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LEARNING AND TEACHING STYLES IN THE VETERINARY MEDICAL EDUCATION IN INDONESIA : A PRELIMINARY STUDY AT BOGOR AGRICULTURAL UNIVERSITY

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ABSTRACT

This study was undertaken in order to improve the quality of learning process and learning gains in the Faculty of Veterinary Medicine, Bogor Agricultural University (IPB). Analysis on the questionnaires taken from 210 students of IPB using Felder's Index of Learning Styles revealed that most of the students were visual, sensing, inductive, active learner, while some of good students were global learner. The findings suggested that an effective communication is important in the learning and teaching process. Teaching styles, however, were mostly auditory, abstract, deductive, passive and sequential which results in some mismatches. Teaching styles that would be developed should include the use of more visual information (pictures, films or hands-on) before, during and after verbal presentation, providing student participation/ group discussion and assignments, balance in the delivering of concrete and abstract concepts, balance in the materials of practical problem solving with materials of fundamental understanding, explicit illustrations of intuitive patterns and sensing patterns, and acknowledge student creations. Especially during the internship course of the final year, suitable teaching styles in clinical setting should be addressed to enhance the clinical skills of the students.

INTRODUCTION

Learning style is the method used by individual to concentrate and to process and retain new information. An optimal teaching and learning process is the function of instructor's teaching method and student learning style. An important relationship between learning style and instruction (teaching method) is that individuals are likely to teach the way they prefer to learn. Based on Felder's description (Felder and Silverman, 1988), students preferences in the learning process include styles that student prefers to process information actively or in a reflective manner, understand information in a sequential or global fashion and recall sensory information (what is seen, heard etc) or intuitive information (ideas, theory, possibilities). Students whose learning styles are compatible with the teaching style of a course instructor tend to retain information longer, apply it more effectively, and have more positive post-course attitudes toward the subject than do their counterparts who experience learning/teaching style mismatches (Felder, 1993).

Quality of the graduates depends mostly on the learning process. This study was undertaken in order to improve the quality of learning process and learning gains in the Faculty of Veterinary Medicine, Bogor Agricultural University (IPB). To design effective learning activities it is important to examine student learning styles, especially in the aspect of instructional and

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information's processing preference. The present study used Felder-Silverman Index Learning Style (ILS) developed by Felder and Soloman (<http://www.ncsu.edu/felder-public/ILSpage.html>) to determine the learning styles of the students of Faculty of Veterinary Medicine, Bogor Agricultural University (IPB). The results were discussed in relation to the development of appropriate teaching styles.

MATERIALS AND METHODS

The ILS questionnaire (developed by Felder and Soloman) was accessed from the website (<http://www.ncsu.edu/felder-public/ILSpage.html>) and was translated into Indonesian. The number of student as respondent was 210 students. They were 50 students from each of 2nd, 3rd and 4th year, and 60 students from the final year, respectively. Student participation was voluntary, and students were identified and grouped according to their academic year. The student names and student numbers were not supplied. Completed questionnaires were analyzed and scored according to Felder's instruction and used to determine which one of the two learning styles within each domain was preferred by each student. Previous data (*unpublished data*) on the teaching styles of the faculty lecturers were used as comparison.

RESULTS

Among 210 students, 137 were active and 73 were reflective, 130 students were sensing and 80 were intuitive, 182 students were visual and 28 were verbal and 126 students were global and 84 were sequential learners, respectively (Figure 1). In all of the groups the number of students with active learning style was bigger than the students with reflective learning style. Similar condition was found also for students with sensing, visual and global learning styles which were more numerous than the students with intuitive, verbal and sequential learning styles, respectively. The percentages of students with active, sensing, visual and global learning styles from each group (academic year) are shown in Figures 2-5. Students with active learning style were 32 (64%) in the 2nd year, 30 (60%) in the 3rd year, 34 (68%) in the 4th year and 41 (68%) in the final year. Students with sensing learning style were 28 (56%) in the 2nd year, 29 (58%) in the 3rd year, 32 (64%) in the 4th year and 41 (68%) in the final year. Students with visual learning style were 42 (82%) in the 2nd year, 44 (88%) in the 3rd year, 45 (90%) in the 4th year, and 52 (87%) in the final year. Students with global learning style were 26 (52%) in the 2nd year, 28 (56%) in the 3rd year, 29 (58%) in the 3rd year and 43 (86%) in the final year. Percentage of students with major learning styles is shown in Figure 6.

DISCUSSION

According to Felder (1996) there are 4 models for student's learning styles, which are The Myers-Briggs Type Indicator (MBTI), Kolb's Learning Style Model, Herrmann Brain Dominance Instrument (HBDI) and Felder-Silverman Learning Style Model. In the Felder-Silverman Learning Model the students are classified as: *sensing learners* (concrete, practical, oriented toward facts and procedures) or *intuitive learners* (conceptual, innovative, oriented toward theories and meanings); *visual learners* (prefer visual representations of presented material-pictures, diagrams, flow charts) or *verbal learners* (prefer written and

spoken explanations); *inductive learners* (prefer presentations that proceed from the specific to the general) or *deductive learners* (prefer presentations that go from the general to the specific); *active learners* (learn by trying things out, working with others) or *reflective learners* (learn by thinking things through, working alone); *sequential learners* (linear, orderly, learn in small incremental steps) or *global learners* (holistic, systems thinkers, learn in large leaps).

The present study used the Felder-Silverman learning model and revealed that most of the students in the Faculty of Veterinary Medicine, Bogor Agricultural University (IPB) were visual, sensing, inductive, active and global learners (Figs. 1-5). Among these styles, the number of students with visual learning style was dominant in all of the groups (Fig. 6). These results might suggest that lectures using visual presentation such as (charts, pictures, video, films) are preferred by most of the students. In the global style (Fig. 5), the number of student was significantly larger in the group of final year student. In IPB, students of the final year have studied all of the veterinary subjects including pre-clinic, para-clinical and clinical subjects. They therefore might have ability to think more global or holistic on certain topics. The percentage of student with active learning (Fig. 2) was also relatively high in higher class (4th and final year). This might reflect that students of final year prefer to be involved in the practical or clinical activities. The present results are coincide with Coker (2000) and Stark (2003) who say that students in the clinical year need a more visual and practical learning.

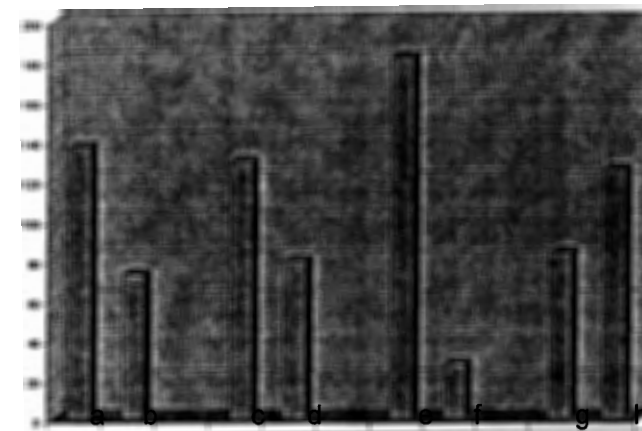


Figure 1. Frequency of students (n=210) according to different learning styles. (a) active 137, (b) reflective 73, (c) sensing 130, (d) intuitive 80, (e) visual 182, (f) verbal 28, (g) sequential 84, and (h) global 126.

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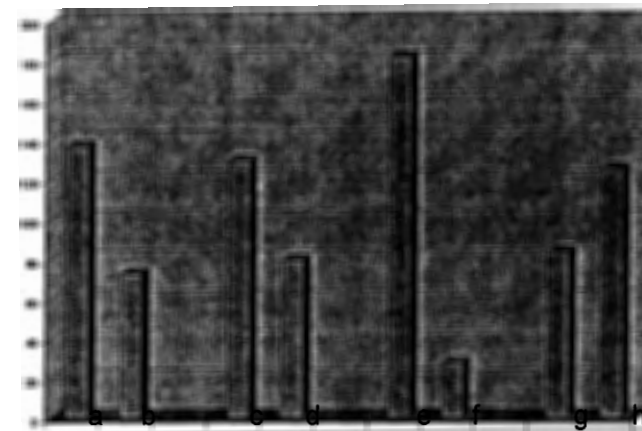


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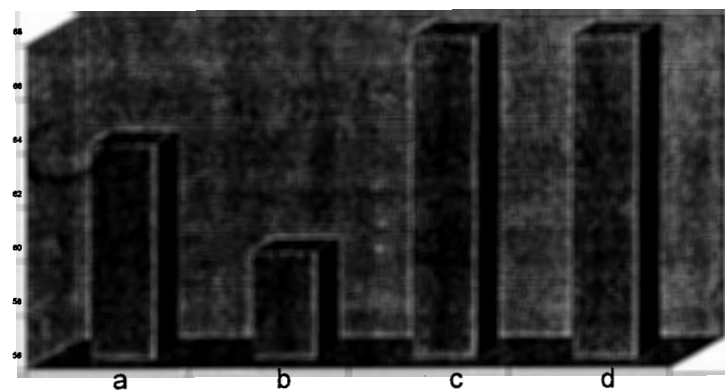


Figure 2. Frequency of students (in percent) with active learning styles among the different groups. (a) second year 64%, (b) third year 60%, (c) fourth year 68%, (d) final year 68%.

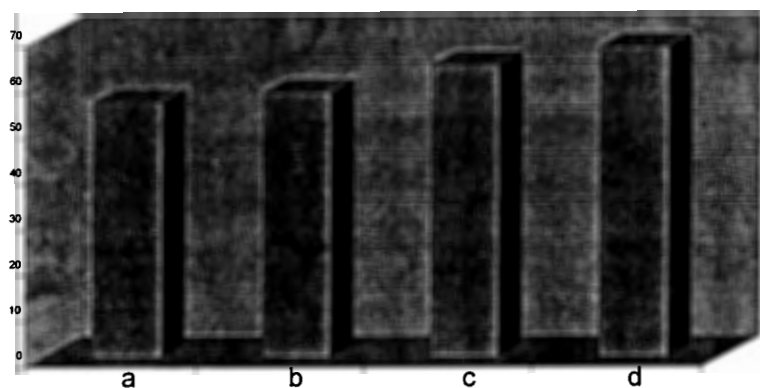


Figure 3. Frequency of students (in percent) with sensing learning styles among the different groups. (a) second year 56%, (b) third year 58%, (c) fourth year 64%, (d) final year 68%.

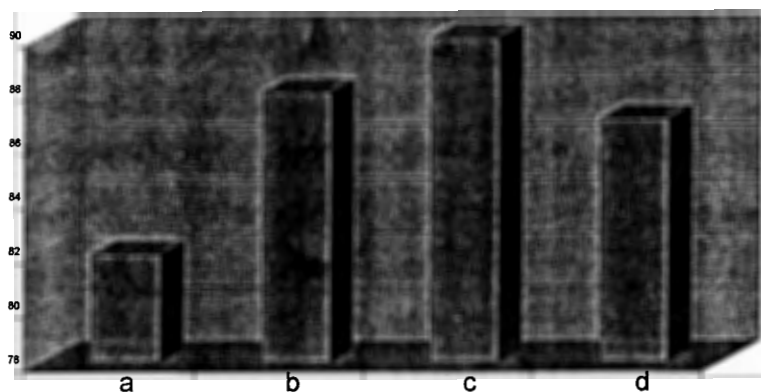


Figure 4. Frequency of students (in percent) with visual learning styles among the different groups. (a) second year 82%, (b) third year 88%, (c) fourth year 90%, (d) final year 87%.

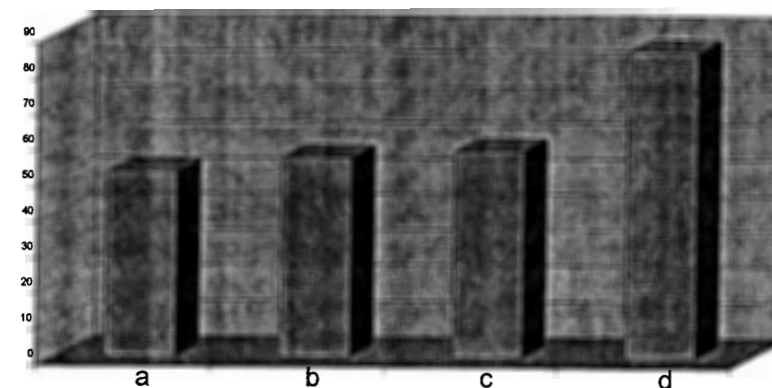


Figure 5. Frequency of students (in percent) with global learning styles among the different groups. (a) second year 52%, (b) third year 56%, (c) fourth year 58%, (d) final year 86%.

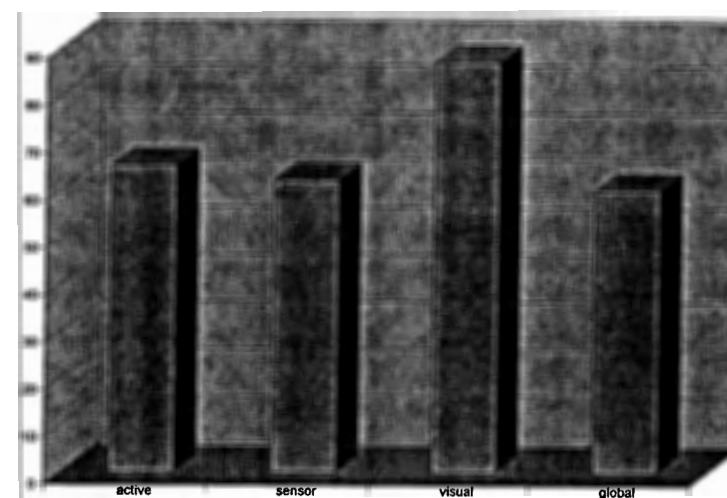


Figure 6. Frequency of students (in percent) according to major learning styles. The percentages of students with active, sensing, visual, and global learning styles were 65%, 62%, 87% and 60%, respectively.

Veterinary medical students should have ability in the clinical skill. This is the main target of the education in the final year. Appropriate learning and teaching styles are important to enhance the clinical skill of the students. In the final or clinical year, students have to be given opportunity to assist in the clinical work. This is highly demanded and prized by the students in the medical operating theatre (Lyon, 2004). In clinical classes, trust is important factor to give the students confidence in their ability to assist the clinical work. When the situation is appropriate, this will create a legitimate role for the students as peripheral participant (Lave and Wenger, 1991) with the potential for positive learning outcomes.

According to Dee et al. (2002) there is difference in the learning style between male and female students. In addition, differences in the learning styles are also shown among the students come from different region of the country (Hoover and Marshal, 1998). In the present

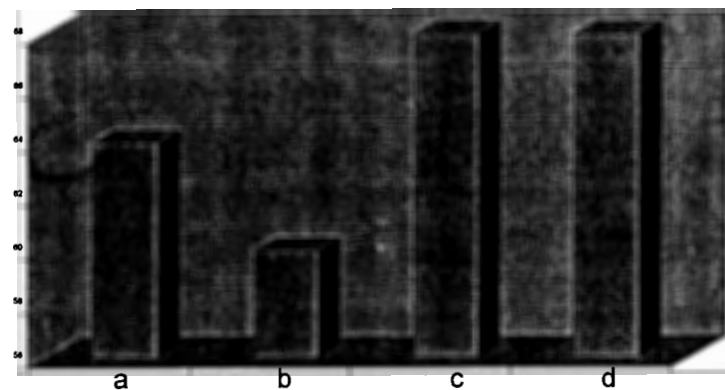


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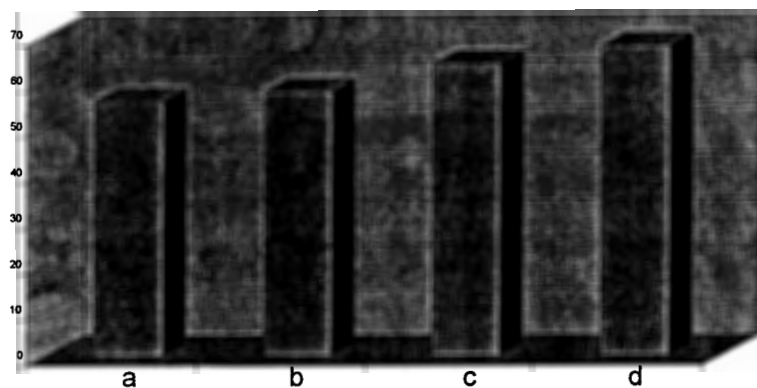


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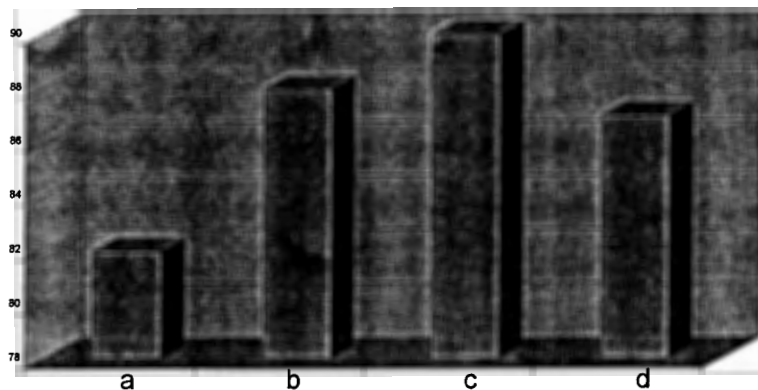


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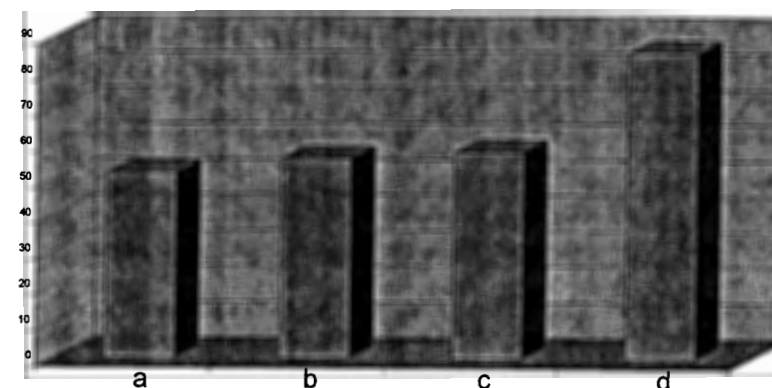


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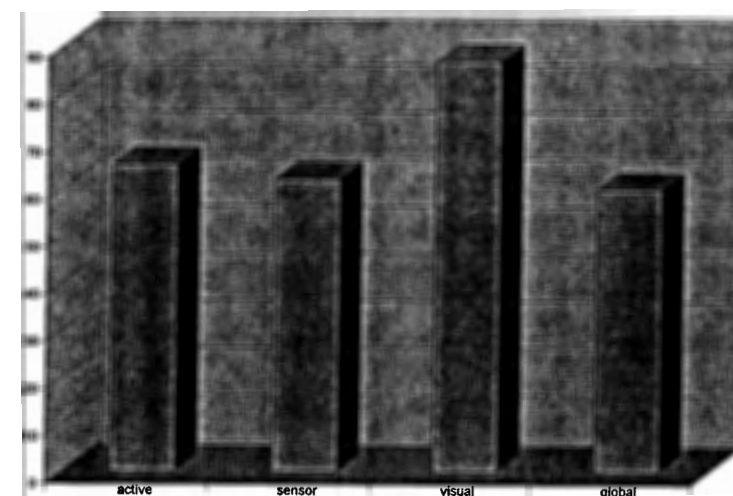


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The present results on the learning styles, however, mismatched with our previous data on the teaching styles, which were mostly auditory, abstract, deductive, passive and sequential (*unpublished data*). According to Felder and Silverman (1988) the mismatches between learning and teaching styles will effect to the students that they may become bored and inattentive in class, get poor result in the exams and discouraged to the subject or the curricula. Lecturers confronted by poor test results, unresponsive or hostile classes or poor attendance and drop out.

The students are most motivated and learn best when they are in the appropriate environment that causes them to realize why they should learn (Fischer and Schariff 1988). Learning approach is likely influenced by many factors rather than curriculum style, including teaching quality, type of assessment and learner characteristics such as personality type, age and previous works and experience (Guilford, 2005).

There are several teaching strategies have been proposed for different learning styles (Felder, 1996). For example teach theoretical material by first presenting phenomena and problems that relate to the theory will be good for sensor and global learners. Balance in conceptual information (intuitive) with concrete information (sensing). The extensive use of sketches, plots, schematics, vector diagrams, computer graphics, and physical demonstrations (visual) in addition to oral and written explanations and derivations (verbal) in lectures and readings. Provide the class for active student participation (active), and encourage or mandate cooperation on homework (every style category). Demonstrate the logical flow of individual course topics (sequential), but also point out connections between the current material and other relevant material in the same course, in other courses in the same discipline, in other disciplines, and in everyday experience (global). Above strategies might be considered when appropriate teaching methods are going to be developed in the Faculty of Veterinary Medicine of Bogor Agricultural University.

Each group of academic year showed difference in the learning styles although it was not significant among other. According to Coker (2000) such difference is caused by the difference in the focus and composition of the subjects within each class, and learning style can change according to this environmental setting. Therefore, teaching methods that may be good for one group may not be simply applied to the other.

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The present results on the learning styles, however, mismatched with our previous data on the teaching styles, which were mostly auditory, abstract, deductive, passive and sequential (*unpublished data*). According to Felder and Silverman (1988) the mismatches between learning and teaching styles will effect to the students that they may become bored and inattentive in class, get poor result in the exams and discouraged to the subject or the curricula. Lecturers confronted by poor test results, unresponsive or hostile classes or poor attendance and drop out.

The students are most motivated and learn best when they are in the appropriate environment that causes them to realize why they should learn (Fischer and Schariff 1988). Learning approach is likely influenced by many factors rather than curriculum style, including teaching quality, type of assessment and learner characteristics such as personality type, age and previous works and experience (Guilford, 2005).

There are several teaching strategies have been proposed for different learning styles (Felder, 1996). For example teach theoretical material by first presenting phenomena and problems that relate to the theory will be good for sensor and global learners. Balance in conceptual information (intuitive) with concrete information (sensing). The extensive use of sketches, plots, schematics, vector diagrams, computer graphics, and physical demonstrations (visual) in addition to oral and written explanations and derivations (verbal) in lectures and readings. Provide the class for active student participation (active), and encourage or mandate cooperation on homework (every style category). Demonstrate the logical flow of individual course topics (sequential), but also point out connections between the current material and other relevant material in the same course, in other courses in the same discipline, in other disciplines, and in everyday experience (global). Above strategies might be considered when appropriate teaching methods are going to be developed in the Faculty of Veterinary Medicine of Bogor Agricultural University.

Each group of academic year showed difference in the learning styles although it was not significant among other. According to Coker (2000) such difference is caused by the difference in the focus and composition of the subjects within each class, and learning style can change according to this environmental setting. Therefore, teaching methods that may be good for one group may not be simply applied to the other.

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