David Kolb Learning Styles Influence on the Achievement of Students at Midwifery Care in Pregnancy

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Abstract—**Students who got the same treatment in the same environment do not always have the same understanding, thinking, and view of the lecture. Kolb divides learning styles into four combinations namely diverger as a combination of feeling and watching, assimilator as a combination of thinking and watching, converger as a combination of thinking and doing, and the last, accomodator as a combination of feelings and actions. Appropriate learning styles can improve students achievement because they will feel comfortable when they follow the course which matches their learning style. The research method used was quantitative with cross sectional study design approach. The population of this research was 153 students and 111 samples were selected using proportionate random sampling technique as well as in the regression analysis. The results of the learning styles from 111 respondents showed that the highest level was the diverger learning style indicated by 65 respondents (58,56%) and the highest educational achievement was the learning achievement B+ by 45 respondents (40,54%). The results of the analysis of regression test obtained diverger value (p=0,287) and assimilator value (p=0,561). Ho was accepted and Ha was rejected; therefore, there was no influence of diverger and assimilator learning styles on Midwifery Care students achievement in pregnancy. In addition, no influence of converger and accomodator learning styles on Midwifery Care students achievement in pregnancy at the Academy of Midwifery Sari Mulia Banjarmasin. Students themselves might be more appropriate in the condition of combining two of learning styles for instance converger and assimilator on Midwifery Care students achievement in pregnancy**

Keywords—achievement learning; David Kolb learning styles; midwifery care in pregnancy

I. INTRODUCTION

Achieving expected successful achievement of students needs careful consideration on several factors that influence it. Success in learning achievement itself is mostly influenced by one's inside and outside factors. The main factors that affect students achievement are internal factors and external factors [1]. Two individuals who grew up in the same environment and got the same treatment would not necessarily have the understanding, thinking, and view to the surrounding world [2]. Each of them has his/her own perspective on every event they had seen and experienced. This perspective is known as learning styles [3]. A phenomenon that occurs grounded that some students do not understand and comprehend the learning style they have. The learning achievement is the students achieved knowledge on a number of specific subjects that have been established every semester including attitude mastery of the material (cognitive, affective, and psychomotor) as a measure of students' success in completing the course. Learning style is believed to give effect to the students' academic achievement. In the reality, it is commonly found that students who learn with their preferred learning style are likely to get good results. The expert in this field named Kolb divides it into four stages of learning poles, the concrete experience (feeling), active and reflective observation (observing), conceptualization (thinking), and active experimentation (acting). The four poles on top form four combinations of learning styles namely diverger style as the combination of feeling and observing, assimilator style as the combination of thinking and observing, converger style as the combination of thinking and acting, and accomodator style as the combination of feeling and acting.

Evaluation is an activity that needs to be done to see how far the educational goals have been achieved by students in the learning outcomes form they showed after the learning process. Further, to determine the effectiveness of the learning experience in achieving optimal learning results, the evaluation is directed to determine the attainment of health professionals as required in the curriculum. Then, to determine the achievement of competencies, the healthcare professionals need to do continuous and constant assessments based on the demands of the competences in the curriculum. Learning is an activity or a process to acquire knowledge, develop skills, improve behavior and attitudes, as well as strengthen the personality. In the context of learning process on acquiring knowledge, according to the conventional scientific understanding, human contact with nature is termed as the experience. Experiences that occur repeatedly spawn the knowledge or body of knowledge. Learning can happen anywhere and anytime, not necessarily in a formal condition in the classroom, but may be informal, non-formal, and as stated above, students can learn from nature or any event.

According to Kolb, there is not any learning style absolutely dominated by any of the poles [3]. What usually happens is they are the combination of the two poles and form

an inclination or orientation learning. Four poles on the top form four combinations of the learning styles.
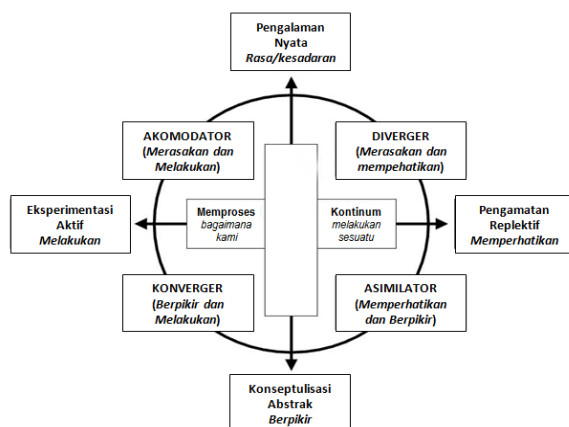

Fig. 1.   The picture of David Kolb Learning Styles Inventory [3]

1) Diverger Style

Students with diverger type are superior in viewing concrete situations from many different viewpoints. The approach in every situation is "observing" and not "acting". Such these students like a learning task that demand to generate ideas (brainstorming), love cultural issues and love to collect a variety of information. This type of information is given to respond well if they are given time for reflection. To provide effective learning, teachers must play role as the experts.

2) Assimillator Style

Students with assimilator type have advantages in understanding the variety of offering things and summarizing the information in a logical, concise, and clear format. Usually these types of students pay less attention to other people and prefer abstract ideas as well as concepts. They also tend to be more theoretical. The conversation of these students is built in inductive reasoning way. In order to achieve effective learning, teachers must act as trainers.

3) Converger Style

Students with converger type excel in finding practical functions of various ideas and theories. They usually have good skills in problem solving and decision making. They also tend to prefer technical tasks (applied) than social or interpersonal relations. These students are skilled in implementing the practical application of ideas and using deductive logic to solve problems. Teachers must act as motivators to make the learning effective.

4) Accomodator Style

Students with accomodator type have a good ability to learn from the results of actual experiences they do by themselves. They like to plan and involve themselves in a variety of new and challenging experiences. They tend to act on intuition/instinct than by logical analysis. In an effort to solve the problem, they usually consider the human factors (for feedback/information) than technical analysis. They adept actively link to the real world by learning, by actively do something rather than just reading or learning it from a book. They are able to apply the learning material in real situations to solve everyday problems. To be effective in learning, teachers must provide flexibility and maximize students' opportunity to find something for themselves, and teachers serve as a facilitators.

II. METHOD

The research method of this study is quantitative method to find a phenomenon, formulate the problem, and connect one problem with another problem systematically. The aim is to develop quantitative methods and use mathematical models, theories and/or hypotheses pertaining to natural phenomena. Meanwhile, the study design approach was the cross sectional study conducted in one term (one-shot studies).

The population of this study was all students of level II Academy of Midwifery Sari Mulia Banjarmasin, a number of 153 students consisting of inasmuch 51 students in class A, 60 students in class B, and 42 students in class D. The samples in this study were 111 Midwife Academy Level II students of Sari Mulia College Banjarmasin. The formula used in determining the sample size in this study is as follows:

$$n = \frac{N}{1 + N\,(d^2)}$$

$$n = \frac{153}{1 + 153\,(0{,}05^2)}$$

$$n = 110{,}87 = 111$$

III. RESULTS AND DISCUSSION

A. Results

In this study, both the independent and dependent variables were analyzed using univariate, bivariate, and multivariate analyses.

1) *Univariate Analysis*

Aiming to analyze the study variables based on pre-defined categories. The data processing was performed to determine the distribution of each variable from David Kolb learning styles and the learning achievement of Midwifery Care students in Pregnancy.

a) David Kolb Learning Styles

TABLE I.   FREQUENCY DISTRIBUTION DAVID KOLB LEARNING STYLES

NO	Learning Styles	Total	
		N	*%*
1	*Diverger*	65	58.56
2	*Assimilator*	34	30.63
3	*Converger*	6	5.41
4	*Accomodator*	6	5.41
Total		111	100

b) The learning achievement on Midwifery Care students achievement in pregnancy

TABLE II.   FREQUENCY DISTRIBUTION ACHIEVEMENT

No	Achievement	Total	
		N	*%*
1	A-	12	1
2	B+	45	2
3	B	30	3
4	B-	24	4
	Total	111	100

2) *Bivariate Analysis*

It aims to select independent variables that can be used as candidates in the multivariate analysis. The influence of each of David Kolb's learning style in learning achievement of students at Midwifery Care in Pregnancy

TABLE III.   THE ANALYSIS OF THE EFFECT OF DIVERGER LEARNING STYLES ON MIDWIFERY CARE STUDENTS ACHIEVEMENT IN PREGNANCY

No.	Learning Styles	Achievement				Total	
		A- and B+		B and B-			
		N	*%*	*N*	*%*	*N*	*%*
1	*Diverger*	27	24.32	38	34.23	65	58.56
2	No *Diverger*	30	27.03	16	14.41	46	41.44
Total		58	51.35	54	48.65	111	100
Chi Square : P = 0.014 α = 0.05							

TABLE IV.   THE EFFECT OF ASSIMILATOR LEARNING STYLES ON THE ACHIEVEMENT OF STUDENTS AT MIDWIFERY CARE IN PREGNANCY

No.	Learning Styles	Achievement				Total	
		A- and B+		B and B-			
		N	*%*	*N*	*%*	*N*	*%*
1	*Assimilator*	23	20.72	11	9.91	34	30.63
2	No *Assimilator*	34	30.63	43	38.74	77	69.37
Total		57	51.35	54	48.65	111	100
Chi Square : P = 0.022 α = 0.05							

TABLE V.   THE ANALYSIS OF THE EFFECT OF CONVERGER LEARNING STYLES ON MIDWIFERY CARE STUDENTS ACHIEVEMENT IN PREGNANCY

No.	Learning Styles	Achievement				Total	
		A- and B+		B and B-			
		N	*%*	*N*	*%*	*N*	*%*
1	Converger	4	3.60	2	1.80	6	5.41
2	No Converger	53	47.75	52	46.85	105	94.59
Total		57	51.35	54	48.65	111	100
Fisher's Exact Test : P = 0.679 α = 0.05							

TABLE VI.   ANALYSIS OF THE EFFECT OF CONVERGER LEARNING STYLES ON MIDWIFERY CARE STUDENTS ACHIEVEMENT IN PREGNANCY

No.	Learning Styles	Achievement				Total	
		A- and B+		B and B-			
		N	*%*	*N*	*%*	*N*	*%*
1	*Accomodator*	3	2.70	3	2.70	6	5.41
2	No *Accomodator*	54	48.65	51	45.95	105	94.59
Total		57	51.35	54	48.65	111	100
Fisher's Exact Test : P = 1.000 α = 0.05							

3) *Multivariate Analysis*

After the bivariate analysis, only diverger and assimilator have a p-value ≤ 0:25 to proceed to a multivariate analysis that logistic regression analysis. It can be seen in the following table VII, The Regression Logistic Analysis Result.

TABLE VII.   THE EFFECT OF LEARNING STYLES DIVERGER AND ASSIMILATOR TOWARDS ACHIEVEMENT SUBJECTS MIDWIFERY CARE IN PREGNANCY

No	Independent Variable	SE	Df	Sig.	Exp(B)
1	*Diverger*	.637	1	.287	1.970
2	*Assimilator*	.345	1	.561	.818

B. Discussion

1) *David Kolb Learning Styles*

As can be seen from the results of the questionnaires given to the respondents, the picture of the four poles of David Kolb learning styles shows the total numbers that can be entered so that it will form a person's learning style with the merger of the two poles of David Kolb. Thus, every individual has the four David Kolb learning styles but there is only one dominant learning style [3]. This can be seen from one column that is larger than the other three columns. Then, the column that the individual learning style. The results of this study indicated that most of the learning style was diverger in which the learning process takes place by feeling and observing [3] [4].

2) The achievement of the learning courses at Midwifery Care in pregnancy has shown the classification of students' achievement. The learning achievement is a change that occurs in individuals from the learning outcomes of four learning styles types of David Kolb students achieved after experiencing a learning process. The results have been evaluated at the end of the semester in the subject of Midwifery Care in Pregnancy. Differences in the number of classification results can provide an estimation of the extent of the learning materials mastery in Pregnancy given to students in a semester. From this study, the most obtained one was B + with the value range from 3:21 to 3:43.

3) The relationship diverger learning style influence on the students learning achievement in Pregnancy resulted the chi-square p value = 0 .014 with a 95 % level of significance or α

= 0:05, this means that Ho was rejected and Ha was accepted, then there is a relationship influence learning styles diverger on learning achievement of students at Midwifery Care in Pregnancy. Although the actual results of this study indicated that most learning styles namely diverger (58.56%) with the highest number of the academic achievement in grades B and B- (34.23%). Even though there is not any influence of the statistical tests, this study has the potential possibilities despite of its weak influence.

4) The relation of assimilator learning styles influence on the learning achievement of Midwifery Care students in pregnancy course.

The Chi-square test results obtained p = 0.022 with the confidence level of 95% or α = 0:05. It means Ho was rejected and Ha was accepted. There is a relationship of assimilator learning styles and the learning achievement of Midwifery Care students in pregnancy.

Although the actual results of this study indicate that most learning style after diverger namely assimilator (30.63%) with the highest number of learning achievement at grades A- and B + (20.72%). In addition, the dominance of students who entered the age of late teens is 101 (90.99%). Even though there is not any influence of the statistical tests, this study has the potential possibilities despite of its weak influence.

5) The relation of converger learning style influence on students learning achievement at Midwifery Care in Pregnancy test results Fisher's exact test obtained the p value = 0679 with the confidence level of 95% or α = 0:05, this means that Ho was accepted and Ha was rejected, then there is not any influence learning styles converger on Midwifery Care students achievement in pregnancy.

6) The relation of accomodator learning style influence on students learning achievement at Midwifery Care in Pregnancy resulted the obtained Fisher's exact test p = 1.000 with a confidence level of 95% or α = 0:05, this means that Ho was accepted and Ha was rejected, then there is not relationship influence learning styles accomodator on Midwifery Care students achievement in pregnancy. The results of this study showed that the learning style that is quite equal to converger is accomodator (5:41%) with a balanced amount of learning achievement at grades A- and B + (2.70%) as well as the B and B- (2.70%).

7) The influence of learning styles on learning achievement of the diverger of Midwifery Care students in Pregnancy result was p = 0287 with a confidence level of 95% or α = 0:05 (p> α). It indicated that Ho was accepted and Ha was rejected. There is not any influence of diverger David Kolb's learning style on Midwifery Care students achievement in pregnancy. Although statistical tests showed no effect, this study shows possible influence on the interpretation despite of its weakness. Because the style of learning is one of the factors that may affect the achievement of students.

8) Assimilator learning styles influence the learning achievement Midwifery Care in Pregnancy obtained the p value = 0287 while assimilator obtained p = 0561 with a

confidence level of 95% or α = 0:05. The obtained p> α meaning that Ho was accepted and Ha was rejected, then was not any influence assimilator David Kolb's learning style on Midwifery Care students achievement in pregnancy. Although the results of statistical tests showed no effect of assimilator David Kolb learning style on learning achievement, learning styles also contributed to the academic achievement.

IV. CONCLUSION

Based on the study to 111 respondents regular level II students in the influence of David Kolb learning style on Midwifery Care students achievement in pregnancy, it can be concluded that the most dominant David Kolb learning style was diverger with 65 respondens (58.56). The conclusions of this study are presented as follow:

1) The Midwifery Care students achievement in pregnancy most was B + with 45 respondents (40.54%).

2) The bivariate analysis results showed that there was not any relationship on the learning style of diverger (feeling and observing) to Midwifery Care students achievement in pregnancy. The potential continued to multivariate analysis and obtained p ≤ 0:25. However, in the multivariate analysis result did not also show any influence on diverger David Kolb learning style on Midwifery Care students achievement in pregnancy.

3) The results of the bivariate analysis result showed there was a relationship on the influence of assimilator learning style (thinking and observing) on Midwifery Care students achievement in pregnancy. The potential continued to multivariate analysis for p ≤ 0:25. However, in the multivariate analysis the result showed no influence on assimilator David Kolb's learning style on Midwifery Care students achievement in pregnancy.

4) The results also showed that the bivariate analysis resulted no relationship of the converger influence on learning style (thinking and doing) Midwifery Care students achievement in pregnancy. The potential obtained the multivariate analysis for p> 0:25.

5) The bivariate analysis showed there was not any relationship on the learning styles accomodator (feeling and acting) to Midwifery Care students achievement in pregnancy. The potential proceeded to multivariate analysis for p> 0:25.

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