

MEDICAL EDUCATION

A Study of Students' Learning Styles in a Medical Institution in Pakistan

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ABSTRACT

Objectives: To determine the learning styles of medical students in a medical college in Pakistan and to match the learning styles of students with the instructional strategies in clinical classes.

Methods: The cross-sectional descriptive study involved medical students of the Islamic International Medical College (IIMC), in clinical classes. Both male and female students were administered a questionnaire based on Kolb's learning style inventory. Instructions to fill the questionnaire were given verbally to all students.

Results: Majority of students had the accommodators learning style (N=83, 54.6%) while convergers, divergers and assimilators were less in number. The learning scheme consists mainly of lecture based learning (42 hours per week) and case based learning (31 hours per week)

Conclusions: Majority of students of clinical classes of IIMC had the accommodator learning style, followed by converger, diverger, and assimilator learning styles. The

learning scheme of IIMC provided learning opportunities for all styles of learning and consisted of adequate instructional strategies. (Rawal Med J 2008;33:239-241).

Keywords: Learning Styles, Kolb's learning style inventory, Islamic International Medical College.

INTRODUCTION

The learners take in and process information in many different ways.¹ These are termed as learning styles. The learning style of a learner is the way he handles new information and experiences, and determines its outcomes. It has been observed that different learners have their own particular learning style, and if the method of information delivery to them conforms to their particular learning style they learn better.² Conformity of learning style with the instructional strategy, therefore, is likely to yield better learning outcomes.³ Disparity between learning style and instructional strategy may account for course dropouts, failures, and examination phobia of learners and faculty may misinterpret it as lack of motivation, disinterest of students and sometimes simply an IQ problem.⁴ Facilitators and supporters themselves may need guidance and training in how to identify, feedback and adapt learning to individual's styles.⁵

Whereas many theories of learning and learning styles have been proposed, Kolb's learning style inventory is the most commonly used model of learning.⁶ According to this inventory four learning styles have been recognized and a 12-stem questionnaire has been designed to classify learners into these four leaning styles. Learners have been classified into convergers, divergers, assimilators and accommodators depending on their responses to these standard questions. In present study, medical students of clinical classes were

categorized on the basis of their learning styles and a correlation was sought between their learning style and the type of instructions.

SUBJECTS AND METHODS

All students of clinical classes of IIMC, Rawalpindi participated in the study. Both male and female students were given a Kolb's Learning Style Inventory questionnaire to fill. The questionnaire consisted of 12 educational dialectical questions. Instructions to fill the questionnaire were given verbally at the start of a lecture. After the lecture, responses were collected.

Table 1. Different learning styles in clinical classes of IIMC. (n=152).

Accommodators	83	54.6%
Assimilators	16	10.5%
Convergers	33	21.7%
Divergers	20	13.2%

The teaching methodology was studied through direct information from the college and the faculty. Different teaching venues were visited and elaborate understanding of instructional strategies was developed. Time allocated for each of the specific learning sessions was noted for different levels of clinical classes.

RESULTS

A total of 152 students' responses were received. A great majority are accommodators. (N=83, 54.6%) (Table1). Theoretical aspects of different subjects were covered in conventional teaching strategies in a discipline-based environment. Lectures, presentations, group discussions, and interactive sessions were the principle modes of

delivery. Formative assessment sessions were at the end of each subject area. Case based study and problem-based teaching were used to cover most clinical subjects. The time duration of this study increased with increasing level of class. In 3rd year clinical sessions were given 7 hours per week while for 5th year class it was 15 hours per week.

Table 2. Teaching methodologies for clinical classes in IIMC, and the time allocated for them (hours per week).

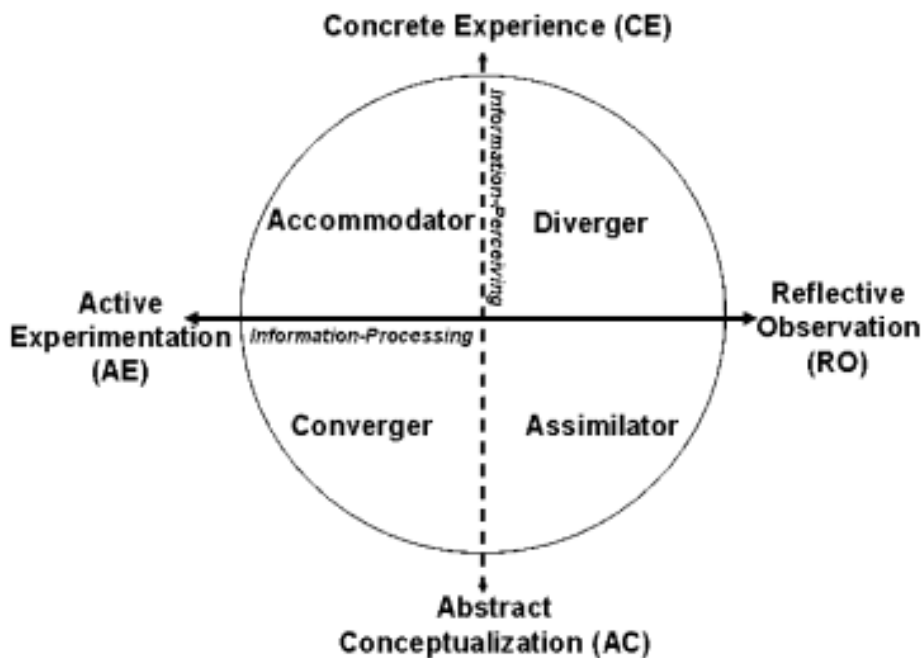
Teaching method	Lectures	Practicals	Hands on learning	Case based learning	Presentations	Small group discussions
3 rd year	13	4	-	7	-	4
4 th year	17	-	1	9	-	4
5 th year	12	-	1	15	2	-
Total	42	4	2	31	2	8

Group discussions, long case study, short case study in outpatient areas, case presentations, and scenario based interactive sessions were the principle modes of delivery (Table 2). 5th year students were given an opportunity to attend operating room for direct observation of operative procedures as well.

DISCUSSION

It is important to understand that an individual's learning style is stable as compared to adaptive instructional strategy.⁷ There are about 53 theories of learning and about 80 models of learning styles have been proposed.⁸ Most take into account the sensory modalities of information input as the determinant of learning style. Three learning styles have been recognized according to this model as visual, auditory and kinesthetic styles (the VAK model),¹⁰ to which is added the read-write style (the VARK model).¹²

Fig 1. David Kolb's model of learning styles.



The model proposed by David Kolb describes learning styles into four categories,¹² is one of the most widely used learning models¹³ and his learning style inventory is the most commonly used instrument for learning style appraisal.^{14,15} It takes into account not only sensory modalities (perception dimension) but also learner's behavioral and personal characteristics (processing dimension). In the perception dimension, the learners learn through two extremes of learning inputs, namely concrete experience, and abstract conceptualization. In processing dimension, the learners learn through active experimentation on one end and on the other through reflective observation. (Fig. 1) On the basis of these two dimensions four learning styles of convergers, divergers, assimilators and accommodators are proposed.¹⁶

Table 1. Learning activities that correspond to Kolb's learning processes (ref 17).

Concrete Experience	Reflective Observation	Abstract Conceptualization	Active Experimentation
Lecture Examples	Thought Questions	Lecture	Lecture Examples
Problem Sets	Brainstorming	Papers	Laboratories
Readings	Discussions	Analogies	Case Studies
Films	Logs	Text Readings	Homework
Simulations	Personal Journals	Projects	Projects
Laboratories		Model Building	Fieldwork
Observations		Model Critiques	
Field work			

Learners with different learning styles respond differently to different instructional approaches and the predominant mode of instructions favors a particular learning style compared to others.⁹ There is a relationship between learning styles and learning activities (Table 3).¹⁷ Our study showed that at IIMC, maximum time was allocated for lectures (42 hours per week), followed by case based learning (31 hours per week). Hands on learning and presentations had the smallest share of time each being 2 hours per week. The present learning scheme provided ample learning opportunities for abstract conceptualizers in the form of lecture-based learning. Active experimenters and concrete experiencers may find opportunity in case based learning in indoors and in outpatient setting. Our results indicate that the present learning scheme is quite suitable for assimilators, consisting mainly of lectures and theoretical learning. Case based learning in indoor wards and in outpatient areas suits the learning style of accommodators, which we found were highest in number at IIMC. Divergers happen to be the least privileged group of learners having smallest proportion of learning opportunities suitable for them in

the form of hands on learning (2 hours per week) and presentations and small group discussions (10 hours per week) In conclusion, a great majority of learners in IIMC clinical classes are accommodators; followed by convergers, divergers and assimilators in that order. The learning scheme of IIMC provides ample learning opportunities for accommodators in the form of lecture based learning and case based learning and is a reasonable learning scheme that corresponds to the learning styles of all learners.

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