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Citation: *AIP Conference Proceedings* **2026**, 020057 (2018); doi: 10.1063/1.5065017

View online: <https://doi.org/10.1063/1.5065017>

View Table of Contents: <http://aip.scitation.org/toc/apc/2026/1>

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Analysis of Students Learning Style Preference as Initial Steps in Determining Strategy of Learning

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Abstract. One of the things that affect the level of acceptance of students to absorb learning information is the learning style. Therefore, it is important to know the student's learning style preferences. The aim facilitates lecturer in designing appropriate learning strategies so that learning to be effective and efficient. This research is a descriptive quantitative research with research subjects are all students of Department of Chemistry Education (second year 2016 and first year 2017). Instruments used in the form of a) questionnaire of learning style preferences based on learning styles DePorter and Hernacki and b) questionnaire of learning style inventory from David Kolb. The results of this research are learning style preferences (based on learning styles according to DePorter and Hernacki) most of the students both of 2016 and 2017 are auditory learning style with the percentage of 37.84% to the student of 2016 and 51.02% to the student of 2017. The learning style preferences (based on learning style according to David Kolb) most of the students both of 2016 and 2017 are assimilation learning style with the percentage of 46.67% to the student of 2016 and 35% to the student of 2017.

INTRODUCTION

The success of the learning process cannot be separated from several aspects that influence it, such as learning strategies used, learning environment, and characteristics of students. One of the things included in the characteristics of students is the student's learning style. Learning styles become one of the factors that can affect the level of acceptance of students in absorbing learning information. Learning styles are a combination of how to absorb, organize and manage information [1]. Each individual has a different way of learning. When a person learns in a way that is not in accordance with the way of learning which he had, then the results cannot be maximized. Therefore, it is important for students to know their learning style. When each student knows his learning style, it will make it easier for them to learn and improve their motivation in learning. Furthermore, when the lecturers know the learning style that is owned by each student, it can facilitate the lecturer in choosing the right learning strategy in order to achieve the learning objectives effectively and efficiently.

Some experts share learning styles from different perspectives, including learning styles according to DePorter-Hernacki, Kolb, and Felder Silverman. Learning styles according to DePorter and Hernacki are 1) visual learning styles, describe individuals who more easily process information through vision, 2) auditory learning styles, explain individuals who more easily absorb information through hearing, and 3) kinesthetic learning style, individuals who more easily absorb information through the movement of practice, as well as touch [1]. The learning style according to Kolb includes 1) divergent, combination of real experience (CE) and reflective observation (RO), 2) assimilation, combination of abstract conceptualization (AC) and reflective observation (RO), 3) convergent, combination of

abstract conceptualization (AC) and active experiments (AE), as well as 4) accommodating, combination of real experience (CE) and active experiments (AE) [2].

The division of learning styles by Felder Silverman includes 1) active-reflective, 2) sensing-intuitive, 3) visual-verbal, and 4) sequential-global [3,4]. Active means individuals can learn actively through application and practice, while reflective means individuals prefer to think and reflect learning materials either independently or in a group. The sensing means the individual prefers to learn facts, procedures and is oriented to theory and meaning [5]. They prefer to solve problems through a standardized and detailed approach. They tend to relate the material learned to the real situation. In contrast to sensing, individuals with intuitive learning styles prefer to learn abstract learning materials. They are able to find possibilities, relationships and tend to be more innovative and creative [3,4]. Individuals with visual learning styles are able to remember well the learning materials when they see visual representations of matter, whereas individuals with verbal learning styles are able to absorb learning well through textual representations in both oral and written form. Individuals with sequential learning styles tend to follow a logical path in finding solutions, while individuals with global learning styles use holistic thinking processes [5]. They easily absorb learning materials randomly without seeing the connection. When they have finished studying, they gain a complete picture of the learning materials they are learning [3]. This study uses the grouping of learning styles according to DePorter-Hernacki and David Kolb. Hopefully, through analysis of student learning style preferences, can facilitate lecturers in choosing learning strategies in order to achieve effective and efficient learning objectives.

RESEARCH METHOD

This research is a descriptive qualitative research. Stages of this research include planning, data collection, and data analysis. The planning stage is to review the literature and develop research instruments. The data collection stage is to take the data of students learning style preferences using the instruments that have been prepared. The data analysis stage is processing data of students learning style preference that has been obtained at the stage of data collection. The subjects of this study are the students of Chemistry Education Study Program of 2016 and 2017. The research instrument used there are two:

1. Questionnaire of student learning style preference based on the learning style of DePorter and Hernacki consisting of visual, auditory, and kinesthetic learning style. The questionnaire contains 36 statements that are divided into three learning styles so that each learning style consists of 12 items of statements.
2. Questionnaire learning style inventory from David Kolb contains 12 statements consisting of divergent learning style, convergent, assimilating, and accommodating.

Data analysis includes 1) summing the scores obtained from each type of learning style, then 2) changing the scores obtained in percentage form, so the results obtained in the form of the percentage of student learning style preference.

DISCUSSION

This study aims to determine the preference of learning styles of the students Chemistry Education Program. Learning styles referred to in this study are learning styles expressed by DePorter-Hernacki and David Kolb. The results of the learning style preferences according to DePorter-Hernacki are presented in Fig. 1 for the students of 2016 and Fig. 2 for the students of 2017.

Based on Fig. 1 it can be seen that the student learning style preference of 2016 most is auditory learning style followed by kinesthetic learning style. The learning style preference the least style is the combination of visual and auditory learning styles. The same can also be seen based on Fig. 2, which is the learning style preference of most students of 2017 is auditory learning style with a percentage of more than 50% of the number of students. Furthermore, the second largest after the auditory learning style is kinesthetic and combined auditory and kinesthetic learning styles, while the least learning style preferences are combined visual and auditory learning styles and combined visual and kinesthetic learning styles with the same percentage. The result of most learning style preferences according to DePorter-Hernacki same both of the students of 2016 and 2017 is auditory learning style. This shows that students tend to be easy in absorbing information in the form of learning materials through hearing. Individual characteristics with auditory learning styles include: 1) Talking to yourself, 2) easily disturbed by commotion, 3) reading and listening, 4) difficulty writing but easy to tell, 5) learning by listening and considering

what is being discussed rather than being viewed, 6) preferring to speak, discuss and explain something [1]. Students with auditory learning styles tend to learn easily through discussion of learning materials with others. They tend to be good speakers. Students with auditory learning style preferences require an atmosphere that can optimize their hearing ability. One of the best learning strategies to apply to students with auditory learning style preferences is through group discussion followed by the presentation of the results of the class discussion [6].

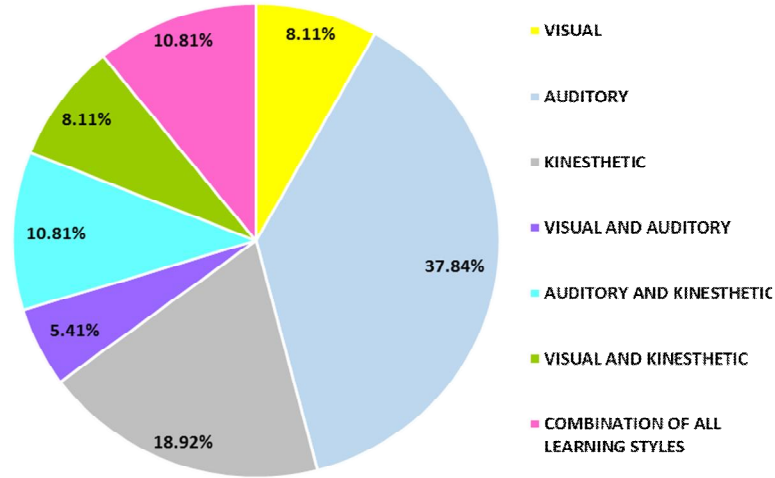


FIGURE 1. Preferences of learning styles by DePorter-Hernacki in students of 2016

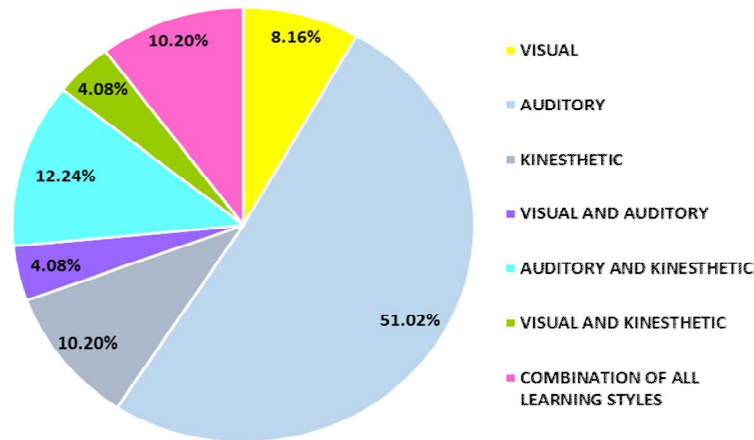


FIGURE 2. Preferences of learning styles by DePorter-Hernacki in students of 2017

The characteristics of the individual with visual learning style preferences include: 1) neat and orderly, 2) speaking quickly, 3) not disturbed by commotion, 4) easier to remember something to be seen, 5) more comfortable reading than told, 6) readers who are fast and diligent, 7) remembering visual associations, and 8) difficulty remembering verbal instructions unless they are written [1]. Students with visual learning style preferences more easily remember information by looking directly at the source of the information. Individuals with visual learning styles learn best when they can see real examples and images from the real world [7]. One of the learning strategies that can be applied to students with visual learning style preference is poster session and mind mapping learning strategies. This is because students with visual learning styles have a strong sense of color and artistry. Through learning by a poster session and mind mapping, students with visual learning style preferences can optimize their ability to absorb information and learning materials because of the use of images and colors.

Students with kinesthetic learning style preferences have characteristics such as 1) speaking slowly, 2) remembering easily when doing a motion, 3) using the finger as a pointer while reading, 4) not being able to sit still for long periods, 5) oriented on physical and movement, and 6) are happier doing [1]. Students with kinesthetic learning style preferences tend to be easy to remember learning materials by doing their own learning activities. Learning strategies that can be applied to students with kinesthetic learning style preferences should make students active in learning. This is because individuals with kinesthetic learning styles remember events and associate feelings and physical experiences with memories [5].

The result of learning style preference according to David Kolb in student of 2016 is presented in Fig. 3. and for the student of 2017 presented in Fig. 4.

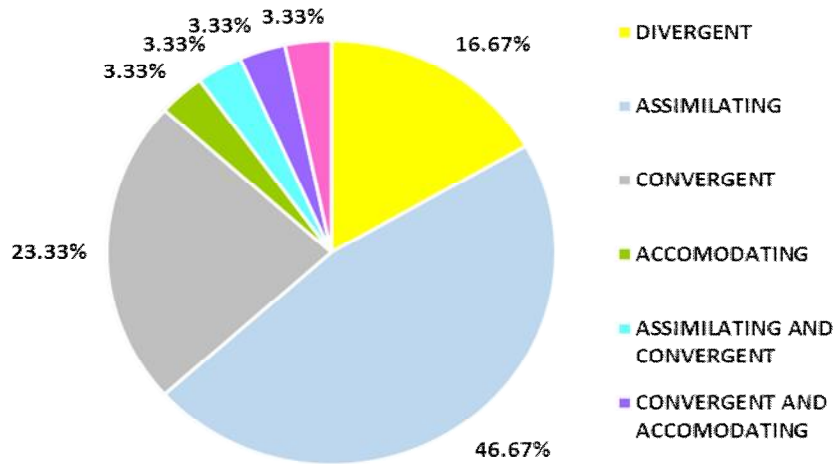


FIGURE 3. Preferences of learning styles by David Kolb in students of 2016

Based on Fig. 3 and Fig. 4 it can be seen that the learning style preferences according to David Kolb on the students of 2016 and 2017 is the most of the assimilating learning style which is then followed by the convergent learning style. The four learning styles according to David Kolb are each a combination of two dimensions of learning ability, including a) assimilating is a combination of abstract conceptualization (AC) and reflective observation (RO), b) convergent is a combination of abstract conceptualization (AC) and active experimentation (AE), c) divergent is a combination of concrete experience (CE) and reflective observation (RO), and d) accommodating is a combination of concrete experience (CE) and active experimentation (AE) [2].

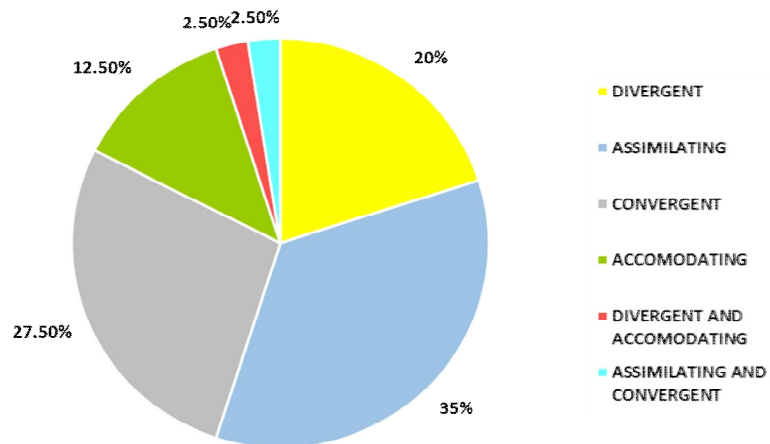


FIGURE 4. Preferences of learning styles by David Kolb in students of 2017

The CE dimension focuses on engagement in immediate experience. Individuals with the CE dimension are easy to connect with people and engage in real situations. The dimension of RO focuses on understanding the meaning of the idea through careful observation. Individuals with RO dimension see and appreciate different points of view. They rely on their thoughts and feelings in shaping opinions to reflect on something happening. Dimensions of AC focus on the use of logic, ideas and concepts in building theory. Individuals with these AC dimensions tend to make symbolic representations, perform analysis and make systematic planning. The AE dimension focuses on active engagement in action and emphasis on practical applications [2].

People with an assimilation learning style prefer learning by reading, exploring and thinking things up in a logical and profound way. Generally, people with an assimilation learning style prioritize the superiority of ideas and concepts rather than their practical value [2]. A learning strategy that can be used for people with learning styles of assimilation involves the organization of information graphically. This is because individuals with assimilation learning styles are able to integrate data in a concise and logical format [8]. People with convergent learning styles tend to experiment with new ideas, simulations, and practical applications [2]. They have good abilities in problem solving through logical and systematic thinking [9]. A learning strategy that can be used for people with convergent learning style is instructional based strategy [8]. People with divergent learning styles are more likely to see the situation from a number of different perspectives [10]. They have a high social interest and sensitivity [2]. The appropriate learning strategy to be applied to individuals with divergent learning style is learning strategy that involves the relationship between individuals in learning such as discussion, group project, and other cooperative learning strategy [8]. People with accommodation learning styles are delighted to be involved and take action in new situations and experiences [2]. A suitable learning strategy to apply to individuals with accommodation learning style is a problem-solving strategy [4,8].

Through the results of this research, the expectation can know the preference of student learning style so that it can facilitate the lecturer in determining the appropriate learning strategy in accordance with the needs of the students so that the learning process can run effectively and efficiently for the realization of the learning objectives that have been set. In addition, the analysis of student learning style preferences can also help students know their best way of learning so that there are no barriers to communication in learning and increasing student engagement in the learning process [10].

CONCLUSION

The research of analysis students learning style preference aims to know the preference of student learning style so that it can be used at the same time facilitate lecturer in determining the learning strategy to be applied. The hope, through appropriate learning strategies, to make learning effective and efficient so that learning objectives can be achieved. The results of this research are learning style preferences (based on learning styles according to DePorter and Hernacki) most of the students both of 2016 and 2017 are auditory learning style with the percentage of 37.84% to the student of 2016 and 51.02% to the student of 2017. The learning style preferences (based on learning style according to David Kolb) most of the students both of 2016 and 2017 are assimilation learning style with the percentage of 46.67% to the student of 2016 and 35% to the student of 2017.

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