

## Exploring English Language Learning Styles of Malay Students at the International Islamic University Malaysia

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**Abstract:** This study investigates the learning styles of Malay students at the International Islamic University Malaysia. Participants in this research were 153 undergraduate Malaysian students of Malay ethnicity enrolled in two degree programmes at the university. Their learning styles were investigated through an analysis of their responses to Learning Styles Indicator (LSI) which had questions grouped under three modalities: Project Orientation, Group Activity Orientation and Individual Activity Orientation. This instrument has been validated in several studies. The study was mainly motivated by concerns about the standards of English of graduates of Malaysian universities. Results of the current study suggest Group Orientation as the preferred learning style for students from both the English Language and Literature and the Economics and Management Sciences compared to the other two orientations. Language proficiency is poorer in explaining learning orientations compared to the language spoken at home by the students. Generally, gender does not help differentiate student preferences of learning orientations. These results also suggest strong cultural influences on the students' learning styles. The main implication of the study is that there is a need for language educators to adjust their instructional style to suit the learning styles of the students.

**Key words:** Learning styles • Project orientation • Group activity orientation • Individual activity orientation

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### INTRODUCTION

Learning styles refers to an individual's inherent preferences in the learning process [1]. An understanding of students' learning styles can enable language educators to provide the best possible help to the students. An understanding of learning styles of students will enable language educators to adjust their instructional style to the needs of the students.

When students are involved in learning and studying, whether they are learning language or any content subject at any level in their education, they inevitably bring with them their own learning styles. They may have acquired their learning styles from their respective cultures, families, or environment. These learning styles that they bring with them to the classrooms may or may not be appropriate to the learning tasks or the instructional style of the teachers. This mismatch may have negative effects in mastering content

or language skills. It is, therefore, necessary that the students understand their own learning styles so that they can derive optimum BENLeFits from their learning. It is also necessary for teachers to understand the learning styles of the students so that they can adjust their own teaching style to match those of the students.

A teacher can help a student learn effectively by having knowledge of learning strategies and learning styles. Learning styles are related to cognitive styles which refer to the general way we learn things and the way we begin to work or do something, both of which appear to depend on the relationship between personality and cognition. This relationship is referred to as cognitive style [2]. According to Brown [2], when cognitive styles are related to an educational context and where affective and physiological factors are involved, they are generally referred to as learning style. Learning styles, learning strategies and the affective domain are interrelated and cannot be separated [3].

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Learning styles are characteristics internal to the learner and learners often do not use their learning styles consciously to understand new information. Students may continue to apply their own preferred styles of learning in spite of the varied teaching styles and the classroom environment although they may add on to the repertoire of styles they already possess. Each individual has certain inherent tendencies toward particular learning styles but these styles are influenced by an individual's culture, personal experiences, maturation and development.

A number of studies have been conducted during the last three decades on how students learn (e.g. [4]). Research on perceptual learning styles have mainly relied on self-reporting questionnaires by which students indicate their preferred learning styles. One such study by Reid [4], which was based on a survey, made distinctions between four perceptual learning modalities: 1) visual learning 2) auditory learning 3) kinesthetic learning and 4) tactile learning. Reid [5] divides learning styles into three major categories: cognitive learning styles, sensory learning styles and personality learning styles.

Research by Reid [4] indicates that students who are considered successful show multistyle preferences and they adapt their learning styles as they experiment and practise in the course of their learning. Reid's study on ESL students showed that they strongly preferred kinesthetic and tactile learning styles. Most of the students showed a negative preference for learning in groups. Reid concluded that there was a significant difference between the learning style preferences between nonnative speakers and native speakers. He also found that students from different language backgrounds differed in their language preferences.

Research on learning styles among Asian students are few and there are even fewer studies on Malaysian students which is the focus of this research. To the researchers' knowledge none has been conducted using the Learning Style Indicator (LSI) which is quite a recent learning style measuring instrument. Reid's [6] Perceptual Learning Styles Preference Questionnaire (PLSPQ) has been widely used in ESL/EFL research to investigate learning styles. Due to the concerns with the reliability and validity of the PLSPQ, the LSI was devised based on the PLSPQ. The LSI was chosen as an instrument as it has been validated in several studies.

Two of the studies on Asian students were conducted by Wong [7]. He conducted a survey with 78 First Year to Fourth Year Asian international

undergraduate students undergoing a range of programs and courses at a South Australian University to determine their perspective of quality in higher education. The study sought to highlight the initial problems faced by Asian international students in terms of learning styles and how they strove to overcome these difficulties through discussions and practice. The results of both the studies by Wong [8] and Wong [7] revealed that the majority of Asian international students would prefer a more student centered style of learning.

Abdolmehdi Riazi and Mohammad Javad Riasati [9] investigated the language learning preferences of Iranian EFL students and the extent of teachers' awareness of them. The findings revealed that most of the learners in the study seemed to favour a communicative approach to perfecting their language skills by working in pairs/groups, tending to be actively engaged in classroom discussions, practising English by talking to their peers and having interaction with other people. Studies by Spratt [10] and Kavaliauskiene [11] also reported similar results.

M.Z. Kamsah, M.S. Abu and A.K. Idris [12] investigated the learning styles among Malaysian engineering students at Universiti Teknologi Malaysia by administering the Index of Learning Styles, a self-scoring instrument that assesses preferences on the Sensing/Intuiting, Visual/Verbal, Active/Reflective and Sequential/Global dimensions developed by Felder and Silverman [13]. The findings revealed that the majority of the respondents showed fairly balanced or moderate preference on active learning. The same trend was seen for sensing and intuition but there were high percentages on moderate and strong preferences on visual over verbal for all the groups. Nearly equal number of respondents had the same preference on either sequential or global learning style.

One of the few studies that used the LSI was conducted by Wintergerst, DeCapua and Marilyn [14]. They applied LSI on three groups of language learners: Russian EFL students, Russian ESL students and Asian (specifically, Chinese, Korean and Japanese) ESL students to identify their learning style preferences. The results of their study indicated that the students learned English under three modalities: Project Orientation, Group Activity Orientation and Individual Activity Orientation. The findings further revealed that these three groups of language learners clearly preferred group activity above individual work, with the Russian EFL and Asian ESL students preferring group work and project work.

The outcome of the study also suggested that this instrument held promise as a viable assessment tool for determining selected learning styles of ESL/EFL students and has sound implications for classroom teachers. The researchers also suggested that there were at least some cultural influences. The results of this study showed that the LSI is a potentially useful diagnostic tool for assessing selected learning styles of ESL/EFL students.

Studies have also found relationship between culture and learning style preferences (e.g. Oxford and Anderson, [15]; Oxford and Green, [16]). Oxford, Hollaway and Murillo [17] suggest cultural influences on the learning styles of learners of a given culture.

Another study by Seyim Inal [18] was conducted to investigate Turkish students' learning style preferences in English language teaching departments with respect to gender and age and to determine if there was a relationship between achievement and learning style preferences. In this study the LSI was administered to 249 English teacher trainees. Results of the study indicate Turkish students were mostly project-oriented learners and they learned best when they were involved in 'hands-on' activities or when they worked with materials. The study also revealed that gender varied according to the three modalities.

This study investigates the learning styles of Malay students at the International Islamic University Malaysia. Participants in this research were 153 undergraduate Malaysian students of Malay ethnicity enrolled in Bachelor of English language programme at the IIUM and students taking English for Occupational Courses from the faculty of Economics and Management Sciences, International Islamic University Malaysia (IIUM). Their learning styles were investigated through an analysis of their responses to Learning Styles Indicator (LSI) (Wintergerst and DeCapua, [19]) which had questions grouped under three modalities: Project Orientation, Group Activity Orientation and Individual Activity Orientation. This instrument has been validated in several studies. The study also investigated whether there were cultural influences in their learning styles. The study was mainly motivated by concerns, which have often been expressed by the private and the public sectors in Malaysia, about the standards of English of graduates of Malaysian universities. These concerns have also been expressed by the authorities at the IIUM, one of the few universities in Malaysia using English as the medium of instruction. A task force was established by the IIUM to look into these concerns which resulted in

recommendations that, among others, pertained to the English language curriculum, language teaching methodology, the language input of English language educators and the language environment for the students.

**Research Objective/Questions:** Our study investigates the learning styles of ESL students by analyzing their responses to Learning Styles Indicator (LSI) questionnaire (see Appendix B for complete LSI text). The study focuses on mainly Malay-speaking undergraduate students at the International Islamic University Malaysia.

We have formulated a number of pertinent research questions:

Question

- What learning styles emerge from responses to Learning Styles Indicator (LSI)?

Question

- How do they learn English in terms of the three orientations?
- Are there differences in styles between students of different proficiency levels based on the results of standard test scores (MUET)?
- Are there differences in styles between students of different proficiency levels based on self-rating proficiency?
- Are there differences in styles between students of different proficiency levels based on language spoken at home (Malay, English, Both Malay and English)?

Question

- Are there differences in learning styles between males and females?
- Are there differences in learning styles between degree programs?

**Respondents:** One hundred and fifty-three language learners (118 females and 35 males) from the faculty of Islamic Revealed Knowledge and Human Sciences (IRKHS) and the faculty of Economics and Management (ENMS), International Islamic University Malaysia (IIUM) took part in the study. The respondents comprised primarily Malaysians of Malay ethnicity enrolled in Bachelor of English Studies (BENL) and Bachelor of Economics and Management (ENMS) programs who were taking English for Occupational Courses. Both of the

groups possessed advanced proficiencies in English. The BENL students were in the second year, while the ENMS students were in their last semester of their 4-year program. The ages of the participants ranged from 20 to 24.

**Instrument:** The instrument used in this study was a 23-item Learning Styles Indicator (LSI) questionnaire (Wintergerst and DeCapua, [19]). The LSI is based on Reid's [6] PLSPQ and has been widely used in ESL/EFL research to investigate learning styles. Due to the concerns with the reliability and validity of the PLSPQ, the LSI was devised based on the PLSPQ. The LSI was chosen as an instrument as it has been validated in several studies. The instrument administered used Likert-like scale, 1 through 4 and also included background questions. It adopted the same scale, i.e. 1 to represent *Always*, 2 *Very often*, 3 *Sometimes* and 4 *Never*.

The three learning orientations and their respective variables are shown below:

- Project Orientation (11 variables; S2, S3, S4, S7, S10, S13, S15, S16, S19, S20, S23)
- Group Activity Orientation (5 variables; S1, S6, S11, S18, S21)
- Individual Activity Orientation (7 variables; S5, S8 S9, S12, S14, S17 S22).

**Procedures for Data Collection and Analysis:** The questionnaire was administered and collected during class sessions. The data obtained through the questionnaire was analyzed using Cronbach alpha for reliability, t-tests and analysis of variance (ANOVA) using the SPSS Version 12.

## RESULTS

Reliability measures using Cronbach alphas for the three orientations were higher for BENL respondents but became lower when their data were aggregated with ENMS respondents. The corresponding coefficients for the orientations are shown here: Project orientation (.872, .805), Group activity orientation (.867, .804) and Individual activity orientation (.777, .657). The results show that the variables tend to improve their reliability to BENL compared to ENMS respondents.

Majority of the respondents is female (77.1%). BENL (79.7%) respondents outnumbered their ENMS (20.3%) peers. Almost all of the respondents (94.1%) are

Table 1: Background of Respondents

	Frequency	Percent	
Gender	Male	35	22.9%
	Female	118	77.1%
Age 20-22			88.8%
Degree program	BENL	122	79.7%
	ENMS	32	20.3%
Malay as native language		144	94.1%
Language spoken at home	Malay English	96	62.7%
	Malay and	4	2.6%
	English Other	40	26.1%
		12	7.8%
Studying English in Malaysia	11-16 years		
	151-65 (13+52)	86	66.2%
Studying English in own country	11-16 years	86	66.2%
English proficiency	TOEFL	3	2.0%
	IELTS MUET	1	0.7%
		146	97.3%
English as academic major		127	83.0%
School's language of instruction	Malay English	141	92.8%
	Other	5	3.3%
		6	3.9%

Malaysian Malays and approximately sixty percent (62.75) use Malay as their main language of communication (62.7%). About a quarter of the respondents use both Malay and English (26/1%) at home. Background of the respondents (N = 153) is summarized in Table 1.

Analysis of the findings is presented according to research questions.

### QUESTION 1

- What learning styles emerge from responses to Learning Styles Indicator (LSI)?

The grand means were computed by pooling together all the variables under each learning style orientation. Results reveal that the students in the sample prefer Project Orientation (PO) (mean 2.66), followed by Individual Orientation (IO) (mean 2.99) and Group Orientation (GO) (mean 3.60) as their learning styles (See Table 2).

Detailed analysis for each of the learning orientations will be discussed under analysis of Question 2.

### QUESTION 2

- How do they learn English in terms of the three orientations?

Table 2: Grand Means for Three Learning Styles

	Project orientation	Group orientation	Individual orientation
Rank	3	1	2
Aggregated responses	1679	764	1071
Mean	3.00	2.66	2.99
Std. Deviation	.798	.852	.835

Scale: 1 Always 2 Very often 3 Sometimes 4 Never

Table 3a: ANOVA Learning Styles \* Language Spoken at Home

Learning Styles	Proficiency (MUET)	Proficiency (Self-rating)	Language Spoken at Home
Project Orientation	Building something	No significance	Participating in related activities <i>F statistic 2.941 3 df p=.035</i>
			Role playing <i>F statistic 5.062 3 df p=.002</i>
Group Orientation	No significance	No significance	Working with classmates <i>F statistic 4.739 3 df p=.000</i>
			Working with others in class <i>F statistic 3.139 3 df p=.027</i>
Individual Orientation	No significance	No significance	Working by myself <i>F statistic 5.883 3 df p=.046</i>
			Learning by reading <i>F statistic 4.040 3 df p=.009</i>

Scale: 1 Always 2 Very often 3 Sometimes 4 Never

Table 3b: ANOVA Learning Styles by Language Spoken at Home and Proficiency

		Sum of Squares	df	Mean Square	F	Sig.	
Project Orientation	<i>Language Spoken at Home</i>						
	Participating in related activities	Between Groups	16.498	3	5.499	2.941	.035
		Within Groups	274.839	147	1.870		
		Total	291.338	150			
Role playing	Between Groups	24.778	3	8.259	5.062	.002	
		Within Groups	239.858	147	1.632		
		Total	264.636	150			
	<i>Muet Proficiency</i>						
Building something	Between Groups	19.451	7	2.779	2.742	.011	
		Within Groups	142.912	141	1.014		
		Total	162.362	148			
	<i>Self-reported</i>						
<i>Proficiency</i>							
NS							
Group Orientation	<i>Language Spoken at Home</i>						
	Working with classmates	Between Groups	14.217	3	4.739	6.327	.000
		Within Groups	110.101	147	.749		
		Total	124.318	150			
Working with others in class	Between Groups	19.763	3	6.588	3.139	.027	
		Within Groups	310.631	148	2.099		
		Total	330.395	151			
	<i>Muet Proficiency</i>						
NS							
<i>Self-reported</i>							
<i>Proficiency</i>							
NS							
Individual Orientation	<i>Language Spoken at Home</i>						
	Working by myself	Between Groups	17.648	3	5.883	2.734	.046
		Within Groups	318.431	148	2.152		
		Total	336.079	151			
Learning by reading	Between Groups	25.523	3	8.508	4.040	.009	
	Within Groups	311.681	148	2.106			
	Total	337.204	151				
<i>Individual Orientation</i>							
<i>Muet Proficiency</i>							
NS							
<i>Individual Orientation</i>							
<i>Self-reported Proficiency</i>							
NS							

Scale: 1 Always 2 Very often 3 Sometimes 4 Never

- Are there differences in styles between students of different proficiency levels based on the results of standard test scores (MUET)?
- Are there differences in styles between students of different proficiency levels based on self-rating proficiency?
- Are there differences in styles between students of different proficiency levels based on language spoken at home (Malay, English, Both Malay and English)?

Language proficiency is poorer in explaining learning orientations compared to the language spoken at home by the students. ANOVA results (Table 3a) show that language proficiency (MUET) is able to explain the difference in learning styles only for project orientation, but not for the other two orientations (i.e., group and individual orientations). Significant variables and supporting details for Table 3a are shown in Table 3b. It should be noted that self-rating proficiency does not show differences in learning orientations.

QUESTION 3

- Are there differences in learning styles between males and females?
- Are there differences in learning styles between degree programs?

Gender does not help differentiate student preferences of learning orientations, except for two variables under Individual Orientation, i.e. “reading instructions” (male slightly more favorable than female) and “reading the instructions” (female more favorable

than male). Student responses toward the two variables suggest their tendency not to practice the method, as reflected through means of 3.00 and above (scale: 3 Sometimes, 4 Never) (Table 4a).

Unlike gender, degree programs (BENL and ENMS) help distinguish more aspects of student learning orientations, for instance, Individual Orientation. BENL students tend not to use the orientation as much as their ENMS counterparts as reflected through their higher means compared to the latter. According to the scale, the higher the means the higher the tendency not to use the method, BENL students tend not to read the textbooks (2.67 vs. 2.06) and work less independently (2.84 vs. 2.16) their ENMS peers (Table 4b).

Unlike the previous result, degree programs show that BENL students tend to differ significantly from their ENMS counterparts with regard to three aspects of the Project Orientation. BENL students perform more intensely on selected activities compared to ENMS students. Means of BENL as opposed to ENMS students means attest to this contention (2.91 vs. 3.61, 2.67 vs. 3.52, 2.92 vs. 3.61) (Table 5).

Once again, degree programs give credence to the Group Orientation among the students belonging to two different majors. BENL students consistently associated themselves more closely with two characteristics under the learning orientation compared to their ENMS peers. “Working with classmates” (means 2.59 vs. 3.23) and “working with others in class” (means 2.65 vs. 3.23) clearly demarcate the difference in orientation between students from two degree programs (Table 6). BENL students tend to perform this more frequently than ENMS students.

Table 4a: t-test Individual Orientation by Gender

Individual Orientation	Sex	N	Mean	Std. Deviation	Std. Error Mean
Reading instructions*	Male	35	3.31	1.278	.216
	Female	118	3.77	.800	.074
Reading the instructions**	Male	35	2.63	1.516	.256
	Female	118	3.34	1.249	.115

\*t-value-2.555 151 df p=.012 \*\*t-value 2.810 151 df p=.006

Scale: 1 Always 2 Very often 3 Sometimes 4 Never

Table 4b: t-test Individual Orientation by Degree Program

Individual Orientation	Degree	N	Mean	Std. Deviation	Std. Error Mean
Reading textbooks*	BENL	122	2.67	1.496	.135
	ENMS	31	2.06	1.459	.262
Working by myself**	BENL	122	2.84	1.466	.133
	ENMS	31	2.16	1.485	.267

\*t-value 2.029 151df p=.044 \*\*t-value 2.310 151df p=.022

Scale: 1 Always 2 Very often 3 Sometimes 4 Never

Table 5: t-test Project Orientation by Degree Program

Project Orientation	Degree	N	Mean	Std. Deviation	Std. Error Mean
Participating in related activities*	BENL	121	2.91	1.449	.132
	ENMS	31	3.61	1.022	.184
Enjoy making something for class project**	BENL	122	2.67	1.496	.135
	ENMS	31	3.52	1.122	.201
Making a class project***	BENL	122	2.92	1.447	.131
	ENMS	31	3.61	1.022	.184

\*-2.544 150 df p=.012 \*\*t-value-2935151 df p=.004 \*\*\*t-value-2.517 151 df p=.013

Scale: 1 Always 2 Very often 3 Sometimes 4 Never

Table 6: t-test Group Orientation by Degree Program

Group Orientation	Degree	N	Mean	Std. Deviation	Std. Error Mean
Working with classmates*	BENL	121	2.59	.863	.078
	KENMSS	31	3.23	.920	.165
Working with others in class**	BENL	122	2.65	1.499	.136
	KENMSS	31	3.23	1.334	.240

\*t-value-3.3629 150 df p=.000 \*\* t-value-1.959 150 df p=.052

Scale: 1 Always 2 Very often 3 Sometimes 4 Never

## DISCUSSION

Adaptation is an ideal characteristic expected of anyone, including ESL learners. Notwithstanding the usefulness of adaptability (Reid, [4]), individuals tend to exhibit an overall preference or orientation, such as learning orientation. With this knowledge, language facilitators will be able to adopt suitable strategies to enhance the learning experiences of target learners. It is therefore important for the facilitators to have a fairly good idea of learners' orientations.

Results of the current study show that the sample chose Group Orientation as their most preferred learning style in comparison with the other two orientations. The result is generally consistent with the findings by Abdolmehdi Riazi and Mohammad Javad Riasati [9], Kavaliauskiene [11] and Spratt [10], although the latter used different measuring instruments.

While the study by Kamsah, Abu and Idris [20] shared the same geographic context, i.e. Malaysia, with the sample of the present study, the two are not readily comparable due many important differences. For instance, Kamsah and her colleagues [20] approached Engineering students, whereas our sample used English and Economics majors. Kamsah's group used Felder and Silverman [13], whereas ours, Wintergerst, DeCapua and Marilyn [14]. Hence, no meaningful comparisons could be made to obtain insights into learning orientations.

Our study may be compared with Seyim Inal [18] who administered LSI on Turkish trainee teachers. While the Turkish study found the respondents to be mostly project

oriented, ours, group oriented. When Turkish results show the three orientations vary according to gender, ours reveal that gender does explain significantly about learning orientations. It could be exaggeration to suggest that culture appears to moderate the results of the Turkish and our Malaysian studies. However, past findings on the relationships between culture and learning style preferences (e.g., [15]; Oxford and Green, [16] ) clearly hinted that the cultural force could be at play here. In both the Turkish and our Malaysian studies, we dealt with homogenous sample. At this junction, we think that culture appears to moderate choice of learning style orientations.

Our study has identified a factor that helps us distinguish student learning orientations, i.e. language spoken at home. This is another evidence to support culture. ANOVA procedure produced virtually no significant differences between learning orientations when tested for proficiency, reflected by the national English tests (MUET). The procedure also did not produce significant results when tested with self-rating proficiency. But the statistical procedure produced statistically significant differences of two variables for each of the learning orientations when the data was tested with "language spoken at home."

Another interesting finding is the contribution of degree program in differentiating student learning style orientations. Gender is of no help to show differences between learning orientations through t-test (Table 4 series), unlike degree programs that produced significant differences for each of the three learning orientations.

## CONCLUSIONS

Learning styles may be identified using a number of identifiers, including standardized English proficiency scores, gender, language spoken at home and degree programs. Our study shows that self-rating of English proficiency is least useful to identify learners' orientations. The standardized test is not that helpful either. Gender does help to some extent at least for the Individual Orientation. But "language spoken at home" is present as identifier in all the three learning orientations.

Our findings are at best tentative due to several limitations. English majors were over-represented in our sample, future studies should at least increase the representation of the under-represented group. The low reliability between BENL only and BENL and ENMS respondents in the sample suggests this deficiency should be addressed. The strength of the data could be improved by including only BENL and ENMS students of the same level, e.g. only third year students.

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Appendix A  
Background Questionnaire

1. Age \_\_\_\_\_ 2. Sex \_\_\_\_\_ 3. Native country \_\_\_\_\_
4. Native Language \_\_\_\_\_
5. Language (s) spoken at home \_\_\_\_\_
6. How many years did you study English in Malaysia \_\_\_\_\_
7. How many years did you study English in your country \_\_\_\_\_
8. What did you take? TOEFL/ IELTS /MUET 9. Your Score \_\_\_\_\_
10. Rate your English language proficiency compared with that of a native speaker of English (CIRCLE)  
Excellent Good Fair Poor
11. Which English classes are you taking this semester? \_\_\_\_\_  
\_\_\_\_\_
12. What is your major? \_\_\_\_\_
13. Including this semester, how many semesters have you been at IIUM? \_\_\_\_\_
14. How many years of school did you complete in Malaysia/your country? \_\_\_\_\_
15. What was the language of instruction in your school? \_\_\_\_\_
16. How many years of school did your father complete? \_\_\_\_\_
17. What was the language of instruction for your father?
18. If your father completed university, what was his major field of study? \_\_\_\_\_
19. Your father's occupation \_\_\_\_\_
20. How many years of school did your mother complete? \_\_\_\_\_
21. What was the language of instruction for your mother?
22. If your mother completed university, what was her major field of study? \_\_\_\_\_
23. Your mother's occupation \_\_\_\_\_

Appendix B. Learning Styles Indicator scales (Wintergerst and DeCapua, 1999)

- |  |                                       |
|--|---------------------------------------|
| 1. I enjoy working on an assignment with two or three classmates           | 1. Always Very Often Sometimes Never  |
| 2. I learn best in class when I can participate in related activities.     | 2. Always Very Often Sometimes Never  |
| 3. I understand things better in class when I participate in role playing. | 3. Always Very Often Sometimes Never  |
| 4. I learn more when I can make a model of something.                      | 4. Always Very Often Sometimes Never  |
| 5. When I study alone, I remember things better.                           | 5. Always Very Often Sometimes Never  |
| 6. I get more work done when I work with others.                           | 6. Always Very Often Sometimes Never  |
| 7. I enjoy learning in class by doing experiments.                         | 7. Always Very Often Sometimes Never  |
| 8. When I work alone, I learn better.                                      | 8. Always Very Often Sometimes Never  |
| 9. I understand better when I read instructions.                           | 9. Always Very Often Sometimes Never  |
| 10. When I build something, I remember what I have learned better.         | 10. Always Very Often Sometimes Never |
| 11. In class, I learn best when I work with others.                        | 11. Always Very Often Sometimes Never |
| 12. I learn more by reading textbooks than by listening to lectures.       | 12. Always Very Often Sometimes Never |
| 13. When I do things in class, I learn better.                             | 13. Always Very Often Sometimes Never |
| 14. I prefer to work by myself.  | 14. Always Very Often Sometimes Never |
| 15. When someone tells me how to do something in class, I learn better.    | 15. Always Very Often Sometimes Never |
| 16. I enjoy making something for a class project.                          | 16. Always Very Often Sometimes Never |
| 17. When I read instructions, I remember them better.                      | 17. Always Very Often Sometimes Never |
| 18. I prefer to study with others.   | 18. Always Very Often Sometimes Never |
| 19. When the teacher tells me the instructions, I understand better.       | 19. Always Very Often Sometimes Never |
| 20. I learn more when I can make something for a class project.            | 20. Always Very Often Sometimes Never |
| 21. I learn more when I study with a group.                                | 21. Always Very Often Sometimes Never |
| 22. I learn better by reading than by listening to someone.                | 22. Always Very Often Sometimes Never |
| 23. I prefer to learn by doing something in class.                         | 23. Always Very Often Sometimes Never |