presentation was easy to understand. That made me think, wow, that's what I need. ...”*

Seeing the complexity of students' choice of elective subjects, the school's role in socializing the selection of elective subjects in Phase F must also run well so that students have a broader picture of information about the elective subjects they must take [12]. Of the nine students interviewed, one student (11.11%) stated that the role of the school through the BK (Guidance Counseling) teacher played an important role for him in choosing chemistry as an

elective subject. It is in accordance with the statement of student five, who stated:

*“...At that time, a counselling teacher told me that, for example, you were suitable for pharmacy. From there, it became a bit open; chemistry is the main choice, along with biology and physics. ...”*

From the explanation above, the tendency of extrinsic factors that influence students' decisions in choosing chemistry as an elective subject includes family factors, friend factors, teacher factors, and school support. The teacher factor is the biggest extrinsic factor influencing students' decisions (66.67%).

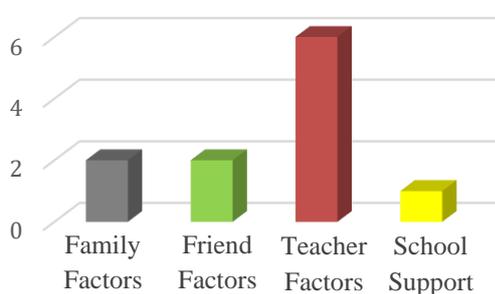


Figure 2. Trend of Extrinsic Factors.

These results prove that the role of the teacher through the learning model applied in the classroom that can facilitate students' understanding and learning experience plays an important role in considering students choosing chemistry as an elective subject in phase F [16]. Thus, it is expected that chemistry teachers can choose effective learning models to increase student participation in classroom learning activities and increase laboratory activities because they can affect students' interest in participating in science subjects, especially chemistry [4].

Based on the results of data analysis, it can be concluded that the factors that influence students' tendency to choose Chemistry as a specialization subject in Phase F involve a combination of individual interest, teacher influence, study and career plans, academic grades, family factors, friend factors, and school support. The combination of these factors reflects the complexity of students' decision-making process. Students' interest in chemistry and science is an important factor in students' decisions. Good academic grades in chemistry also had a positive influence, suggesting that academic achievement can be a driver of subject selection. It shows the importance of the teacher's role in creating a comfortable learning environment by using learning methods that can increase students' interest in studying chemistry to improve students' academic achievement. Analysis of the interview results also shows that extrinsic factors are interrelated and influence students' decisions holistically.

The concept of elective subjects is a new concept that emerged in implementing the independent curriculum. In the 2013 curriculum, students are grouped into science, social studies or language majors, so they cannot specifically choose subjects that match their interests, talents, and

abilities. However, if categorized in the science family, students tend to choose science majors at the high school level. It can be proven by an experiment conducted by Amin, which shows that 42 out of 46 research samples, or 91.31%, have a high interest in choosing a science major [9].

From the data obtained, special attention is needed from schools, teachers, and families to maximize students' potential in choosing Chemistry as a specialization subject. Steps that schools can take in assisting students in determining the subject of choice include:

1. Socialization to students and parents. It aims to build understanding on the part of parents and students regarding the importance of recognizing students' talents and abilities to make career plans after high school.
2. Assistance in exploring interests are talents and abilities. Schools, through counselling teachers, subject teachers and homeroom teachers, can synergistically assist students in exploring their interests, talents and abilities. So that students can make better career plans.
3. They are improving the quality of learning. Improved learning quality will increase students' understanding of the subject. Thus, students will become more interested in participating in learning activities in class and can improve their academic grades in the subject.
4. They are strengthening communication and social relationships between students. The discovery of the friend factor, which is a consideration for students in choosing elective subjects, is also important for the school through subject teachers or counselling teachers and homeroom teachers to strengthen social relationships and communication between students to create a strong sense of togetherness to explore their interests, talents, and abilities so that they can achieve success in the fields that match their potential.

## Conclusion

Based on the study results, intrinsic and extrinsic factors cause students to choose chemistry as an elective subject in Phase F of the Merdeka curriculum. Intrinsic factors include individual interests, academic values, and future study or career plans. Meanwhile, extrinsic factors that influence include family factors, friend factors, teachers, and school support. With the results obtained, it is hoped that schools and subject teachers can understand and respond to the factors mentioned as a basis for increasing student interest and the quality of chemistry learning at the high school level. With this discussion, it is hoped that the results of the study can significantly contribute to developing a more effective curriculum and educational strategy in chemistry at the upper secondary education level. For future researchers who want to conduct research on similar topics, to expand the scope of the schools studied and increase the number of participants involved in the study so that the results obtained become better and more accurate.

## References

- [1] Anderhag, P., Emanuelsson, P., Wickman, P.O., & Hamza, K. M. (2013). *Students' choice of post-compulsory science: in search of schools that compensate for the socio-economic background of their*

- students. *International Journal Science Education*, 35(18), 3141-3160.
- [2] Bennet, J., Lubben, F., & Hampden-Thompson, G. (2013). *Schools that make a difference to post-compulsory uptake of physical science subjects: some comparative case studies in England*. *International Journal Science Education*, 35(4), 663-689.
- [3] Boe, M.V., & Henriksen, E.K. (2013). *Love it or leave it: Norwegian students' motivation and expectations for post-compulsory*. *Science Education*, 97(4), 550-573.
- [4] Broman, K., & Simon, S. (2015). *Upper secondary school students' choice and their ideas on how to improve chemistry education*. *International Journal Science and Mathematics Education*, 13(6), 1255-1278.
- [5] Jahja, Y. (2011). *Psikologi perkembangan*. Jakarta: Rineka Cipta.
- [6] Kartini, Kartono. (1996). *Psikologi Umum*. Bandung : CV. Mandar Maju.
- [7] Kemdikbud. (2022). *Buku Saku Kurikulum Merdeka; Tanya Jawab*. Kementerian Pendidikan dan Kebudayaan.
- [8] Kurniasih, Imas & Sani, Berlin. (2014). *Implementasi Kurikulum 2013 : konsep dan penerapannya*. Surabaya : Kata Pena.
- [9] Amin, M. (2011). *Hubungan antara persepsi terhadap pelajaran eksakta dengan minat memilih jurusan IPA*. Sumatera : Universitas Islam Negeri Sultan Syarif Kasim Riau.
- [10] Moleong, Lexy J. (2009). *Metode Penelitian Kualitatif*. Bandung: Remaja Rosdakarya.
- [11] Mujtaba, T., Sheldrake, R., Reiss, M.J., & Simon, S. (2018). *Students' science attitudes, beliefs, and context; associations with science and chemistry aspiration*. *International Journal Science Education*, 40(6), 644-667.
- [12] Palmer, T.A., Burke, P.F., & Aubusson P. (2017). *Why school students choose and reject science: a study of the factors that students consider when selecting subjects*. *International Journal Science Education*, 39(6), 643-662.
- [13] Purnomo, N.T. (2016). *Minat Belajar Sswa, Gaya Belajar Siswa, dan Prestasi Siswa terhadap metode mengajar guru dengan hasil prestasi belajar Pendidikan Jasmani dan kesehatan Olahraga*. *Jurnal Ilmiah Penjas*, 2(1), 46-65.
- [14] Saleh, M. (2020). *Merdeka belajar di tengah pandemi Covid-19*. *Prosiding Seminar Nasional Hardiknas (1)*, 51-56.
- [15] Sariati, N.K., Suardana, L.N., & Wiratini, N.M. (2020). *Analisis kesulitan belajar kimia siswa kelas XI pada materi larutan penyangga*. *Jurnal Ilmiah Pendidikan dan Pembelajaran*, 4(1).
- [16] Shirazi, S. (2017). *Student experience of school science*. *International Journal Science Education*, 39(14), 1891-1912.
- [17] Slameto. (2015). *Belajar dan faktor-faktor yang mempengaruhinya*. Jakarta: Rineka Cipta.
- [18] Smith, E., & Gorrard, S. (2011). *Is there a shortage of scientists? A re-analysis of supply for the UK*. *British Journal of Education Studies*, 59(2), 159-177.
- [19] Smyth E., & Hannan C. (2006). *School effects and subjects choice: the uptake of scientific subjects in Ireland*. *Sch. Eff. Sch. Improv*, 17(3), 303-327.
- [20] Ulinniam, Hidayat, Barlian, U.C., & Iriantara, Y. (2021). *Penerapan kurikulum revisi 2013 di masa pandemi pada SMK IBS Tahtmainul Qullub Indramayu*. *Jurnal Pendidikan Indonesia*, 2(1), 118-126.
- [21] Yamin, M. & Syahrir, S. (2020). *Pengembangan pendidikan merdeka belajar (telaah metode pembelajaran)*. *Jurnal Ilmiah Mandala Education*, 6(1), 126-136.