

## Decription of Students' Learning Style

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### Abstrak

Belajar adalah perubahan mental yang terjadi sebagai representasi dan hubungan dari hasil pengalaman dalam jangka panjang. Vermunt mengklasifikasikan empat tipe belajar: meaning-directed, application-directed, reproduction-directed dan undirected learning. Tujuan penelitian ini adalah untuk menggali secara deskriptif bagaimana tipe belajar mahasiswa di FK-UNAND. Penelitian ini menggunakan metode kuantitatif dengan pendekatan studi potong lintang dan mendeskripsikan tipe belajar empat orang mahasiswa. Kuesioner ILS dari Vermunt dibagikan kepada enam mahasiswa dan hanya empat kuesioner yang kembali serta bisa dianalisis. Dari hasil penelitian didapatkan: (1) mahasiswa A mempunyai tipe belajar yang tidak spesifik, mahasiswa ini lebih cenderung ke tipe undirected dan reproduction directed, (2) mahasiswa B menunjukkan lebih mahir dalam kegiatan belajar, tipe belajarnya lebih mengarah kepada reproduction dan application directed, (3) mahasiswa C mendapatkan nilai yang lebih tinggi pada tipe undirected, (4) mahasiswa D menunjukkan mahasiswa yang lebih mampu untuk melakukan self regulation, construction of knowledge dan mempunyai motivasi internal yang baik, namun skor yang diperoleh masih terkategori tipe undirected. Kesimpulan penelitian ini ialah terdapat tumpang tindih pola belajar pada mahasiswa, namun profile yang tepat ditunjukkan pada skor yang dominan. Rekomendasi untuk perbaikan proses belajar mengajar di FK-UNAND disampaikan berdasarkan hasil penelitian yang diperoleh.

**Kata kunci:** ILS, mahasiswa, tipe belajar

### Abstract

*Definition of learning is as changing of mental representation or associations for long term as a result of experience. Vermunt states four learning styles: meaning-directed, application-directed, reproduction-directed and undirected learning styles. The objective of this study was to explore descriptively how is students' learning style in the MFAU. The research approach was qualitative method and apply cross sectional studies as well as concern at the descriptive of learning style of four MFAU students. The Vermunt's ILS questionnaire was administered to the six medical students. Four questionnaires were returned and usable for further analysis. The results of the survey that, firstly, student A adopts unspecific learning process and she is more undirected and reproduction directed type. Secondly, the student B performances more advance at learning activities. Her score is higher at reproduction and application directed type. Thirdly, student C gets higher score at undirected type. Then, student D performs an expert learner due to self-regulation, construction of knowledge and personal interested, but the student is still more undirected type. All in all, it was found some overlapping of learning styles among students surveyed, the means of profile showed the dominant type of learning of each student. The results of the survey should provide advises for students and teachers to improve the learning-teaching process in the MFAU as succinctly presented earlier.*

**Keywords:** learning style, ILS, student

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### INTRODUCTION

Ormrod defines learning as changing of mental representation or associations for long term as a result

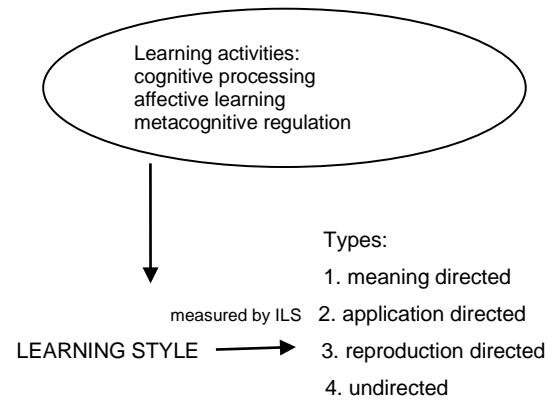
of experience.<sup>1</sup> In the speed of technological development, professional and social changes, learning is no longer a passive process, but an active, constructive and self-directed process to construct internal knowledge representation.<sup>2</sup> Ertmer & Newby point out that learning is association between stimulus and response.<sup>3</sup> Their main focus is how this association is made, strengthened, and maintained during the learning process. Regarding this activity, there are four learning components, namely: basic knowledge, procedural skills, self-regulated learning and motivational and affect.<sup>4,5</sup>

Vermunt however concluded that there are three types of learning activities. *First, cognitive processing activities* are thinking activities that students use to process subject matter. It directly influences learning outcomes in terms of knowledge, understanding and skills. *Second, affective learning activities* involve emotions or mood of the students. Some examples in this domain are motivating themselves, attributing learning products to causal factors, and mastering the blocking emotions. *Finally, metacognitive regulation activities* drive the cognitive and affective activities that indirectly influence learning outcomes. For examples, to plan learning activities and change this activity during learning process, to monitor whether learning process functions as planned.<sup>5-8</sup>

Vermunt introduced Inventory Learning Style (ILS).<sup>6</sup> It characterizes learning style or learning pattern of students in higher school.<sup>2,5,9,10-11</sup> Vermunt describes concept of learning styles at four domains: processing strategies, regulation strategies, mental models of learning, and learning orientation. He states four learning styles: meaning-directed, application-directed, reproduction-directed and undirected learning styles. From high-quality learning perspectives, the first two learning patterns are more desirable than the last two.<sup>5</sup>

Figure 1 shows the conceptual framework of learning activities, i.e. cognitive processing, affective learning and metacognitive regulation. These four types of learning activities influence learning style. Vermunt applies ILS as an instrument to assess the

component and summaries types of learning style.



**Figure 1.** Framework of conceptual

Several researchers studied interrelation between student's motivation and academic performance.<sup>1,4,10,12</sup> There is a positive connection between two domains. The higher student's motivation, the higher score academic performance they get.<sup>4</sup> Between two kinds of motivation, the intrinsic motivation have more advantages than extrinsic one, such as pursuing the task by their own initiative, without having to be pushed or cajoled, as well as, evaluating regularly their progress.<sup>1</sup> But, extrinsic motivation is not bad thing, it can be most useful when it put on desirable behaviour, for example, when the student gets frustration and boring activities. Hence, teachers can support students by good grades and public recognition.<sup>1</sup>

Medical Faculty Andalas University (MFAU) is has been known the favorite faculty among the community in Indonesia specially in the Sumatera island and around. There are more than 250 new registered students per year. Since academic year 2004/2005, this faculty has been implemented Student Centered Learning (SCL) by adopting Problem-based Learning Methods. Consequently, learning and teaching process are changed hugely. This research will explore descriptively how is students' learning style in the MFAU. Are they in meaning directed, application directed, reproduction directed or undirected style? Moreover, this article provides some suggestions - based on the survey results- for students and teachers to enhance the learning-teaching process in the PBL approach.

## METHODS

The research approach was qualitative method and apply cross sectional studies as well as concern at the descriptive of learning style of four MFAU students. The ILS questionnaire was administered to six medical students. Four questionnaires were returned and usable for further analysis. Table 1 shows the characteristics of the respondents. The respondents have different characteristics which may influence their learning styles.

**Table 1.** Characteristics of respondents

No.	Characteristics	A	B	C	D
1.	Gender	Woman	Woman	Man	Man
2.	Age	17 yrs	19 yrs	21 yrs	23 yrs
3.	Prior Education at (Senior High School before)	Riau	Malaysia	Jambi	South Sumatera
4.	GPA	1 <sup>st</sup>	1 <sup>st</sup>	5 <sup>th</sup> (Clinical)	5 <sup>th</sup> (Clinical)
5.		-	-	2.89/4	2.98/4

The students filled out the Vermunt's ILS questioner with 20 subscales and 120 items relating to processing strategies, regulating strategies, learning orientation and mental models. It uses 5-point Likert scales which students choose the number according to right answer individually.

**Table 2.** Type of learning scale

1. Meaning directed:
• Deep processing *(1)
• Self-regulation (4)
• Personally interested orientation (7)
• Construction of knowledge model (12)
2.Application directed
• Concrete processing (3)
• Self-regulation (4)
• External-regulation (5)
• Vocation oriented (10)
• Use of knowledge mental model (14)
3.Reproduction directed:
• Stepwise processing (2)
• External regulation (5)
• Certificate oriented (8)
• Self-test oriented (9)
• Intake of knowledge model (13)
Undirected
• Lack of regulation (6)
• Ambivalent (11)
• Stimulating education model (15)
• Cooperative learning model (16)

Score per item were classified based on their scale and added as a profile. These profiles were categorized per type of learning scale (Table 2). We get means of each type of learning style per student. The presentation each student is provided in order to analyse the profile of the student.

## RESULT

This section analyzes the students' learning styles. This is based on the 'PROFILE SCORE' and categorised according to type of learning style.

### Student A.

This student still uses learning pattern at senior high school, where she frequently memorises subject matter and repeats each part of the subject by heart. She faces some problems to distinguish which part of the subject is important, which one is not, and the correlation of each concept. She can analyze the learning material in details and does not go to next chapter before accomplishing the existing one. She prefers a concrete education more than an abstract one, where she can apply it in her daily activities. Basically, she regulates her learning activities internally, although she still needs instructions and guidance from the textbooks or her teachers. But, she often fails to understand such instructions and guidance. She may also struggles with a large amount of subject materials. Consequently, she is confused whether the course is the right choice for her and whether she is capable of doing the subject matter. However, she wants to prove that she is competent in learning process and can attain high grade. She emphasizes for constructing knowledge that she engages, and in turn, she can meet her objectives in learning process. She hopes teachers plays an important part to support her learning and examines that she mastered enough in her study. She most likely collaborates with her fellow students, especially, when she stagnates with learning materials, prepares for examination, and motivates each other as well.

In sum, this student -as a first medical student- presumably still struggles with new learning environment at higher education. Consequently, she adopts unspecific learning process. For example, she is sometimes more internally regulated, and at other

time she is externally regulated. In addition, she, also, often lack of regulation. Roughly, she has some different scales of learning style. But from the profile that she gets, apparently she is more undirected and reproduction directed type.

#### Student B.

The student wants to show that she is gifted in the subject matters at higher education. Studying medicine in a higher education is a prime challenge for her. She chooses the course programme because she expects it will lead her to become competent and professional medical doctor. She wants to realize her quality which she is capable and incapable of doing it. She is very keen on her chosen course programme, though she is sometimes doubtful about her choice - whether this kind of education is the appropriate course for her-. In addition, she thinks that this course is very hard for her, leading her to worry about it. However, she tries to analyse the subject matter when she encounters with some difficulties. Besides, if she faces problems in a study text, she will search other literatures. She frequently tries to describe things based on her understanding. On the other hand, she often regulates her learning process externally. Not surprisingly, she follows some instructions and learning methods from teachers and syllabus or textbooks. Moreover, from these materials she focuses on the main part and studies details, and then tries to memorize such part. If she does not recognize with the most important parts of the subject matter, she will repeat these parts until she is familiar with them. But, she finds it difficult to relate each part in the subject matter to build up a coherent knowledge. In the learning process, she often needs motivation and support from her teachers and friends. She likes to cooperate with her fellow students to deal with difficulties and prepare for examination.

All in all, the student performances more advance at learning activities. Her score is higher at reproduction and application directed type.

#### Student C.

This student studies the subject matters in greater details. He gradually analyses each components of the theory. He sometimes relates each

part of subject matter, tries to approach a problem from many different angles and consult with the teacher to get solution. In addition, he explores other sources to solve complicated problems. To test and evaluate his learning progress, he tries to formulate the important points by his own words based on his understanding. However, he is often unclear with the subject matter i.e. which information he has to retain and which one is not. Besides, he often confused about the course that he chose, whether it is the right choice or not. As a result, he needs support and motivation from his teachers and friends. Actually, encouragement and motivation from the teachers is necessary for him to check whether he is mastered in the subject matter and to reflect on his way of learning process. He always studies together with his friends, especially when he confronts with complicated chapters and prepares for examination. He emphasizes to himself that he is capable enough study at higher education and realize that such this course are important for his future career to be a talented professional.

In sum, although he gets GPA higher than majority his friends' as well as he finished his preclinical year faster than common students in his class, this student gets higher score at undirected type. It happens probably that his internal motivation to prove his capability and to be professional is more dominant than his doubtful which arises to choose this course. He gets support from his environment such as his friends and teachers during learning process.

#### Student D.

The student is very interested in the course that he chose, subsequently he argues that this course is absolute relaxation and his aim in his option is for enriching himself. He is however still doubtful with his choice, i.e. whether it is the right type of education for him or not. Otherwise, he constantly makes list of the significant parts and learn them by heart. He then learns item by item separately. He tries to analyse every successive steps until he is capable in this subject matter. Besides, he uses this knowledge for approaching his understanding and often waits the specific instructions to solve or do assignments. He wants to prove to himself that he is capable enough in

this subject matter. He wishes he will be a smart professional in the future. For this purpose, he regulates internally his learning process and realizes that for setting his activities are his responsibility, not a task of teacher. He frequently collaborates with his friends to discuss the difficult subject matter, prepare for examination and support each other. Although, he is able to construct the knowledge, he still hopes teacher's explanation about which is important part and not important.

Finally, although this student performs an expert learner due to self-regulation, construction of knowledge and personal interested, the student is still more undirected type. He may be worried about his capability, in turn; he strives to construct knowledge as well as manages his learning process by himself. In addition, he learns with his friends in group discussions.

## DISCUSSION

To promote student's learning style, process-oriented teaching is aimed at encouraging development of meaning and application-directed learning style. Therefore, we suggest some advices for the students and teachers that based on learning components. They are:

### 1. Cognitive processing strategies

Presumably, majority of the students can be categorized as more undirected type since the profiles of undirected learning style – such as lack of regulation, ambivalent, stimulating and cooperation-are dominant. These scales arise, because the students (student A and B), just graduated from senior high school, where teacher are dominantly regulated learning process and the learning materials are lesser than higher education's. For these students, they have to realize that they are in higher education now; they will be confronted with different system and a large amount subject matter. Such subject matters need not only analysing and memorizing but also relating and structuring every part of them. Focusing on student C and D who at clinical year, they should be smarter for relating and structuring cognitive process, hopefully they can relate, for instance, basic science, and clinical science in their learning activities.

Consequently, these students have more deeply processing.

In processing strategies, teachers should be aware of their students' processing strategies. These students are more memorizing/rehearsing and analyzing subject matter. When confronted such situation, teachers take over to explain relationships, give analogies, present overview, summaries and schemes.<sup>2</sup> Moreover, they mark central concepts and expose major and minor points. However, for the mature students – for example, student C and D-teacher is advised to give similarities and differences between theories. In addition, teacher should ask students the important point, as well as central concepts.

### 2. Affective learning strategies

The students (student B and D) said that such course is very interesting and challenger for them. But, all of these students still confuse about their choice in this medical course. Apparently, on this circumstance, students should support their intrinsic motivation by adapt their self-esteem. Such this need is important to look inside positively about themselves.<sup>1,4</sup> cited some research that 'students who believe they are able to achieve, and can do well this course are more likely motivated in term effort, persistence as well as behaviour than student who believe they are less able and do not expect to success'. Therefore, mental of competence and self-efficacy should be developed among students.

Regarding teaching process, teachers should develop fascinated, motivated, and varieties assignment, materials and learning activities.<sup>4</sup> Encouraging students to be responsibility with their tasks is crucial. Building up the competencies among the students by giving appreciates (soft rewards) and high grade is believed important.

### 3. Regulation strategies

Although all of the students are internally regulated learning activities, student A and C are often lack of regulation. Therefore, they should sharpen their internally regulated. Ertmer<sup>13</sup> suggested in self-regulation, student activates their learning strategies

for planning, monitoring and evaluating. In planning process, she pointed out, before they start to learn, student considers with three things, include: 1. demanding of the task (e.g type and length of the task), 2. individual resources (e.g knowledge and skills that support the task), and 3. potential deals with both of two above. During the learning process, they monitor such process. They are aware what they did, and what are the fit ways for sequencing step and how to anticipate, as well as to plan to be next action. After finishing the task, the expert student should evaluate the planning strategies and overall processes; as a result, they know whether the goals of the task are attained or not.<sup>13</sup>

In this strategy, teachers have important role as a monitor student's self-regulated learning as well as provider of feedback about student's quality of their strategies.<sup>2</sup> In addition, teachers act as a model of learners. As a result, students have a clear picture about thinking and learning strategies and how it should be implemented.

## CONCLUSION

This article has presented the student's learning styles, mainly using ILS framework. The framework has shown its own merit in analysing the students' pattern of learning. While it was found some overlapping of learning styles among students surveyed, the means of profile showed the dominant type of learning of each student. The results of the survey should provide advises for students and teachers to improve the learning-teaching process in the Medical Faculty of Andalas University as succinctly presented earlier. We suggest that it is important to investigate more students and explore how the correlation between their learning style and GPA as well as comparing learning style of the first and the four year students and others.

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