

Gender Socialization and Learning Style Patterns of Secondary School Students

OTHMAN MOHAMED

Faculty of Educational Studies

Universiti Putra Malaysia

43400, Serdang, Selangor, Malaysia

Keywords: learning styles, socialization, secondary school

ABSTRAK

Kajian ini telah menentukan pola gaya pembelajaran di kalangan pelajar sekolah menengah dengan menggunakan teori pembelajaran berpengalaman Kolb (1984). Bilangan subjek seramai 274 telah dipilih secara rambang dari empat sekolah menengah di negeri Selangor dan Pahang, Malaysia. Hasil pola gaya pembelajaran pelajar telah dilakarkan menggunakan grid gaya pembelajaran Kolb (1984). Dapatan kajian menunjukkan terdapat perbezaan yang signifikan di antara genus ke atas skala domain Pengalaman Konkrit $t(272) = 2.42, p < .05$, dan skala domain Pemerhatian Refleksi $t(272) = -2.77, p < .05$. Tidak terdapat perbezaan yang signifikan ke atas skala domain Konsepsilisasi Abstrak dan Eksperimentasi Aktif. Dapatan kajian juga menunjukkan pelajar lelaki mirip ke arah tahap domain pengalaman konkrit dan pelajar perempuan pula mirip ke arah tahap domain pemerhatian refleksi. Perbezaan genus dalam domain konkrit dan refleksi adalah sealiran dengan tradisi proses sosialisasi genus.

ABSTRACT

The research study determined the learning style patterns of secondary school students using Kolb's (1984) experiential learning theory. The 274 subjects were randomly drawn from four secondary schools in the states of Selangor and Pahang in Malaysia. The resulting learning styles domain pattern of the students was plotted on Kolb's (1984) learning styles grid. The findings indicated a significant difference between gender for the concrete experience domain scale $t(272) = 2.42, p < .05$, and the reflective observation domain scale $t(272) = -2.77, p < .05$. No significant differences were detected on the abstract conceptualization and Active Experimentation domain scales. The research study also found male students were oriented towards the concrete experience domain stage and female students toward the reflective observation domain stage. The gender differences within the concrete and reflective domain were consistent with the traditional gender socialization process.

INTRODUCTION

Individuals need adequate knowledge in order to meet the challenges of a fast changing society sustained by high economic growth. Consequently, the strong socio-economic growth in Malaysia is posing a demanding challenge to educationists to enhance teaching their students effective learning methods. As an important element in the teaching-learning process, teachers and educators need to recognize and understand the learning style of their students. Therefore, there is a need for a system of assisting students to monitor and manage their learning style.

Kolb (1984) described learning as a social process along the two dimensions of grasping information and transforming information. Grasping information is realized through concrete experience or through abstract conceptualization. Concrete experience involves feelings whereas abstract conceptualization emphasizes thinking as the main domain. Transformation of information occurs through the process of reflective observation or through active experimentation.

Learning from the reflective domain involves an internalization process whereas learning from the active experimentation domain emphasizes

an active external effort towards participatory experience. Hence from these domains, Kolb (1984) developed four specific sequences in the learning cycle process: (1), concrete experience (2), reflective observation (3), abstract conceptualization (4), active experimentation. The resulting four learning styles derived from the learning cycle domain are the divergers, assimilators, convergers, and the accommodators.

Primarily, divergers are inclined towards imaginative ability and awareness of meaning and values. Such a Gestalt emphasizes an adaptation by observation rather than action. Assimilators are inclined towards inductive reasoning and assume an ability of understanding and generating an integrated explanation of theoretical models. Convergers are strong on problem solving, decision making and the practical application of ideas. The accommodative learning style person adapts well to changing situations and has the strength to do things, carry out plans and be involved in new experiences (Kolb 1984).

Kolb's theory also allows for the differing patterns of development resulting from male and female socialization (Kolb 1984; McBer and Company 1985). This early learning development transforms into specialized orientation during the adult years. Chodorow (1978) indicated that girls are readily attached to their mother in their early socialization process. The socialization of women tends to be more personal and caring versus that of the men, who tend to be impersonal and logical. Boy's identity formation is characterized by individualization from the mother. It is apparent that both boys and girls develop certain conceptual stimuli towards the parent in their socialization learning process (Bandura 1977).

Purpose of the Study

The purpose of the research study was to determine the learning style patterns of secondary school students using Kolb's (1984) experiential learning theory. The study also investigated gender differences in regard to the learning styles of the students.

In this regard, the study sought to address the secondary school students' learning styles with the following research questions: What is the learning style domain pattern of the secondary school students? Are there gender differences in the learning styles domain stages

1) concrete experience; 2) reflective observation; 3) abstract conceptualization; and 4) active exploration of the secondary school students? Are there gender differences of learning styles among the secondary school students?

METHODOLOGY

Subjects

The research design in the study utilizing the *ex post facto* determination presumed the existing conditional criteria in the variables of choice within the population. The subjects were drawn from four secondary schools in the states of Selangor and Pahang in Malaysia, selected randomly from a listing of schools in the two states based on its rural or urban cluster setting. The n-size of 274 with the subgroup count for gender met the power analysis requirement of .8 with alpha set at .05 for analysis of comparison between the means of the variables in the research study, thus ensuring a reduction of Type II error in the study as determined by Cohen (1992). The subgroup counts were 121 males (44.2%) and 153 females (55.8%) with a mean age of 16.2 years. The higher number of female students was consistent with the population pattern of adolescents in the country.

Procedure and Instrumentation

The students were administered the Kolb's Learning Styles Inventory (LSI) (Kolb 1984), and the demographic questionnaire at the specific secondary schools in the study. For this purpose, the LSI was translated into Malay by the researcher and the authenticity of its figurative conceptual meanings were verified by three experts (two university educational psychologists and a linguist).

The LSI is an inventory measuring the differences in learning styles along two dimensions. The completed inventory was collected and the data subsequently computed to provide the students learning styles domain stages pattern along the abstract-concrete (grasping) and active-reflective (transforming) dimensions. Diagrammatically, the domain stages pattern is shown in Fig. 1. The LSI contains 12 sets of four responses indicating an individual's ranking inclination of how best the responses characterize the individual's learning style. A numerical response of 1 represents the least characteristic of the individual's learning style

domain, while a numerical response of 4 indicates the most characteristic learning style domain.

The four stages of the learning cycle domain scale scores were computed. Subsequently, two additional scores used as the intersect for the subjects learning style grid were computed. The scores were obtained by subtracting the concrete experience scores from the abstract conceptualization scores and the reflective observation scores from the active experimentation scores. These scores determined the placement of the subjects' learning style quadrant grid either as divergers, assimilators, convergers or accommodators (Fig. 2).

Several authors have reported the reliability of the LSI, which has a high internal consistency, with Chronbach's alpha coefficients ranging between .73 and .88 for the scales (N=268) (McBer and Company (1985)). In the research study, the reliability coefficients of the LSI Malay

version vary between .53 and .63 (N=274). This internal consistency was modest. Nevertheless, the 12 items for each scale in the instrument were maintained to ensure consistency with the original English version.

RESULTS

The overall learning style domain pattern of the secondary school students was plotted from the mean identified by the various domain scores of the LSI. The mean for the concrete experience was 26.75 with SD of 5.59; reflective observation = 33.15, SD of 5.46; abstract conceptualization = 30.47, SD of 4.86; and active experimentation = 29.7, SD of 4.92. The resulting kite-like learning styles domain pattern of the students was plotted on Kolb's learning styles grid (Kolb 1984) and is shown in Fig. 1.

A t-test analysis were conducted to discern differences between the domain scales of the

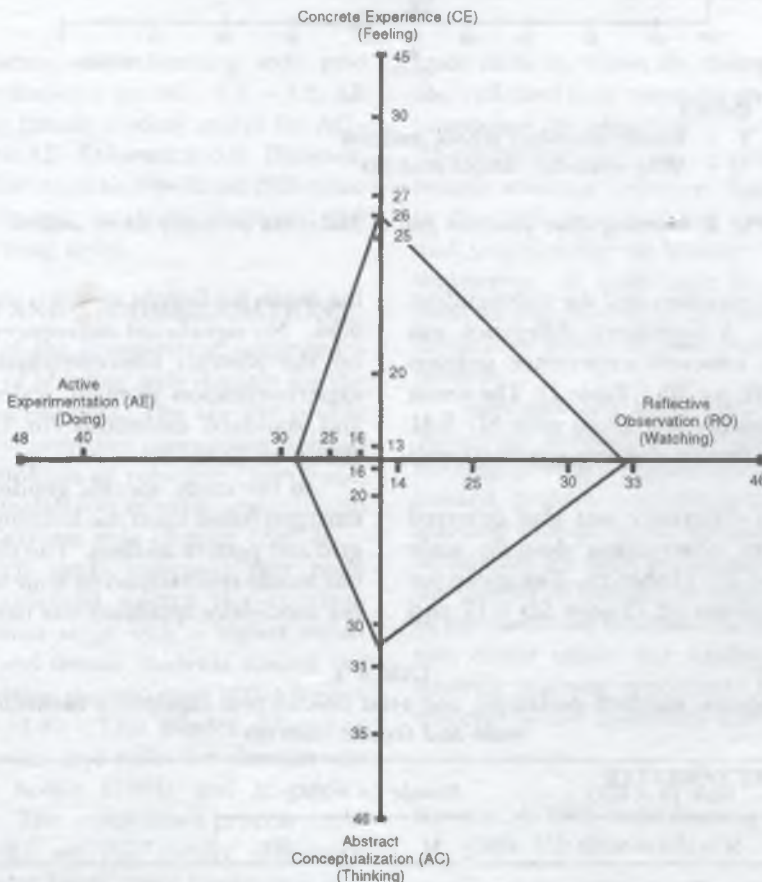
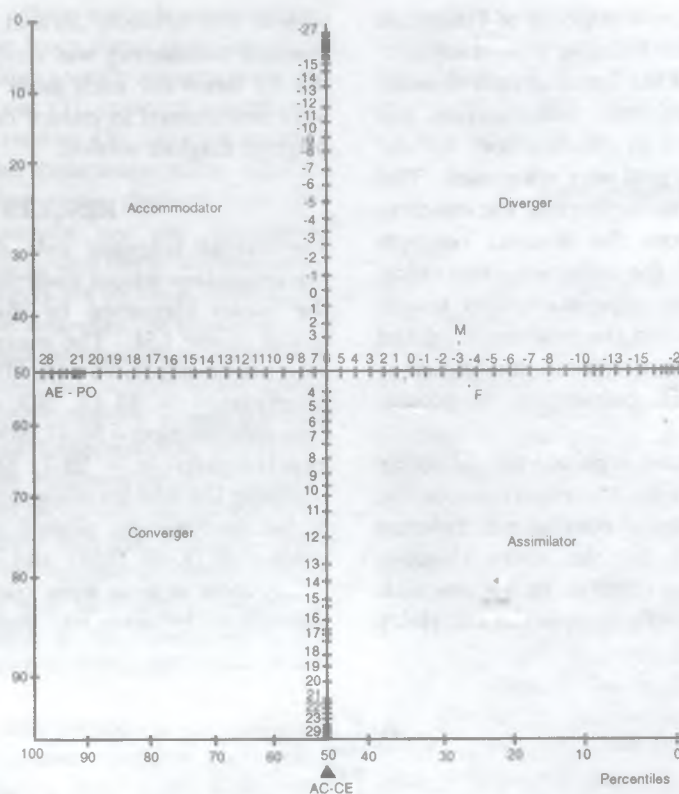


Fig. 1. Learning styles domain of Malaysian secondary school students



INDEX

- F = female secondary school students
- M = Male secondary school students

Fig. 2. Learning styles quadrant grid of Malaysian secondary school students

LSI as dependent variables and the independent variable gender. A significant difference was detected for the concrete experience domain scale $t(272) = 2.42, p < .05$ (Table 1). The mean for the male students was 27.66 with SD 5.41 and the mean for female students was 26.02 with SD 5.65.

A significant difference was also detected for the reflective observation domain scale $t(272) = -2.77, p < .05$ (Table 2). The mean for the male students was 32.13 with SD 5.17 and

the mean for female students was 33.95 with SD 5.56. No significant differences were detected on the abstract conceptualization and active experimentation domain scales. The means and standard deviations for these scales are shown in Table 3.

In the study, specific gender learning styles emerged based upon the learning styles quadrant grid and pattern analysis. The diverger quadrant was mostly represented by male students whereas the assimilator quadrant was mostly represented

TABLE 1
Means, standard deviations, and t-test on concrete experience between male and female students

Male (n = 121)		Female (n = 153)		t	p
M	SD	M	SD		
27.66	5.41	26.02	5.65	2.42	.016

TABLE 2
Means, standard deviations, and t-test on reflective observation
between male and female students

Male (n = 121)		Female (n = 153)		t	p
M	SD	M	SD		
32.13	5.17	33.95	5.65	-2.77	.006

TABLE 3
Means and standard deviations of learning styles domains
for male and female students

Domain	Male (n=121)		Female (n=153)	
	Mean	SD	Mean	SD
Concrete experience (CE)	27.66	5.41	26.02	5.65
Reflective observation (RO)	32.13	5.17	33.95	5.56
Abstract conceptualization (AC)	30.87	5.13	30.16	4.62
Active experimentation (AE)	29.33	5.09	29.99	4.77

by female students. The learning style grid scores for male students are AC - CE = 3.2; AE - RO = -2.8. The female student scores for AC - CE = 4.1 and their AE - RO score is -3.9. However, a t-test analysis discerned no significant difference for the two genders on both divergers and assimilators learning styles.

DISCUSSION AND RECOMMENDATIONS

Overall results of the investigation suggested a specific pattern of learning style domain for the secondary school students. The kite-like profile had a bias on the reflective observation domain with average emphasis of concrete experience, abstract conceptualization domain and minimal active experimentation style domain (*Fig. 1*).

The research study indicated that male students were oriented toward the concrete experience domain stage with a higher mean value of 27.66 and female students toward the reflective observation domain stage with a higher mean value of 33.95. This gender difference within the concrete and reflective domain was consistent with Kolb's (1984) and Magolda's (1989) findings. The socialization process could have an influence on this gender difference indicating males as being more impersonal and logical in their learning. The positioning of the

male students within the diverger quadrant grid also reflected their emphasis on learning through adaptation by observation rather than action. The reflective observation inclination among the female students indicated that female students in the study were inclined toward internalizing and emphasizing on feelings in their learning dimension. As assimilative learners, the female students also assume an inductive reasoning and integrative ability of understanding theoretical models.

Although the study was exploratory on a Malaysian student population, the research findings provided support for established trends toward gender socialization differences in learning style patterns. Innovations in teaching techniques for skills preparation might optimize the transfer of learning strategies and approaches in the classroom situation. Academic counsellors too, could utilize the findings and moderate strategic learning procedures for the benefit of students in the Malaysian school setting.

REFERENCES

- BANDURA, A. 1977. *Social Learning Theory*. Englewood Cliffs, N.J: Prentice-Hall.
- CHODOROW, N. 1978. *The Reproduction of Mothering*. Berkeley, CA: University of California.

COHEN, J. 1992. A power primer. *Psychological Bulletin* 112(1): 155-159.

KOLB, D.A. 1984. *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, New Jersey: Prentice-Hall.

MAGOLDA, M.B.B. 1989. Gender differences in cognitive development: An analysis of cognitive

complexity and learning styles. *Journal of College Student Development* 30: 213-220.

McBER and Company. 1985. *Learning Styles Inventory 1985, Technical Specifications*. Boston: Author.

(Received 29 April 1995)

TABLE 1

Means and Standard Deviations for the Study

Variable	Mean	SD	Variable	Mean	SD
Age	20.5	1.2	Learning Style	1.5	0.5
Gender	1.0	0.0	Complexity	2.5	0.5
Grade	1.0	0.0	Learning Style	1.5	0.5
Learning Style	1.5	0.5	Complexity	2.5	0.5
Complexity	2.5	0.5	Learning Style	1.5	0.5
Learning Style	1.5	0.5	Complexity	2.5	0.5

The study was designed to investigate the relationship between learning styles and cognitive complexity. The sample consisted of 100 college students, 50 males and 50 females, who were enrolled in a first-year psychology course. The data were analyzed using a 2x2x2 factorial ANOVA with gender, learning style, and complexity as independent variables. The dependent variables were the scores on the Learning Styles Inventory (LSI) and the Cognitive Complexity Scale (CCS). The results showed that there were significant main effects for learning style and complexity, and a significant interaction effect between learning style and complexity. Specifically, students with a high learning style score (1.5) had higher scores on the CCS (2.5) compared to students with a low learning style score (1.0) who had lower scores on the CCS (2.0). This suggests that students who are more experiential learners tend to have higher cognitive complexity. The interaction effect indicated that the relationship between learning style and complexity was not uniform across all students, suggesting that other factors may also influence cognitive development.

The results of the study support the idea that learning style is a significant factor in cognitive development. The findings suggest that students who are more experiential learners (high learning style) tend to have higher cognitive complexity (high CCS) compared to students who are more abstract learners (low learning style) who have lower cognitive complexity (low CCS). This relationship is consistent with Kolb's (1984) theory of experiential learning, which posits that learning is a process that involves the transformation of experience into knowledge. The study also found a significant interaction effect between learning style and complexity, indicating that the relationship between these two variables is not uniform across all students. This suggests that other factors, such as individual differences and environmental influences, may also play a role in cognitive development. The study has implications for educators and researchers interested in understanding the factors that influence cognitive development and learning styles. Future research should explore the underlying mechanisms of this relationship and investigate the role of other variables in cognitive development.