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# Pertanika Journal of Social Science and Humanities

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Pertanika, the pioneer journal of UPM, began publication in 1978. Since then, it has established itself as one of the leading multidisciplinary journals in the tropics. In 1992, a decision was made to streamline Pertanika into three journals to meet the need for specialised journals in areas of study aligned with the strengths of the university. These are (i) **Pertanika Journal of Tropical Agricultural Science**, (ii) **Pertanika Journal of Science and Technology** and (iii) **Pertanika Journal of Social Science and Humanities**.

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The objective of the journal is to promote advancements in the fields of anthropology, business studies, communications, economics, education, extension studies, psychology, sociology and the humanities. Previously unpublished, original theoretical or empirical papers, analytical reviews, book

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## The Use of Instructional Videos and Notes in Teaching Agricultural Knowledge and Skills: An Experimental Study at Universiti Putra Malaysia

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**Keywords:** instructional video, instructional notes, video and teaching of agriculture, agricultural knowledge and skills, experimental study on instructional video

### ABSTRAK

Ini adalah kajian yang berbentuk separa eksperimen di kalangan pelajar tahun pertama program Diploma Pertanian, Universiti Putra Malaysia untuk menentukan kesan penggunaan Multi-media dalam pencapaian pengetahuan dan kemahiran semasa latihan praktik kerja ladang. Pelajar tahun pertama dibahagikan kepada lima kumpulan mengandungi 30 orang setiap kumpulan dan diberikan rawatan eksperimen yang berbeza. Kandungan teknikal kajian ialah kemahiran mengetut pokok jambu batu (*Psidium guava*). Hasil kajian menunjukkan video dan nota pengajaran adalah berfaedah dan berkesan kepada pelajar sebelum mereka menjalani latihan praktik di ladang. Kumpulan pelajar yang menonton video mempunyai peningkatan pengetahuan yang signifikan berbanding dengan kumpulan yang tidak didedahkan kepada video. Walau bagaimanapun nota pengajaran didapati tidak memberikan kesan yang ketara. Kajian juga mendapati bahawa pengajar yang diberi latihan penggunaan media pengajaran mempunyai kesan yang signifikan dari segi meningkatkan kemahiran pelajar dalam membuat tut.

### ABSTRACT

A quasi-experimental research study was conducted with first-year Diploma of Agriculture students to find out the effects of instructional multi-media on their knowledge and skills achievement during their fieldwork training at the farm. The students were divided into five groups of 30 students each, and each group was assigned a different treatment. The skill selected for the experiment was marcotting of guava (*Psidium guajava*). The findings of the study show that an instructional video and notes are beneficial and effective to the students before they carry out their fieldwork training. Students who watched the instructional video had significantly higher knowledge than the students who did not watch the video. However, instructional notes did not have any significant effect. The results also show that an instructor trained in using multi-media had a significant effect on the students' skill in making the marcot.

### INTRODUCTION

As an institution of higher learning, Universiti Putra Malaysia (UPM) has the reputation and credibility of producing graduates with the Diploma of Agriculture who have the skills and quality to carry out agricultural work. The Diploma of Agriculture programme was initially started in the 1930s by the School of Agriculture, and later continued by the College of

Agriculture (1947-1971). When Universiti Pertanian Malaysia was established in 1971, the Diploma of Agriculture became one of the foundation programmes. This programme aims to produce semi-professionals who are knowledgeable, skilful and possess the capability to play an important role in spearheading national development in the agricultural sector (UPM 1992).

One of the key requirements for Diploma students is to undergo fieldwork training in which they are exposed to both the theoretical and practical aspects of agricultural work. However, with changing times there are marked differences in the fieldwork training: the size of student intake, teaching staff and time allotted to fieldwork. The increase in the number of students has created a number of problems for the Farm Division of UPM which handles the farmwork practicals. Among the problems are:

- a. Difficulty in providing the facilities at the farm.
- b. Difficulty in arranging a suitable timetable of lectures and fieldwork training in order to give the students theoretical exposure before the fieldwork training. Often, the students do their practical training without enough theoretical exposure.
- c. Demand for qualified and experienced teaching staff due to the increase in student intake. Instructions for farmwork practicum are now given by the farm technicians who previously only provided support service to the course.
- d. The time for conducting farm practicum is limited to three hours per week. Within this time span, instruction is given, followed by actual practical work.

Given the circumstances and problems above, many concerned groups, including the employers and graduates themselves, observed that the quality of Diploma of Agriculture graduates has deteriorated. In order to maintain the quality of graduates and the image of UPM, efforts must be made to overcome the problems. The main concern is how to improve the teaching-learning process of fieldwork training so that it is efficient and effective. Among the factors that may influence skills teaching are teaching methods (Gronlund 1978), students' level of knowledge (Abu Zahari 1988), the length of time allocated and the skills of the instructor (Alang 1990).

#### *Problem Statement*

Teaching is a communication activity between the teacher and the students in which information or facts are transmitted from the teacher to the students, resulting in the students becoming knowledgeable.

Kemp and Smellie (1978) stated that instructional media have the following effects: (1) learning is productive due to the planned learning experience useful to the students, (2) self-learning is encouraged through the use of audio-visual materials, (3) learning is more balanced because the audio-visual materials can be easily moved from one place to another, and (4) learning is more scientific and systematic through a well-prepared teaching plan. The use of instructional media, especially video, has several advantages. Instructional video is flexible in that it can be used at different speeds; it can be stopped for explanation, and it can be replayed instantly for clarification. Video recordings can be stored for later use and can be viewed individually by the students. In this way, both learning and skill achievement are enhanced (Sharifah 1986).

Based on the concerns about improving the fieldwork training for the Diploma of Agriculture students and the potential of instructional multi-media, this study sought to address the following questions:

1. Will the use of instructional multi-media produce the desired effect of increasing students' knowledge if they are exposed to the media before they go for field work?
2. Will the skill of the instructors in using the instructional multi-media increase the level of skill attainment of the students?
3. What is the students' perception of the usage of instructional multi-media for fieldwork training?

#### *Research Objectives*

The general objective of this study was to determine whether the use of instructional multi-media in fieldwork training will increase the knowledge of the students and help them in improving their farmwork skills.

The specific objectives were:

1. To assess the students' perceptions of the use of instructional video and notes for fieldwork teaching.
2. To identify the effect of instructional video and notes on the knowledge of the students doing fieldwork training.
3. To identify the effects of instructors' skill in using instructional media on the level of the students' skill in fieldwork training.



**INDEPENDENT VARIABLES  
(TREATMENTS)**

1. Control Group (CG)  
- Demonstrator in field  
(Traditional Method)

2. Experimental Group (EG-1)  
+ Students watch instructional video  
+ Demonstration in field

3. Experimental Group (EG-2)  
+ Students watch instructional video and given notes  
+ Demonstration in field

4. Experimental Group (EG-3)  
+ Students watch instructional video and given notes  
+ instructor watches instructional video and given notes  
+ Demonstration in field

5. Experimental Group (EG-4)  
+ Students watch instructional video and given notes  
+ Instructor follows training workshop on using multimedia for field-work training  
+ Demonstration in field by instructor who has the teaching skill after being trained

**DEPENDENT VARIABLES**

**EFFECTS OF INSTRUCTIONAL MEDIA ON STUDENTS**

1. Knowledge
2. Number of marcot
3. Number of marcos produced root
4. Skill in doing marcot



Fig 1. Research framework

*Research Hypotheses*

1. The student group using instructional media will have significantly higher knowledge compared to the student group who did not use any instructional media.
2. The student group using instructional video and notes will have significantly higher level of knowledge compared to the student group that uses only instructional video.
3. The level of skill achievement in field work training among the student groups taught by an instructor who is trained in using multi-media techniques will be significantly higher than student groups taught by an untrained instructor.

**METHODOLOGY**

*Research Framework*

In this study, instructional video and instructional notes on plant marcotting were prepared to test the level of knowledge and skills accomplished by the groups of students involved in this quasi experimental research. The research framework of this study is shown in Fig. 1.

*Research Design*

This experiment was carried out using pre-test and post-test non-equivalent control group design with the use of a control group as suggested by Campbell and Stanley (1966). The samples were randomly divided into five groups as shown in Fig. 2.

0	X1	0	(Experimental Group 1 = EG-1)
0	X2	0	(Experimental Group 2 = EG-2)
0	X3	0	(Experimental Group 3 = EG-3)
0	X4	0	(Experimental Group 4 = EG-4)
0		0	(Control Group = CG)

Where, 0 - pretest and post-test  
 X1 - treatment given to EG-1  
 X2 - treatment given to EG-2  
 X3 - treatment given to EG-3  
 X4 - treatment given to EG-4

Fig 2. Research design

### Sample and Population

The subjects for the study were 150 first-year Diploma of Agriculture students who were selected randomly from the 180 first-year students. The selected students were divided into five groups: control group (CG) and experiment groups (EG). Of the 150 students selected, only 137 participated as the other 13 students could not participate for a variety of reasons.

### Treatment

Different treatments were given to each group of students. Instructors (agricultural technicians) were also given two types of treatment according to the research objectives and hypotheses formulated, as shown in the research framework (Fig. 1).

### Research Tools

Instructional video and notes were used as research tools in the treatments given to the students and instructors. The content of the instructional media consisted of instructions on how to marcot planting materials. The subject matter chosen for this study was guava (*Psidium guajava*).

The technical notes and script for the video were developed by the research team and the technical content was verified by an agronomist. After several meetings the script was approved and was ready for production. Preparation for conducting the experiment was finalized with the Farm Division, UPM which conducted the farmwork practical. A workshop on how to use the instructional video for skill teaching was conducted for farm technicians who were responsible to provide farmwork training to the

students. This was done as a requirement (treatment) in the experimental design.

### Research Instruments

Five research instruments were used:

- i. Questionnaire to determine the students' perception of the use of instructional video and notes.
- ii. Pre-test and post-test questions to measure the knowledge of the students.
- iii. Report form - to record the number of marcottings done by each student.
- iv. Observation form - to record the marcots that produced roots.
- v. Skill Evaluation Form - to evaluate the skill of students in carrying out the marcotting.

### Sequence of Research Activities

Table 1 shows the sequence of the experiment from step 1 to step 8. All groups carried out the pre-test (step 1) and post-test (step 5).

### Data Analysis

Data analysis was conducted using the computer program SPSS/PC+ Version 4.0. Data were analysed using descriptive statistics and analysis of variance. F-test and Scheffe-test were employed to determine the differences among groups. The significant level of 0.05 was used for the analysis.

## RESULTS

### Students' Perceptions towards Instructional Video and Notes

In this research the students were asked to give their perceptions on the advantages of watching instructional video and reading notes before they attended the fieldwork. The results of the data analysis are shown in Table 2.

TABLE 1  
Sequence of research activities

Group/ Step	Pre-test	Treatment		Demonstration in field	Post-test	Do marcotting	Perception towards video	Observed rooted marcots
		Video	Notes					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CG	XX	-	-	XX	XX	XX	XX	XX
EG-1	XX	XX	-	XX	XX	XX	XX	XX
EG-2	XX	XX	XX	XX	XX	XX	XX	XX
EG-3	XX	XX	XX	XX	XX	XX	XX	XX
EG-4	XX	XX	XX	XX	XX	XX	XX	XX



TABLE 2  
Perception of student towards instructional video and notes

No. Items Analysis	Frequency	Percentage
1. Marcotting experience of Diploma of Agriculture students (All Groups n = 137)		
1.1 No experience	137	100.0
1.2 Have experience	0	0
	<u>137</u>	<u>100.0</u>
2. Students attending fieldwork training on marcotting (n = 112)		
2.1 Have seen video	108	96.4
2.2 Have not seen video	4	3.6
	<u>112</u>	<u>100.0</u>
3. Video seen : (n = 108)		
3.1 By individual	12	11.1
3.2 By group (2-13 students)	96	88.9
	<u>108</u>	<u>100.0</u>
4. Frequency of video viewing during treatment of three days (n = 108)		
4.1 Once	63	58.3
4.2 Twice	45	41.7
	<u>108</u>	<u>100.0</u>
5. Reasons for viewing video only once (n = 63)		
5.1 Lot of other assignments	31	49.2a
5.2 Content of video is complete and easy to understand	27	42.9a
5.3 Content of video interesting	20	31.7a
5.4 Content of video not interesting	10	15.9a
6. Reasons for viewing video twice (n = 45)		
6.1 Need to repeat in order to be clearer in understanding contest	45	100.0
6.2 Content of video interesting	20	44.4a
6.3 Need to record and write facts	10	22.2a
6.4 Accompany friends	4	8.9a
7. Advantage of notes to increase understanding after viewing video (n = 80)		
7.1 Most advantageous	66	82.5
7.2 advantageous	14	17.5
	<u>80</u>	<u>100.0</u>
8. Do you feel any gain in viewing the video (n = 108)		
8.1 There is a gain	108	100.0
8.2 No gain	0	0.0
	<u>108</u>	<u>100.0</u>
9. What are the gains from viewing the video (n = 108)		
9.1 Know better what to do in the field	87	80.6a
9.2 Easy to understand teacher's briefing	80	74.1a
9.3 Make discussion easier	44	40.7a
9.4 Gain more knowledge and experience	38	35.2a
9.5 More confidence in doing marcotting	34	31.5a

(a) Total percentage more than 100 because students gave more than one response



It was found that nearly all students (96.4%) who were assigned to view the instructional video did it (individually or in a group). The number of students who viewed the video in groups and did the fieldwork was eight times higher (88.9%) than those who watched the video individually. Even though there was no direction to have a discussion after viewing the video, group viewing is a good habit if followed by discussion. This will increase the students' understanding of the video content. Romiszowski (1988) noted that discussion of the content after watching a video can increase the understanding of what has been viewed. Another advantage is that viewing the video in a group saves time as more students are able to view the video.

During a period of three days, 58.3% of the students viewed the instructional video once; 41.7% viewed it twice. This was due to the content of the video being easy to understand (42.9%) and also because the students had a lot of other assignments from other courses to be completed (49.2%). Only 15.9% of the students found that the video was not interesting.

All the students who watched the video twice expressed the view that by repeatedly watching the video the contents became clearer; 44.4% said that the contents were of interest to them, 22.2% wanted to take notes on the video contents and a few of the students were just viewing with friends.

All of the students who responded to the question on the advantage of video viewing said that video was indeed advantageous in their learning process.

Based on the background of the students who did not have any knowledge and experience in doing marcotting, their responses were reasonable. By viewing the instructional video they were more knowledgeable about what they were going to do in the field (80.6%), and this knowledge helped them to easily understand the instructor's briefing (74.1%).

By viewing the instructional video for 20 minutes and also by reading the notes, the students felt that they were more knowledgeable and more ready to follow the fieldwork. With the knowledge they had gained from watching the video, 40.7% said that it was an advantage for them in their discussions, 35.2% had understood more and 31.5% were more confident in doing marcotting. This means that the students should be given adequate and

appropriate knowledge before they perform fieldwork activities.

The perception of the students was found to be in line with previous research. Campbell (1971), and Wittich and Charles (1979) were among the few researchers who found that video has a good effect on cognitive and affective teaching. Bowers (1982) found that using instructional multi-media in the form of a video package and printed media increases student knowledge.

#### *Students' Knowledge Before Treatment*

Students were pre-tested on their knowledge of marcotting before they were given a treatment. To establish whether there were any differences between the knowledge of the five student groups, analysis of variance and F-test were carried out as in Table 3.

From Table 3, the value of F (1.33) was found to be not significant, where  $p = 0.26$ . This showed that all the five groups of students had about the same knowledge level about plant marcotting before they went for their fieldwork.

#### *Effects of Different Kinds of Instructional Media Towards the Students' Knowledge*

After being exposed to the instructional video and notes, the students went for their fieldwork at the farm. Afterwards, the student knowledge was measured by answering post-test questions. Analysis of the post-test is shown in Table 4.

The F-value obtained from the analysis was 25.95. The result indicated that there were significant differences among the five groups of students in relation to the knowledge they gained after being taught this method. Thus, the treatments had produced effects on the knowledge gained by the students.

In order to determine which group showed significant difference, Scheffe's test was performed. The test results showed that there was a significant difference among CG and EG-1, EG-2, EG-3 and EG-4. However, there was no significant difference among EG-1, EG-2, EG-3 and EG-4. Thus, this result supported the first hypothesis of the study i.e. student groups using instructional media will have significantly higher knowledge than those who did not use any instructional media.

The results of this analysis showed that the use of an instructional video on marcotting had

TABLE 3  
Analysis of variance of student groups before treatment (pre-test)

Sources	DF	SS	MS	F	P
Between groups	4	482.48	120.62		
Within groups	132	11972.38			
Total	136	12454.86	90.70	1.33	.26
	CG	EG-1	EG-2	EG-3	EG-4
n	29	28	26	27	27
Mean(a)	30.66	28.07	30.99	33.54	32.56
SD	2.94	2.54	2.02	2.40	3.97

(a) Means connected by a line underneath are not significant at the 0.05 level.

- CG : Untreated (taught by traditional method)
- EG-1 : Students watching video + traditional method of teaching
- EG-2 : Students watching video and given notes + traditional method of teaching
- EG-3 : Students watching video and given notes + instructors watching video and given notes + traditional method of teaching.
- EG-4 : Students watching video and given notes + instructors followed workshop on the use of video + field training + skills of instructors to use traditional method.

TABLE 4  
Analysis of variance of student groups and post-test results

Sources	DF	SS	MS	F	P
Between groups	4	8718.47	2179.62	25.95	0.00
Within groups	132	11087.76	84.00		
Total	136	19806.23			
	Student Groups				
	CG	EG-1	EG-2	EG-3	EG-4
n	29.00	28.00	26.00	27.00	27.00
Mean(a)	57.87	76.59	75.44	75.23	80.29
SD	8.83	8.21	11.10	8.27	9.25

(a) Means connected by a line underneath are not significant at the 0.05 level.

resulted in significant upgrading of the knowledge of the students before doing the marcotting. The findings from this analysis were supported by the answer of all the respondents (100%) who said that the use of video was beneficial, especially in familiarizing them with what was to be taught in the field (80.0%) and making it easier to understand the briefing given by the instructor (74%) (see Table 2). Therefore, the findings of this research are similar to those of previous studies which showed that instructional videos are effective in improving knowledge.

Although all of the students (100%) who used the notes said that the notes were useful in

improving knowledge after viewing the video, no significant difference was seen in the results (EG-1, EG-2, EG-3 and EG-4 showed no significant difference in the score that they obtained in the post-test). Following the second hypothesis, knowledge gained by students EG-2, EG-3 and EG-4 who viewed the video and were given notes should be higher compared to EG-1 which only viewed the video. However, the findings from this experiment did not support the second hypothesis.

#### Number of Marcots Made by Students

Table 4 shows the effect of treatments towards the number of marcots made by the students. It



can be seen that significant differences between CG, EG-1, EG-2, EG-3 and EG-4 existed in the number of marcots made by the students. This was indicated by  $F = 41.64$ .

In order to determine which groups showed significant differences in the number of marcots made Scheffe's test was used. The results showed that there were no significant differences between CG and EG-1 and between EG-2 and EG-3 in the number of marcots made. Significant differences existed between CG and EG-2, CG and EG-3, CG and EG-4; between EG-1 and EG-2, EG-1 and EG-3, and EG-1 and EG-4; EG-2 and EG-4; and EG-3 and EG-4. The results showed that EG-4 had the highest mean in terms of the number of marcots made (Table 5).

Although knowledge gained by EG-4 was not significantly different from that of EG-1, EG-2 and EG-3 (Table 4), EG-4 made the highest number of marcots. The average number of marcots made by EG-4 was almost twice that of the control group (CG). This means that the treatment of training the instructor in instructional video and notes for fieldwork had a significant effect on the students' skills (EG-4). The finding supports the third hypothesis.

Students must be given basic knowledge before working in the field because they spend a maximum of only three hours there. If the students are equipped with knowledge before going to the field, the limited time available can be used solely for doing practical work.

In this study, the group EG-1 who had been exposed to the instructional video only did not indicate any significant difference in the number of marcots made with the group which had not

been exposed to it (CG). Similarly, there was no significant difference between the groups EG-2 and EG-3, although the latter group should have made more marcots due to the exposure the instructor had on the video and notes. The reason why there was no significant difference between the groups was probably related to the skills of the instructor in using instructional media. Although the group EG-1 had viewed the video, only their knowledge had increased and was significantly different from the CG (see Table 3). However, to gain skills, the students not only need knowledge, but also an instructor who can help them. Even though the knowledge of CG and EG-1 was different, the two groups were trained by the same instructor. The role of the instructor during the students' training influenced the students' achievement in acquiring skills.

No difference existed between EG-2 and EG-3, probably because of the instructor. Although both EG-2 and EG-3 were exposed to the video and notes, and had similar knowledge before the fieldwork, the latter group should make more marcots than EG-2 because the instructor was exposed to the video and notes. However, the treatment given to the instructor did not upgrade the instructor's skills in the use of instructional media for practical training.

The data also showed the importance of training on educational media for the instructors. This training provided knowledge and expertise to the instructors so that they could be more effective in teaching the use of time and, more importantly, in increasing the skills of the students. This was indicated by the achievement

TABLE 5  
Analysis of variance of student groups with marcots made

Sources	DF	SS	MS	F	P	
Between groups	4	157.60	39.40	41.64	0.00	
Within groups	132	124.90	0.95			
Total	136	282.50				
		Student Groups				
		CG	EG-1	EG-2	EG-3	EG-4
n		29	28	26	27	27
Mean(a)		3.24	3.43	4.88	4.33	6.19
SD		0.83	0.63	0.99	1.39	0.88

(a) Means connected by a line underneath are not significant at the 0.05 level.

made by EG-4, which obtained the highest number of marcots than all other groups. The instructor had attended a multi-media workshop (video and notes) for fieldwork training before giving instructions to the students in EG-4.

Naim (1991) has noted the importance of providing training on media use to instructors. According to him, educational technology does not replace the role of the teacher. His view supported Bower's (1982) contention that even though the media could improve or provide teaching, the imagination and creativity of the teachers were still required. Dale (1957) and Faris (1984) shared this same opinion when discussing the use of film as an instructional medium.

*Number of Successful Rooted Marcots*

The analysis of the data on the number of successful rooted marcots is shown in Tables 6, 7 and 8.

The results of the analysis in Tables 6, 7, 8 show that the F-values obtained were 45.78, 51.45 and 37.26, respectively. The results indicated that significant differences existed in the number of successful rooted marcots at the sixth, seventh, and eighth week among CG, EG-1, EG-2, EG-3 and EG-4. Differences occurred because of the treatments given. The results of Scheffe's test revealed that significant differences existed between the means of EG-4 (3.74, 4.37 and 4.81), and means of all other groups, namely EG-3 (1.74, 2.15 and 2.56), EG-2 (1.27, 2.12,

2.81), EG-1 (0.29, 0.71 and 1.29) and CG (0.00, 0.17 and 0.76) at the 6th, 7th and 8th week.

The results showed that EG-4 had the highest number of roots on marcots at weeks 6, 7 and 8. The performance of EG-4 was the best amongst all the groups. The results of this study again show the importance of a trained instructor in effective teaching for fieldwork training. An instructor who had been trained was capable of encouraging or motivating students to their highest achievement. The instructors could also carry out remedial work on the students' practical. These remedial approaches are important to strengthen the skills of the students, who would then be aware of their mistakes and use this learning experience to do a better job in the future. To enable the students to achieve the maximum skill, the principles of repetition, continuity, and reinforcement should be used in the teaching and learning process. When the performance of the students is at its peak, the learning experience at this level will form the basis for them to attain greater skills in carrying out their tasks in agricultural fieldwork.

*Marcotting Skills of Students*

Table 9 provides the analysis of variance for the group of students and their skills in making marcots. Similar results to those obtained for the previous two variables (number of marcots made and the number of successful rooted marcots) were obtained for the skills of students in making marcots.

TABLE 6  
Analysis of variance of student groups with number of marcots producing roots at week 6

Sources	DF	SS	MS	F	P		
Between groups	4	243.06	60.77	45.78	0.00		
Within groups	132	174.20	1.33				
Total	136	418.26					
			Student Groups				
			CG	EG-1	EG-2	EG-3	EG-4
n	29	28	26	27	27	27	27
Mean(a)	0.00	0.39	1.27	1.74	1.74	1.74	3.74
SD	0.00	0.60	1.54	1.16	1.16	1.16	1.65

(a) Means connected by a line underneath are not significant at the 0.05 level.



TABLE 7  
Analysis of variance of student groups with number of marcots  
producing roots at week 7

Sources	DF	SS	MS	F	P
Between groups	4	293.43	73.36	51.45	0.00
Within groups	132	188.21	1.43		
Total	136	481.64			

	Student Groups				
	CG	EG-1	EG-2	EG-3	EG-4
n	29	28	26	27	27
Mean(a)	0.17	0.71	2.12	2.15	4.37
SD	0.38	0.76	1.48	1.29	1.64

a) Means connected by a line underneath are not significant at the 0.05 level.

TABLE 8  
Analysis of variance of student groups with number of marcots  
producing roots at week 8

Sources	DF	SS	MS	F	P
Between groups	4	275.31	68.83	51.45	0.00
Within groups	132	243.80	1.85		
Total	136	519.11			

	Student Groups				
	CG	EG-1	EG-2	EG-3	EG-4
n	29	28	26	27	27
Mean(a)	0.76	1.29	2.81	2.56	4.37
SD	0.87	1.12	1.48	1.29	1.64

a) Means connected by a line underneath are not significant at the 0.05 level.

An F-value of 53.33 obtained by the analysis of variance indicated that differences existed amongst CG and all other four experimental groups. Scheffe's test showed significant differences existed between EG-4 and EG-3, EG-2, EG-1 and CG. Non-significant results were obtained for comparisons between CG and EG-1 and between EG-3 and EG-2 (See Table 9). The result of Scheffe's test also showed that EG-4 had the highest work skills in marcotting with a mean of 187.41. This was verified by the performance of EG-4, which had the highest

number of marcots and the highest number of successful rooted marcots.

As mentioned earlier, the average number of marcots achieved by the EG-4 was almost double the average obtained by CG, and the number was also higher than the other experimental groups. With greater numbers of marcots being produced, the students in EG-4 obtained more learning experience in sharpening their skills. Repetition of the same process over time will improve the students' skill in performing marcotting.

TABLE 9  
Analysis of variance of student groups with capacity to carry out marcotting

Sources	DF	SS	MS	F	P
Between group	4	180040.20	45010.05	53.33	0.00
Within group	132	111411.64	844.43		
Total	136	291451.84			

	Student Groups				
	CG	EG-1	EG-2	EG-3	EG-4
n	29	28	26	27	27
Mean(a)	<u>86.17</u>	<u>93.43</u>	136.15	123.48	187.41
SD	21.08	19.87	29.24	41.83	28.72

(a) Means connected by a line underneath are not significant at the 0.05 level.

The high achievement of EG-4 can be attributed to the quality of remedial efforts of the instructor, as he had attended the workshop on how to use the multi-media package. By acquiring knowledge from the workshop, the instructor could motivate the students of EG-4 in making more marcots. This quality of instruction did not occur in other groups whose instructor had not undergone training.

After the instructor attended the workshop, there was a significant change in the way he taught and the way he approached the students. It was observed that the instructor's teaching method had resulted in more participation and communication from the students. The students were more willing to answer his questions, and thus created a two-way communication process. Other students learned from the answers and also the encouragement given by the instructor to the students to make more and better marcots. This had resulted in better skills of the students in the EG-4. This report supports the third hypothesis of this research.

### DISCUSSION

The results of this study as found in Tables 5-9 indicate that there were significant relationships between the independent variables and the dependent variables in the research. The treatments given to different groups of students affected their level of knowledge and skill attainment (EG-4). Post-test results of knowledge level showed that there was a significant difference between the groups which watched

the video and the CG who did not watch it. Data from descriptive analysis also showed that nearly 81 per cent of respondents who watched the video had a basic knowledge about marcotting before going to the field.

In this research, instructional notes were given after the students watched the video. However, it was found that the technical notes did not significantly contribute to increase in knowledge. Further research needs to be carried out to find out the effect if the notes are given before the video is watched. The results of this study supported the first hypothesis, but not the second one.

The instructor's competency in training for farmwork was found to be the critical factor in enhancing the student's level of skill attainment. The limited time that the instructor had with the students was effectively used to teach them the skills of marcotting. Compared to the students in other groups, the students in the EG-4 were more skilful in making marcots and had successfully produced not only more marcots, but also a greater number of rooted ones. The results again indicate that instructional media can be used to give the basic knowledge to the students before doing their practical work. However, for better skill achievement besides using the instructional media, the instructor needs to be trained in the technique of how to use the instructional package. The skills possessed by the instructor in handling the students in EG-4 to make them more skilful clearly supports the statement in hypothesis 3.



## CONCLUSION

The following conclusions were derived from this study:-

1. The students had a positive perception on the use of instructional video and notes for teaching. All the students in the study stated that the instructional video and the technical notes were beneficial to them in providing basic knowledge before they went for practical training in the farm.
2. The use of an instructional video was found to be effective as part of skill training especially in providing basic knowledge.
3. Students with basic knowledge and proper understanding of theory exposed through instructional video and notes achieved a higher level of skill if they were trained by a skilful instructor.
4. The research results supported the first hypothesis which stated that the student group using instructional media had greater knowledge than the groups that did not use any instructional media. The results also supported the third hypothesis which stated that the skill of the students in fieldwork training was higher when they were taught by an instructor who was trained in the methods of using multi-media. However, the results did not support the second hypothesis which stated that the student group using an instructional video and notes would have a higher level of knowledge than the student group that used only an instructional video.

### *Implications for UPM*

It is important for UPM to take appropriate measures to improve the teaching of skills during the practical fieldwork session. The students in the study mentioned the benefit of instructional video and technical notes in providing suitable knowledge. However, the university needs skilful and competent instructors to teach the necessary skills. Universiti Putra Malaysia therefore can improve the teaching of field agricultural skills through:

1. Developing a multi-media package for fieldwork. In preparing the package, inputs from respective experts are very important so that the technical contents are valid and suitable. The university should involve communication and education experts so that

the package is pedagogically sound and effective.

2. Training of instructors to use the instructional package needs to be intensive and comprehensive so that instructors are well-versed about the instructional package as well as know-how of incorporating it in their teaching.

### *Suggestions for Further Research*

1. This research showed that instructional video is effective in providing knowledge to the students. However, the effect of the technical notes was not significant for increasing knowledge and understanding in the teaching-learning process. It is suggested that research be carried out to isolate the effect of the technical notes.
2. The techniques of utilizing the instructional video also need further research. In this study, the students watched the video in groups but there were no follow-up discussions. It is suggested that various learning strategies using the video be tested, e.g. watching the video alone, watching the video alone but followed up by discussion with the instructor, and watching the video in groups to be followed by structured discussion. By conducting the study, effective teaching methods of using instructional video could be identified.
3. This study has made a contribution in the form of an instructional video and technical notes on marcotting and their effect on students' knowledge. Research on other forms of instructional media could be similarly conducted to determine their effectiveness and suitability toward achieving certain educational objectives.
4. Instructional contents of the video and notes used in this study were agricultural. Further research on other topics or disciplines could be carried out.
5. A critical factor in the teaching-learning process is the teacher or instructor. Teaching approaches and styles may affect the learning process. The appropriate teaching approaches may differ in classroom, laboratory, or field setting. Research is needed to identify the teaching method and style that is appropriate for instructional multi-media use in the field, classroom and laboratory.

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## Gender Socialization and Learning Style Patterns of Secondary School Students

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**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 Konseptualisasi 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

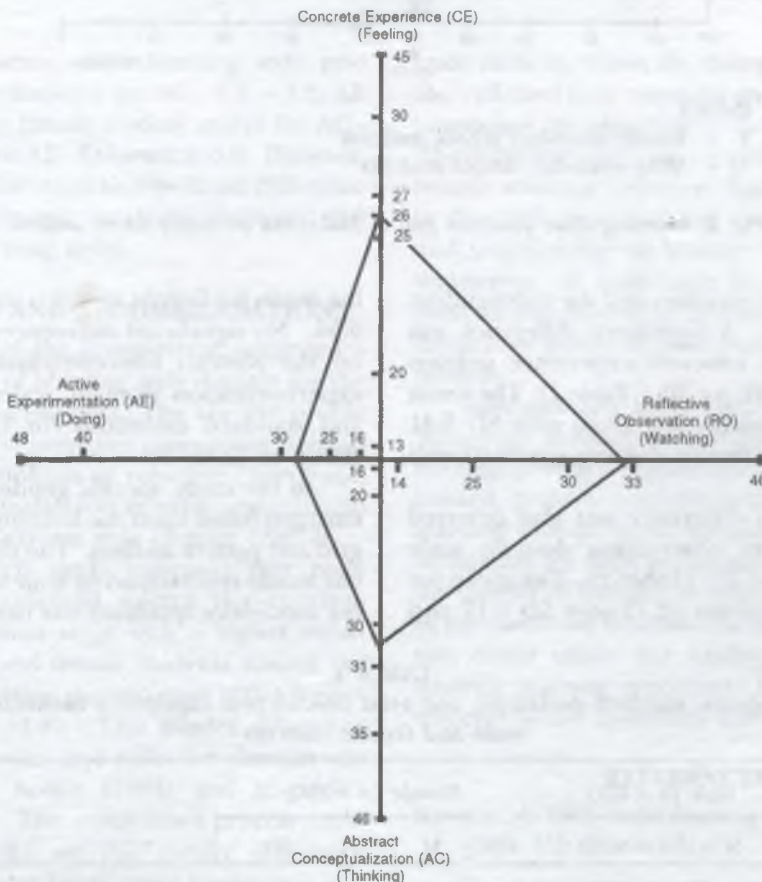
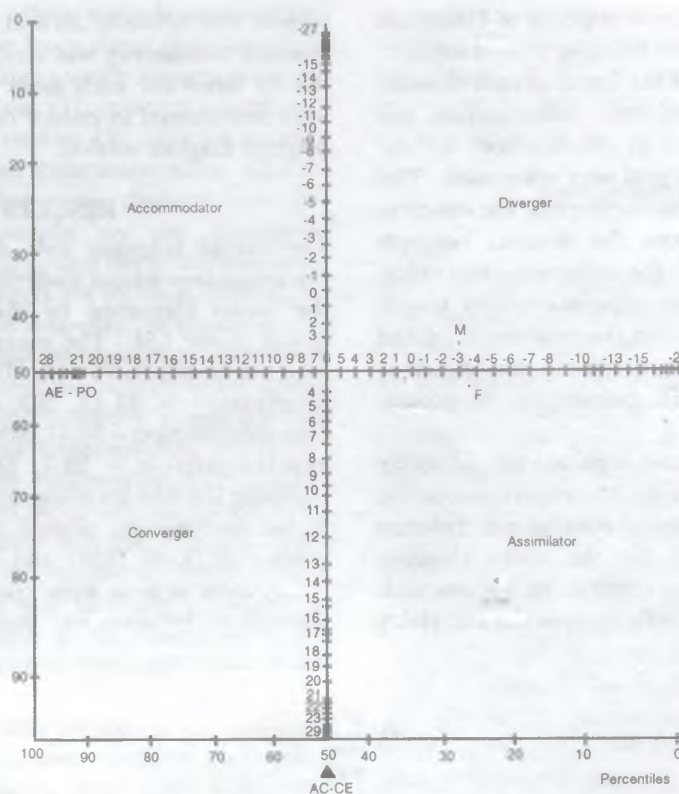


Fig. 1. Learning styles domain of Malaysian secondary school students



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.

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TABLE 1

Summary of the results of the analysis of variance for the study

Source	SS	df	MS	F	p-value
Gender	10.5	1	10.5	1.2	.28
Learning Style	15.2	3	5.07	0.6	.63
Gender x Learning Style	12.8	3	4.27	0.5	.68
Error	180.0	180	1.0		

The results of the analysis of variance for the study are presented in Table 1. The results show that there were no significant differences between the two groups of students in terms of cognitive development. The results also show that there were no significant differences between the two groups of students in terms of learning style. The results further show that there were no significant differences between the two groups of students in terms of the interaction between gender and learning style. The results therefore suggest that cognitive development and learning style are not significantly affected by gender or learning style in this study.

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## Subject Matter Knowledge of Student Teachers: How Does it Affect Their Ability to Teach Entrepreneurship

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**Keywords:** subject matter knowledge, student teachers, teaching ability, entrepreneurship education, teacher professional development

### ABSTRAK

Kajian ini mengkaji prestasi akademik 64 orang guru pelatih Universiti Pertanian Malaysia dan persepsi mereka terhadap keupayaan mengajar topik perdagangan dan keusahawanan dalam silabus Kemahiran Hidup. Dapatan menunjukkan (1) terdapat perbezaan yang signifikan antara prestasi akademik responden dengan program pengajian mereka, (2) taraf kemasukan pelajar mempengaruhi pencapaian akademik dan (3) pencapaian akademik yang tinggi menghasilkan keupayaan yang tinggi untuk mengajar komponen perakaunan. Kajian ini mencadangkan pemilihan guru hendaklah berdasarkan pengalaman mengajar Kemahiran hidup dan juga prestasi akademik yang memuaskan. Dalam usaha menghasilkan guru yang profesional, pengetahuan guru dalam subjek yang diajar hendaklah ditambah melalui pengambilan beberapa kursus berkaitan.

### ABSTRACT

This study investigated 64 UPM student teachers' academic performance and their perception of their ability to teach commerce and entrepreneurship topics in the living skills syllabus. The findings show that (1) there is a significant difference between academic programmes and academic performance of the respondents, (2) entry qualifications influence academic performance of the respondents, and (3) high academic performance results in high ability to teach accounting components. This study suggests that proper selection of vocational teacher trainees should be made to ensure better living skills teachers. Selection should be based on experience in teaching living skills and satisfactory academic achievement. To produce professional teachers, teachers' subject matter knowledge should be increased by enrolling in several related courses.

### INTRODUCTION

Guyton and Farokhi (1987) agreed that if prospective teachers are recruited from among the academically best candidates, if they perform well in university courses, if they possess basic skills competency and are educated extensively in their academic disciplines, and if they are placed in schools under the guidance of master teachers, then highly competent teachers will emerge.

Currently, subject matter knowledge of teachers is highly emphasized. The nature of teachers' professional development varies considerably across different nations. According to Calderhead (1995) "...how we prepare new teachers for the profession, how we support them in their first post as teachers, and how we

help them to develop in their future careers varies widely". He also agreed that the training of teachers is seen as a key influence in the improvement of education. Adler (1982) suggested that teachers should themselves be at least as well-schooled as the graduates of the schools in which they are expected to teach.

Clark and Elmore (1981) reported that teachers adapt curricula to fit their knowledge and Calderhead (1995) explained that studies of novice and experienced teachers suggest that the competent teacher possesses an enormous diversity of knowledge — not only about subject matter, but about children, teaching and the classroom context — that enables teachers to make sense of classrooms and to monitor and shape their classroom routines and behaviour.

On the other hand, Berliner (1987) commented that novice teachers only make simpler, common-sense interpretations of classroom events, and are less able to anticipate possibilities and act accordingly. Calderhead (1995: 3) concluded that

“since children’s own backgrounds vary considerably and they approach a subject with particular understanding of their own, so teachers need a wide repertoire of pedagogical content knowledge to cater for children’s individual differences. The analogy that works for one child, for example, may be completely meaningless to another.”

Debate about the knowledge base for teacher education is at the core of the move to establish professional standards for teaching (Beaudry 1991). Grossman (1989) agreed that teachers must have a theoretical understanding of how students learn a particular subject in addition to a knowledge of the subject material itself.

Entrepreneurship stands as part of the new frontier in the 1990s. Porter and McKibbin (1988) mentioned 3 ideas that stand out in importance for entrepreneurship education. First, they predicted that entrepreneurship would be one of the driving forces of the 21st century economy. The second key idea identified was cross-functional integration, which is central to entrepreneurship and small business management, as an important part of future business education. The third idea, relating to staff development, stressed the need for the faculty to understand their specialty in the large system of business. This type of business academic interaction defines a hallmark of the academic field of entrepreneurship (Katz 1991).

Evans (1987), Hess (1987), Atkinson (1989), Gleason (1989), Vawdrey (1989), Daughtery and Ristau (1991) and Massey (1990) agreed that if entrepreneurship is to permeate all of education then all teacher training efforts should include preparation in the concepts and practices of entrepreneurship. The agenda of teacher education institutions must address the critical need for informed and competent teachers.

In Malaysia, a new subject in Kurikulum Baru Sekolah Menengah (KBSM) (the new secondary school syllabus) called Living Skills was introduced in 1989 to replace pre-vocational or elective subjects (agriculture science, home economics, commerce, and industrial arts). It consists of 3 core components (manipulative

skills, commerce and entrepreneurship and self management) and the elective part consists of 3 areas (agriculture science, home economics and additional manipulative skills). All Form 1, 2 and 3 pupils are required to study the subject. Thus commerce and entrepreneurship elements become compulsory for all lower secondary students. Since living skills is a new subject, teachers were not trained specifically for the subject, but they were given in-service training to learn the subject matter. The elective teachers were asked to teach the core component of living skills, including commerce and entrepreneurship. The topics covered under commerce and entrepreneurship syllabus are very broad — 85 topics, including 21 accounting topics.

Research has been conducted on the implementation of living skills in KBSM (Sharifah *et al.* 1990; Ramlah 1992). All the researchers reported problems of teaching living skills, and suggestions were given on how to improve the teaching-learning situation. Ramlah (1992) also found that living skills teachers had low confidence in teaching accounting topics and had average confidence in teaching other topics in commerce and entrepreneurship for the Form 1 syllabus. She also indicated that teachers with an agriculture science background had more confidence in teaching topics related to agriculture, but not the other core components of living skills including commerce and entrepreneurship. The purpose of this study was to: (a) assess agriculture and home economics student teachers’ ability to teach topics in commerce and entrepreneurship in the living skills subject; (b) assess students teachers’ knowledge. Their knowledge was measured in terms of academic achievement in accounting, commerce and entrepreneurship, as well as cumulative grade point average (CGPA); (c) to determine the relationship between student teachers’ academic performance and their ability to teach.

## MATERIALS AND METHODS

### *Subjects*

The subjects for the study consisted of all the 64 Universiti Putra Malaysia final-year Education students majoring in Agriculture and Home Economics in the 1993/94 session. They were selected because they were required to take “living skills” as their minor. These students



were exposed to two business courses in a living skills minor package at Faculty of Educational Studies, Universiti Putra Malaysia.

#### Instrument

The instrument was developed by the researchers. Part one of the instrument covered the background information of the students. Part 2 was concerned with the ability to teach. All the 85 commerce topics found in the syllabus for Forms 1, 2 and 3 were considered. Student teachers' ability to teach was measured by using the Likert scale: 1 indicates very low and 5 indicates very high. The number of items measured was 85 and the reliability of the items was found to be .95. The third part of the instrument was the academic performance of the students, which was measured using CGPA and test scores for 2 business-related courses. Data on CGPA were obtained from the students' records and their scores for business courses were obtained from the lecturers involved in teaching the subjects.

### FINDINGS

#### Profile of Respondents

Table 1 shows that most of the education students majoring in Agriculture Science and Home Economics were Diploma and Higher School Certificate holders.

TABLE 1  
Students' programme entry qualification

Programme	Diploma/ HSC	Trained Teachers	Matricu- lation & Promoted	Total
Agriculture Science	15	11	8	34
Home Economics	12	8	10	30
Total	27	19	18	64

Table 2 shows that the CGPA of most of the respondents was in the low category — second class lower and third class.

Table 3 shows the scores in commerce and entrepreneurship for agriculture and home economics students. Most of the agriculture students have higher scores than the home economics students; this difference is significant at .05.

TABLE 2  
Student teachers' CGPA and teaching experience

	High	Low	Total
Trained teachers	7	11	18
Non-teachers	17	29	46
Total	24	40	64

Note: High = first class + second class upper  
Low = second class lower + third class

TABLE 3  
Student teachers' programme and performance in  
commerce and entrepreneurship

Programme	High	Low	Total
Agriculture Science	23	11	34
Home Economics	8	22	30
Total	31	33	64

Chi square = 10.71659  
D.F. = 1  
Significance = .00106

Table 4 shows the score for agriculture and home economics students in accounting. Chi square analysis indicates that there is no significant difference between the two groups of students since  $p = .739$ .

TABLE 4  
Programme of student teachers and their  
performance in accounting

Programme	High	Low	Total
Agriculture Science	19	15	34
Home Economics	18	12	30
Total	37	27	64

Chi square = .11079  
D.F. = 1

Table 5 shows that agriculture students have higher CGPA than home economics students, and this difference is significant at .05 level.

Table 6 shows that most students who joined the programme based on Diploma and HSC qualifications had higher scores for commerce and entrepreneurship, accounting and CGPA, whereas a significant number of teachers had a low score in all these areas. Matriculation and promoted students, too, had

TABLE 5  
Programme of student teachers and their CGPA

Programme	High	Low	Total
Agriculture Science	19	15	34
Home Economics	8	22	30
Total	27	37	64

Chi square = 5.57759  
D.F. = 1  
Significance = .01819  
Pearson's R = .29521      Significance = .01788

TABLE 6  
Academic achievement and entry qualifications of student teachers

	Commerce and Entrepreneurship		Accounting		CGPA	
	High	Low	High	Low	High	Low
Diploma/HSC Teachers	14	13	21	6	16	11
Matriculation/Promoted	5	14	8	11	4	15
Total	12	6	8	10	7	11
Total	31	33	37	27	27	37

low scores on those aspects, except for commerce and entrepreneurship. Promoted student are the first year diploma students in UPM who had attained a certain cumulative grade point average and had been promoted to the first year degree programme in the Faculty of Educational Studies, UPM.

Table 7 shows that a higher percentage of the non-bumiputera students scored higher for

TABLE 7  
Race and academic achievement of student teachers

	Commerce and Entrepreneurship		Accounting		CGPA	
	High	Low	High	Low	High	Low
Bumiputera	23	29	26	26	15	37
Non-bumiputera	8	4	11	1	9	3
Total	31	33	37	27	24	40

Note: Bumiputera(n) = 52  
Non-bumiputera (n) = 12

commerce and entrepreneurship, accounting and CGPA than bumiputera students.

Tables 8, 9, 10 and 11 show the significant differences between gender and programme of respondents with academic achievement. There is a significant difference between programme of respondents and scores on commerce and entrepreneurship and CGPA, where agriculture students have a higher mean than home economics students. There is also a significant difference between gender of respondents and scores on commerce and entrepreneurship and CGPA, where male students have a higher mean than female students. There is no significant difference between gender and programme of students and accounting score, as shown in Table 8.

TABLE 8  
Difference between demographic variables and accounting score

	Mean	s.d.	t-value	Sig.
Gender				
Female	70.0909	11.969	.63	.531
Male	68.1500	10.038		
Programme				
Ag. Sc.	69.2059	10.365	-.21	.836
Home Econ.	69.8000	12.560		

Note: \* p < .05

TABLE 9  
Difference between demographic variables and commerce and entrepreneurship score

	Mean	s.d.	t-value	Sig.
Gender				
Female	76.1364	5.246	-2.55	.013*
Male	79.7000	5.069		
Programme				
Ag. Sc.	79.5000	5.490	3.92	.000*
Home Econ.	74.7000	4.087		

Note: \* p < .05

TABLE 10  
Difference between demographic variables and CGPA

	Mean	s.d.	t-value	Sig.
Gender				
Female	2.8963	.273	-.92	.363
Male	2.9681	.326		
Programme				
Ag. Sc.	3.0222	.298	3.26	.002*
Home Econ.	2.8014	.233		

Note: \* = p < .05



TABLE 11  
Mean and standard deviation of the variables

Variables	Mean	Standard Deviation
Ability	307.328	37.769
CGPA	2.919	.290
Commerce and Entrepreneurship	77.250	5.413
Accounting	69.484	11.357

Table 12 shows the correlation of ability to teach, CGPA, score on commerce and entrepreneurship, and score on accounting.

TABLE 12  
Correlation of variables

	Ability to teach	CGPA	Com. & Entrp. Score	Acct. Score
Ability	-	.162	-.056	.338*
CGPA	.162	-	.644*	.456*
Commerce & Entrepreneur- ship	-.056	.644*	-	.239*
Accounting	.338*	.456*	.239*	-

\* =  $p < .05$

Even though students were exposed only to a few business courses, those who have higher academic performance tend to have a higher ability to teach, and vice versa. This can be explained by their background. According to the current pattern of courses taken by agriculture and home economics students, not even one business course related to the living skills syllabus was included as a technical course in their major programmes. But all agriculture students have the opportunity to learn a few other related business courses such as agriculture economics, farm management, and principles of economics. Diploma holders have studied three extra business courses such as introduction to accounting, introduction to agricultural economics; basic economics; all these courses have contributed to their performance in both subjects, commerce and entrepreneurship and also accounting. With this background, there is no doubt that they have more confidence in teaching the business topics as required compared to teachers and matriculation students who do not have such a background. Their background also contributed to the differences

in scores for commerce and entrepreneurship compared to home economics students.

The findings show that those who have high CGPA are those students enrolled in Agricultural Education who were selected for the programme based on their entry qualifications, that is Diploma in Agriculture and HSC/STPM. The researchers found that those students who are not teachers had a higher score in commerce and entrepreneurship, accounting and CGPA.

The findings also illustrate the significant difference between demographic variables and academic achievement in terms of gender and programme. It was also found that a majority of non-bumiputera students tend to have a higher score than the bumiputera students in all three areas; this is because the majority of the non-bumiputera students are HSC holders. Agriculture students tend to have higher scores in commerce and entrepreneurship and CGPA than home economics students. Respondents who are high achievers tend to be diploma and HSC holders as discussed above. They have a higher ability to teach because they understand the content of the subject better, especially in commerce and entrepreneurship and accounting topics, than those who are in the lower category.

The commerce and entrepreneurship syllabus is quite broad and consists of a variety of topics which could not be covered merely by taking two business courses. Even though the students had high academic performance they still do not have a high perception of their ability to teach the whole components in the commerce syllabus. The only explanation for this situation is that students are not really exposed to all the topics required by the living skills syllabus due to the time factor and limited courses. Other courses should be introduced in the minor package to cover all commerce and entrepreneurship topics as required. The situation is different for accounting topics because by taking one accounting course, the high ability students manage to understand the main contents of the 21 topics in the syllabus. The teaching strategy to conduct both related courses should be modified to suit the differences in the background of respondents.

## CONCLUSION

Based on the findings of the study, the following conclusions can be made.

1. There is a significant difference between programme and academic achievement of respondents. Agriculture students have higher CGPA scores, and better results on the commerce and entrepreneurship course than the home economics students.
2. Diploma and HSC holders have higher scores on commerce and entrepreneurship, accounting and CGPA than teachers and matriculation students.
3. Non-bumiputera students have a higher score on commerce and entrepreneurship, accounting and CGPA than bumiputera students.
4. There is no significant relationship between student teachers' ability to teach and students' CGPA.
5. There is a significant relationship between students' score in accounting and their score in the commerce and entrepreneurship course.
6. There is a significant relationship between students' CGPA and accounting performance.
7. There is a significant relationship between students' CGPA and commerce and entrepreneurship performance.
8. There is a significant relationship between students' ability to teach and their accounting performance.

#### RECOMMENDATIONS

1. Both programmes should continue to consider admitting diploma and HSC holders to the programme since they have a higher ability than the other groups of students.
2. Teachers should be given more opportunity to learn the accounting subject according to their pace, since their entry qualification is not as high as diploma, HSC or matriculation students. This could be done by having a full-time lecturer teaching the accounting components and arranging tutorials as required.
3. More business-related courses suitable to the requirements of the living skills syllabus should be introduced. The current commerce and entrepreneurship course should be divided into 2 separate courses so that the 64 topics will be taught deeply and not only superficially.
4. New courses should be introduced so that students could be exposed to higher level subject matter beyond school syllabus so that they will be more knowledgeable and more confident in teaching the subject matter. For

this reason, a minor in living skills is not suitable for all categories of students, unless they are admitted based on their experience and knowledge related to business.

5. Different approaches should be used to handle different categories of students in agriculture and home economics education. Different groups have different abilities and different needs to understand the demands of the subjects.
6. Matriculation students should be considered for admission to the programmes only if they are really interested to teach and do not perceive teaching as a second choice profession.
7. Co-ordinator of both programmes, Agriculture and Home Economics Education should advise students before they take living skills as their minor. In addition, selection of teacher trainees in vocational areas should not be based only on their experience in teaching agricultural science or home economics but also consider their experience in teaching commerce and entrepreneurship or living skills.
8. Students with "teaching experience" also need to undergo teaching practice because their previous experience was not related at all to the new subject matter.

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## Implementing Educational Innovation: Learning from the Classroom Interaction of Effective Bahasa Melayu Teachers in Malaysia

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**Keywords:** educational innovation, secondary school curriculum, good practice, Bahasa Melayu teachers, teacher education

### ABSTRAK

Kertas ini melaporkan satu kajian pengajaran di bilik darjah selepas lima tahun pelaksanaan Kurikulum Bersepadu Sekolah Menengah (KBSM) di Malaysia. Kajian ini mengambil kira sebahagian amalan 12 guru Bahasa Melayu yang dikenal pasti berkesan mengajar pelajar berumur 12-13 tahun melalui cerapan sistematik. Berbeza dengan falsafah KBSM, guru-guru tersebut cenderung menggunakan strategi pengajaran tradisional seluruh kelas dan menguasai interaksi dalam bilik darjah. Hasil kajian ini mencadangkan perlunya mengambil kira pengetahuan profesional guru yang sedia ada serta kepercayaan mereka tentang gagasan amalan pengajaran yang baik dalam merancang dan melaksanakan program-program pendidikan guru dalam perkhidmatan.

### ABSTRACT

This paper reports a study on classroom teaching techniques five years after the implementation of the Integrated Curriculum for Secondary Schools (KBSM) in Malaysia. Systematic observation was made of the classroom practices of 12 Bahasa Melayu teachers who were identified as effective in their teaching of 12-13 year-old pupils. Contrary to the philosophy of the KBSM, the teachers were inclined to use traditional whole-class teaching strategies and to dominate classroom interaction. The study concludes that there is a need to consider the existing teachers' professional knowledge and their beliefs about the notion of good practice when designing and implementing in-service teacher education programmes.

### INTRODUCTION

Evidence suggests that the success of educational innovation in the classroom is associated with the teachers (Fullan and Hargreaves 1992). However, with the increasing reality of imposed innovation in many countries (UNESCO 1986), teachers have, to some extent, been neglected and their participation in the development and dissemination of most planned educational change has been underestimated. Moreover, the lack of research in the developing countries dealing with the unique local situation tends to increase reliance on foreign educational concepts in the planning and implementation of such innovations. There

is a need to consider how teachers implement the innovation in their classroom teaching in such a situation (Knight and Smith 1989; Fullan 1991).

One example of recently planned educational innovation is the introduction of the Integrated Curriculum for Secondary Schools, better known by its Bahasa Melayu acronym KBSM. The implementation of the KBSM in 1988 was driven by the need to achieve the aims of the National Educational Philosophy (NEP) to not only equip individuals with the appropriate knowledge and skills, but also to produce responsible citizens with strong moral and ethical values.



Its implementation, claims the Ministry of Education (1990a), has had an effect not only on secondary school teachers and their classroom teaching, but also on their professional development. However, the most crucial and much publicized effect of the KBSM is said to be on the lives and professional development of existing secondary school teachers, especially from its recommendations on how to deliver the new curriculum in the classroom.

One such publication, a module of the National Educational Philosophy (Ministry of Education 1990a) which contains a guide of appropriate teaching and learning styles for the KBSM, made a claim that the effectiveness of teaching and learning in the secondary school classroom is dependent on the teaching and learning styles being practised by the teacher. Chapter 5 (p. 37-58) of the module suggested that teachers should use more pupil-centred rather than teacher-centred strategies. The module also recommended that effective teachers of the KBSM should:

- (1) Improve the quality of her/his questions not only by emphasizing questions which require a low cognitive demand, such as memorization of the facts, but also questions which require a high cognitive demand such as reasoning,
- (2) Stimulate pupil's questions, not only questions directed to the teacher but also questions directed to fellow pupils, and
- (3) Reduce the amount of time of teacher talk, and subsequently increase the amount of pupil talk.

#### *Good Practice and Teacher Effectiveness*

Obviously, it is preferable for in-service programmes and materials to reflect good practice as identified by educational research. Good practice in teaching has always been associated with teacher effectiveness (Biddle and Dunkin 1987). An effective teacher should be one whose pupils have consistently made better than expected progress. She/he uses methods suited to the learning purpose, involving the strategic use of multiple teaching methods. This reflects general ambiguity about the nature of teaching itself and implies that empirical investigation is necessary both to describe embedded beliefs and practices characteristic of effective teaching and, hence, to illuminate the progress of curriculum implementation.

However, there has been little empirical investigation of the beliefs and practices of the KBSM teachers. Five years after its inception, little, if anything, is known about how the Bahasa Melayu secondary school teachers have implemented the KBSM in their classroom teaching. Do the teachers follow the prescriptions of the KBSM modules effectively? Did the teachers adjust their teaching, particularly the procedural knowledge, to fulfil the requirements of the KBSM? Were the teachers able to exhibit good practices in implementing the KBSM? The KBSM modules remain the most authoritative prescriptive documents for the Bahasa Melayu secondary school teachers.

Information about good practices in classroom teaching, especially from expert teachers (Tobin and Fraser 1991; Hyland 1993) is needed to inform us of the development and improvement of curricula and teaching, particularly for national curricula such as the KBSM. Good practice also might provide a model to be emulated by novices, input to be used to help less effective teachers to implement the KBSM, and it can also offer a resource for further curriculum reform (Knight and Smith 1989). This approach of seeking good practice is currently in the forefront of research on teacher effectiveness and effective teaching (Galton 1991; Knight 1991; Ornstein 1991; Cullingford 1995).

### OBJECTIVE

The main objective of this study was to examine and describe the effective Bahasa Melayu teachers' methods through systematic classroom observation. It also considered the implications of the findings on curriculum reform and teacher education.

### DESIGN

The study was carried out with the proposition that the dynamics of classroom teaching can be explained by eliciting information from close analysis of inter-relationships between three main classroom processes, teachers' perceptions, strategies and behaviour; pupils' perceptions, strategies and behaviour; and characteristics of the learning task and activities (Kyriacou 1986). The inter-relationships between these three domains can be seen by observing the classroom practice of teachers.



One method of identifying these inter-relationships is to focus the study on classroom interaction, particularly teacher-pupil interaction and the quality of pupil involvement in this interaction, by concentrating on individual teachers and his/her pupils.

### INSTRUMENT

The study employed a systematic observation system. One observation instrument sensitive to the concepts of progressive teaching and pupil-centredness was used by Galton, Simon and Croll (1980) in the ORACLE study of the English primary classroom. Examination of the instrument suggested that it allows the full range of teacher and pupil classroom activities to be observed and that it could provide a framework for examining aspects of teacher and pupil classroom activities within the context of the KBSM. The instrument was supplemented by a schedule focusing attention upon noble values. Pilot testing on 15 teaching lessons suggested that both Teacher and Pupil Records were robust enough to be used in Form One classes of Malaysian secondary schools, and practice confirmed this to be the case. In each lesson, the teacher was observed using the Teacher Record with 25 observation episodes of 25-second time-sampling units. Similarly, each target pupil was observed for six episodes using the Pupil Record which focuses on the pupil's activities and interactions.

### SUBJECT

The criterion of an effective teacher as one whose pupils have consistently made better than expected progress could not be used due to a lack of assessment data from the KBSM and the lack of teachers who had taught the same pupils over a long period of time. Following Berliner (1986), the study employed the evaluative judgement of the education authorities to identify a sample of effective Bahasa Melayu teachers. This approach has cultural validity and is an important source of judgement about effectiveness, since the beliefs of people in authority have the power to perpetuate themselves. Furthermore, the nature of the study, which is concerned with the match and mismatch between the KBSM's demands and the teachers' concepts of effectiveness, could best be evaluated by observing the teachers who are considered by

the education authorities as effective by the KBSM's standards.

This study was carried out in 1992, five years after the KBSM was implemented. As KBSM was phased in, starting with Form One, attention was focused on Form One lessons, which have the best-developed KBSM practices. Concentrating on one group of pupils - 12 and 13-year-olds - controls effects that might be derived from pupil motivation. The Form One pupils have just finished their primary schooling whose curriculum also emphasized pupil-centred teaching and learning strategies. Its effectiveness is, however, worth another study. With six years' exposure to pupil-centred teaching, it might be assumed that Form One pupils are familiar with its activities and that the secondary school teachers can work to KBSM prescriptions without first needing to induct pupils into new ways of learning.

Since education in Malaysia is a centralized system, one district's educational administration was chosen. All teachers who teach the National Language, Bahasa Melayu - a KBSM core subject - in the district's 12 secondary schools were assessed by their respective principal, assistant principal and head of department. Each school authority was asked to nominate the most effective Form One Bahasa Melayu teacher, if any.

### DATA COLLECTION AND ANALYSIS

Twelve teachers (five male and seven female) of Bahasa Melayu who were nominated as effective by those in authority were studied. Some schools could not nominate any teacher because there was no teacher who met the criteria. Other schools which had difficulty in selecting only one nominated two.

Six target pupils in each participating teacher's class were identified according to their achievement in the latest semester's examination result. These six pupils, two representatives for each group, were selected at random according to high achievers (score of 75% and above of total marks), medium achievers (score of 25-75% of total marks) and low achievers (score of less than 25% of total marks) in the results for each class. As far as possible, the selection included one girl and one boy in each pair. Although each teacher supplied the names of pupils in his/her class, together with their respective results and location in the class, the teacher was not informed about the selected



target pupils. There were 264 target pupils (126 male and 138 female), with a gender composition mean of 15.3 males and 16.8 females per lesson.

The data were gathered from 44 lessons of Form One teachers. The observation using the Teacher Record yielded a total of 1,100 observation episodes, with a total observation time of 458.33 minutes. The Pupil Record, focusing in each lesson on the six "target" pupils, yielded a total of 1,584 observation episodes with a total observation time of 660 minutes for 264 target pupils. A descriptive statistical analysis was employed. The initial step of analysis was to get frequencies and percentages of occurrences of all categories of the Teacher and Pupil Records (Croll 1980).

## RESULTS

### *Teachers' Classroom Activities*

The effective Bahasa Melayu teachers spent most of their classroom time (90.2% of all observations) interacting with their pupils (Table 1). The main form of the interaction was conversation (69.8% of all interactions). Silent interaction such as gesturing, demonstrating, marking and waiting occupied the rest (30.2%). Their conversation was mainly in the form of "statements", that is utterances which do not seek an answer (67.1% of all conversations) and of "questions", that is utterances which seek an answer (32.9%).

Further analysis of teachers' activity indicated that the major type of teachers' statements were related firstly, to "task supervision", that is statements which monitor and maintain the task activity (49.2% of all teacher statements), and secondly, to "task", that is statements associated with the theoretical, practical or observational content of a pupil's work (40.4% of all teacher statements). Only a small proportion of the teachers' statements were related to routine matters of classroom management (10.4%).

In contrast, most of the teachers' questions referred to the task, that is questions about the theoretical, practical or observational content of a pupil's work (54.1% of all teacher questions) rather than to the task supervision which covered questions which resulted in the pupil reflecting over whether or not she/he has finished her/his work and recalling the teacher's instructions about her/his task (41.1% of all teacher questions). Detailed analysis

TABLE 1  
Teachers' activity in the classroom

Activity	Percentage of all observations	Percentage in each major activity
<b>A. Making statements</b>		
<i>Task:</i>		
1. Of facts	6.9	16.3
2. Of ideas, problems	10.2	24.1
<i>Task supervision:</i>		
3. Telling pupil what to do	7.7	18.2
4. Praising work or effort	9.0	21.3
5. Feedback on work or effort	4.1	9.7
<i>Routine:</i>		
6. Routine information	1.5	3.5
7. Routine feedback	0.3	0.7
8. Critical control	0.5	1.2
9. Of small talk	2.1	5.0
<i>Sub-total</i>	42.3	100.0
<b>B. Questioning</b>		
<i>Task:</i>		
1. Of facts	1.2	5.8
2. Closed questions	2.1	10.1
3. Open questions	7.9	38.2
Referring to task supervision	8.5	41.1
Referring to routine matters	1.0	4.8
<i>Sub-total</i>	20.7	100.0
<b>C. Other interactions</b>		
1. Gesturing	8.5	31.3
2. Demonstrating	2.7	9.9
3. Marking	6.0	22.1
4. Waiting	3.2	11.8
5. Reading	6.8	25.0
<i>Sub-total</i>	27.2	100.0
<b>D. No teacher-pupil interaction</b>		
1. Visiting pupil	0.2	2.1
2. Totally distracted	8.8	91.6
3. Out of room	0.6	6.3
<i>Sub-total</i>	9.6	100.0
<b>Total</b>	100.0	

indicated that the effective Bahasa Melayu teachers used more "open" questions which stimulated pupils' imagination and reasoning (38.2% of all teacher questions), than questions

associated with factual answers (15.9%). The high proportion of "open" questions is consistent with the enquiry and discovery learning strategies recommended by the KBSM.

*Patterns of Teacher-Pupil Interactions*

The results from the Teacher Record showed that most teacher-pupil interactions (70.5%) focused on pupils as members of the whole class (Table 2). Less than one-fifth (17.1%) of all interactions were directed to the pupils as members of a group and 12.4% to pupils working alone.

TABLE 2  
Audiences of the teacher-to-pupil interactions in the effective Bahasa Melayu teachers' interactions

	Percentage based on total observations		Percentage based on total interactions	
	Pupil Record <sup>a</sup>	Teacher Record	Pupil Record <sup>a</sup>	Teacher Record
Teacher interacts with:				
Individual	1.6	11.2	64.0	12.4
Group	.8	15.5	32.0	17.1
Whole class	.1	63.8	4.0	70.5
Total interactions	2.5	90.5		
No interaction	97.6	9.5		
Total	100.0	100.0	100.0	100.0

Note. <sup>a</sup>Includes only when there was a pupil-to-teacher conversation; i.e., excluded 35.9% of the pupils' silent interaction with the teacher on-task.

On the other hand, the Pupil Record indicated that pupils only interacted verbally with their teachers for about 2.5% of all observations. When the pupils did communicate, they interacted with the teachers mainly as individuals (64.0% of all pupil-teacher interaction). This implies that only a small amount of individual attention was given even by those teachers considered to be "effective" by the education authorities.

Detailed analysis of their activities showed that pupils worked alone most of the time (44.2% of all observations), mainly on the task (29.7%). At other times, they interacted with their teachers

(38.4%), mainly by observing and listening to the teachers' presentation (35.9%). Only 17.4% of observations show pupils interacting with their peers, mainly on the task (14.1% of all observations). This suggests that these teachers need to improve their pupil-centred strategy if they want to enhance their teaching parallel to prescriptions in the KBSM modules. If this is not happening, even by effective teachers, it is argued that the prescription on pupil-centred strategies in the modules is contested.

*Tasks and Audiences of Interactions*

The contents of teachers' conversations overwhelmingly (91.5%) related to the task and its associated supervision (Table 3). A distinction was made between "task" utterances (i.e. all teachers' utterances referring to the substantive content of the topic under study which contains a definite cognitive content) and "task supervision" (i.e. any utterances concerned with monitoring and maintaining the task activity which do not contain a substantial cognitive content in themselves). An important question, which is beyond the scope of the study, is how good were the tasks.

TABLE 3  
Tasks and class audience of the effective Bahasa Melayu teachers' conversations (Percentage of questions and statements)

Task contents of the conversations	Percentage of all conversations	Percentage of class conversations
1. Task	44.9	49.4
2. Task supervision	46.6	41.5
3. Total (1 and 2)	91.5	90.9
4. Routine	8.5	9.1
5. Total (1, 2 and 4)	100.0	100.0
Task conversations		
6. Higher level	28.7	24.5
7. Lower level	16.2	15.4

Detailed analysis of the "task" conversations indicated that there were more higher order conversations (statements and questions which stimulated pupils' imagination and reasoning - 28.7% of teacher conversations) than lower order conversations (statements and questions about



the factual information - 16.2% of teacher conversations). Both types of conversations were most common in whole class settings (85.4% of higher order and 95.1% of lower order task conversations).

#### *Noble Values*

The KBSM recommended that effective teachers should promote noble values. The results of these observations suggested that the teachers spent 4.1% of their time on such promotion (Table 4).

TABLE 4

Inculcation of the noble values in the effective Bahasa Melayu teachers' interactions

Noble Value	Percentage of observations	Percentage of statements or questions
1. Kindness	0.5	0.9
2. Mutual respect	0.2	0.3
3. Caring	2.4	3.7
4. Physical and mental purity	0.2	0.3
5. Honesty	0.1	0.1
6. Co-operation	0.2	0.3
7. Gratitude	0.4	0.6
8. Rationality	0.1	0.1
Total	4.1	6.3

Of the 16 noble values specifically prescribed in the KBSM, only eight were observed in the effective Bahasa Melayu teachers' lessons. These values were "kindness", "mutual respect", "caring", "physical and mental purity", "honesty", "co-operation", "gratitude", and "rationality".

#### *Classroom Organization*

Most pupils sat in groups (95.8% of all observations), usually in pairs of the same gender (48.9%) (Table 5). However, it is well known that seating arrangements do not imply that the curriculum is geared to group learning. In 24.2% of cases, groups were of mixed gender.

#### *Pupil Achievement and Tasks*

The relationship between teacher attention and pupil achievement gathered from the Pupil

TABLE 5  
Pupils' seating arrangements in the effective Bahasa Melayu teachers' classrooms (Percentage of observations)

Seating base	Percentage
Alone	4.2
Pair, of the same gender	48.9
Pair, of the opposite gender	13.6
Several, of the same gender	22.7
Several, of the opposite gender	10.6
Total	100.0

Record indicated that there was no significant difference ( $\chi^2 = 3.81, p > 0.05$ ) in the distribution of the teacher-pupil interaction between the three groups of pupils. This may be related to the very small proportion of pupil-teacher conversations (2.5% of all observations). The high achievers received more attention as individuals (0.9% of all observations) whereas low achievers received more attention as members of a group (0.6% of all observations) (Table 6).

TABLE 6

Pupils' achievement, audience and tasks in the effective Bahasa Melayu teachers' interactions (Percentage of observations)

Audience and task contents	Percentage		
	High achievers	Medium achievers	Low achievers
1. All teacher-pupil interactions	1.1	0.5	0.9
a. Individual interaction	0.9	0.4	0.3
b. Interaction as group member	0.1	0.1	0.6
c. Interaction as class member	0.1	-	-
d. Teacher ignores pupil's attempt to initiate interaction	0.1	-	-
2. Task-related contents:			
a. Interaction on task	1.1	0.4	0.9
b. Interaction on routine	0.1	0.1	-
Number of cases	88	88	88

### *Pupils' Gender and Tasks*

The data from the Teacher Record showed that there were highly significant differences in the attention given by the effective Bahasa Melayu teachers to pupils of different genders ( $\chi^2 = 12.9$ ,  $p < 0.01$ ). The data from the Pupil Record indicated that girls received more than twice as much teacher attention than the boys (1.8 and 0.7% of observations respectively) (Table 7). Girls also received more attention than boys with regard to the tasks.

TABLE 7  
Pupils' gender, audience and tasks in the effective Bahasa Melayu teachers' interactions  
(Percentage of observations)

Audience and tasks	Percentage	
	Boys	Girls
1. All teacher-to-pupil interactions	0.7	1.8
a. Individual interaction	0.5	1.1
b. Interaction as group member	0.2	0.5
c. Interaction as class member	-	0.1
d. Teacher ignores pupil's attempt to initiate interaction	-	0.1
2. Task-related interactions:		
a. Interaction on task	0.6	1.7
b. Interaction on routine	0.1	0.1
Number of cases	132	132

Further analysis of the results indicated that the teachers' gender had a significant association ( $\chi^2 = 29.83$ ,  $p < 0.05$ ) with their interaction with boys and girls. On average, the male teachers were inclined to interact with the female pupils about two-and-half times more than the female teachers did.

### CONCLUSIONS

What can we learn from the practices of effective Malaysian teachers of Bahasa Melayu? Five years after the implementation of the KBSM, the findings suggested that the teachers followed only some of the prescriptions of the KBSM, such as those with regard to the types of questions and maintaining the engagement of pupils on the task. However, there is little evidence, even from the practice of effective Bahasa Melayu teachers, that the teaching and learning processes underlying the KBSM curriculum of inculcating knowledge, skills and

values are being implemented; nor that the KBSM was considered as giving new status to the pupils as the key players, and the teacher as counsellor; let alone that the pupils were becoming an active factor, whereas the teacher was being the motivator and source of stimulus, a mover of teaching and learning, as claimed by the Ministry (Ministry of Education 1990a, 1990b).

Teachers had little involvement in the development and dissemination of educational innovations such as the KBSM. Their participation is mainly at the implementation stage. While their involvement at the earlier stage of innovation is reported to have some disadvantages (Fullan and Pomfret 1977), without it the genuine intention of the innovation will disperse along the drain of educational bureaucracy and the "new" content of such an innovation is subject to variations of interpretation before it reaches the teacher. As the implementation becomes more complicated, the more the innovation is opened to interpretation, and the more fragile is the business of innovation.

The early involvement of teachers is also necessary to inject current professional knowledge in the development of innovation, especially since the existing affected teachers have already developed their own sustainable approaches towards good practice which are hard to change. Quite often, any attempt to introduce educational change is seen as a disturbance. The unfamiliar "new" content of innovation might involve de-skilling of their existing practices (Vulliamy and Webb 1991). The failure to implement the innovation successfully has tremendous effect of "guilt and frustration at not being able to meet the standards" (Fullan and Hargreaves 1992, p. 6). Faced with the "unrealistic" innovation, they have to make an appropriate professional decision, often based on their beliefs about good practice in such a situation (Knight and Smith 1989).

Since the implementation of the KBSM is underway, how should we implement effectively a policy which is, in practice, being rejected and subverted? One might say that an alternative is to abandon the KBSM ideals and adopt a more limited set of goals based upon the more conservative, teacher-defined view of good practice. However, this is very unlikely, at least at



present, because not all elements of the KBSM are unusable. Another possibility is to improve the situation, especially through teacher development. As suggested by the Minister (Sulaiman 1991), teacher education must do a better job in identifying the kind of professional knowledge, skills and values necessary to prepare teachers to work in different contexts. There is certainly a need to consider the existing teachers' professional knowledge and their beliefs about the notion of good practice in the designing and implementation of in-service teacher education programmes.

As the best way to improve teaching practice lies not so much in trying to control teachers' behaviour as in helping them to control their own behaviour by becoming more aware of what they are doing (Elliot, in Day 1993), teachers' existing knowledge, beliefs and practice and the contexts in which they occur should be "scrutinized" and "supported". In-service teacher education should be designed, as suggested by Calderhead and Robson (1991), to cater for the various well-fixed images of teaching that teachers already have which affect what they get from their courses. This model of developing in-service teacher education is consistent with the idea of reflective practice (Schon 1983) and the idea of responsibility through partnership and coalition (Day 1993).

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Melaksanakan Pendidikan Kritis dengan Jaminan, Kesejahteraan dan  
Keberhasilan Siswa Sekolah

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ABSTRAK

ABSTRAK

Penelitian ini bertujuan untuk mengetahui bagaimana pelaksanaan pendidikan kritis di sekolah-sekolah di Kuala Lumpur. Untuk itu, penelitian ini menggunakan pendekatan kualitatif dengan menggunakan teknik wawancara mendalam, observasi partisipatif, dan analisis isi. Hasil penelitian menunjukkan bahwa pelaksanaan pendidikan kritis di sekolah-sekolah di Kuala Lumpur masih belum optimal. Hal ini disebabkan oleh beberapa faktor, yaitu kurangnya pemahaman tentang pendidikan kritis, kurangnya dukungan dari pihak-pihak yang terkait, dan kurangnya sumber daya manusia yang berkualitas. Oleh karena itu, diperlukan upaya-upaya untuk meningkatkan pelaksanaan pendidikan kritis di sekolah-sekolah di Kuala Lumpur, yaitu dengan meningkatkan pemahaman tentang pendidikan kritis, meningkatkan dukungan dari pihak-pihak yang terkait, dan meningkatkan sumber daya manusia yang berkualitas.

ABSTRACT

This study aims to know how the implementation of critical education in schools in Kuala Lumpur. For this purpose, this study uses a qualitative approach using in-depth interviews, participatory observation, and content analysis. The research results show that the implementation of critical education in schools in Kuala Lumpur is still not optimal. This is caused by several factors, namely lack of understanding of critical education, lack of support from related parties, and lack of quality human resources. Therefore, it is necessary to make efforts to improve the implementation of critical education in schools in Kuala Lumpur, namely by increasing understanding of critical education, increasing support from related parties, and increasing quality human resources.



## Hubungan Nilai Kerja dengan Jantina, Umur dan Pengalaman Mengajar Guru Pelatih

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**Kata kunci:** nilai kerja, sikap kerja, latihan guru

### ABSTRAK

Untuk berjaya di dalam pekerjaan, seseorang itu perlu mempunyai bukan sahaja pengetahuan dan kemahiran, tetapi juga nilai kerja yang baik. Kajian ini meninjau dua belas nilai kerja guru pelatih Universiti Pertanian Malaysia (UPM) dan hubungan di antara nilai-nilai kerja tersebut dengan jantina, umur dan pengalaman mengajar. Secara amnya, guru pelatih UPM mempunyai nilai kerja yang baik. Mereka menganggap perkembangan sendiri, ganjaran ekonomi dan pekerjaan terjamin sebagai sangat penting, manakala kreativiti, keadaan tempat kerja, stail hidup dan autonomi sebagai sederhana penting. Nilai seperti kepelbagaian, autoriti, hubungan sosial, resiko dan prestij dianggap sebagai kurang penting kepada mereka. Selain itu, hubungan rendah yang signifikan wujud antara nilai kerja secara keseluruhan dengan pengalaman mengajar dan umur. Pada keseluruhannya, guru pelatih yang tiada pengalaman mengajar dan berumur muda didapati mempunyai nilai kerja yang lebih baik daripada guru pelatih yang mempunyai pengalaman mengajar. Guru pelatih lelaki didapati lebih mementingkan kreativiti dan autoriti daripada guru pelatih perempuan. Guru pelatih yang tiada pengalaman mengajar didapati lebih mementingkan kepelbagaian, resiko dan prestij daripada guru pelatih yang berpengalaman mengajar. Umur didapati mempunyai hubungan rendah yang negatif tetapi signifikan dengan stail hidup, autoriti, resiko dan prestij. Hubungan ini menunjukkan bertambah berumur guru pelatih, kepentingan nilai tersebut kepada mereka berkurangan. Antara cadangan hasil daripada dapatan kajian ialah memberi ganjaran yang setimpal untuk menarik minat generasi muda menjadi guru, memberi lebih autonomi kepada guru, menggalakkan guru menggunakan daya kreativiti masing-masing dan memberi tugas yang lebih mencabar kepada guru muda.

### ABSTRACT

In order to be successful in his work, a person should have not only knowledge and skills, but also good work values. The study explored twelve work values of trainee teachers of Universiti Pertanian Malaysia (UPM) and their relationships with gender, age and teaching experience. In general, trainee teachers of UPM had good work values. They considered self-development, economic reward and job security as very important values, whereas creativity, working conditions, life style and autonomy were considered moderately important. Values like variety, authority, social relationship, risk, and prestige were not very important to them. In addition, significantly low relationships exist between work values and age and teaching experience. Young trainee teachers without teaching experience were found to have better work values than experienced trainee teachers. Male trainee teachers were found to value creativity and authority more than female trainee teachers. Trainee teachers without teaching experience were also found to value variety, risk and prestige more than experienced trainee teachers. Age was found to have negative and low but significant relationships with life style, authority, risk and prestige. This relationship showed that as trainee teachers grew older, these values became less important to them. Based on the findings of the study, it is suggested that rewards should be given to teachers in order to attract more of the younger generation to become teachers, teachers should be given more autonomy, teachers should be motivated to use their own creativity, and younger teachers should be given challenging tasks.

## PENGENALAN

Kraska (1990) menyatakan bahawa majikan mahu pekerja yang mempunyai nilai atau etika kerja yang baik. Pekerja sedemikian berjaya melaksanakan kerja dengan sempurna. Selain itu, pekerja yang mempunyai nilai kerja yang baik didapati menunjukkan kepuasan dalam menjalankan kerja mereka dan mereka mempunyai sikap yang positif dalam membuat keputusan (Montague 1986). Sebaliknya pekerja yang tidak mempunyai nilai kerja yang baik boleh menjejaskan prestasi mereka di tempat kerja. Ini jelas daripada laporan Beach et al. (1982) yang menyatakan bahawa 87% daripada pembuangan pekerja dan keengganan majikan menaikkan pangkat pekerja disebabkan oleh nilai kerja pekerja yang tidak baik yang ditunjukkan melalui tabiat dan tingkah laku mereka semasa di tempat kerja. Menurut Oinonen (1984) pula, tanpa nilai kerja yang baik, pekerja biasanya gagal mendapat pekerjaan yang mereka ingini.

Sesuatu program pendidikan tidak akan dikatakan efektif jika pelajarnya mempunyai nilai kerja yang tidak baik apabila bergraduat daripada program berkenaan. Bagi Wenrich and Wenrich (1974), seseorang graduan itu bukan sahaja perlu menguasai pengetahuan dan kemahiran tetapi juga perlu mempunyai nilai kerja yang baik. Malah mereka juga mencadangkan agar sebarang program pendidikan perlu menyedari sejauhmana pelajar memenuhi keperluan dan ekspektasi majikan. Berrymann (1987) yang menyokong kepentingan nilai kerja dibentuk di kalangan pelajar mencadangkan agar gelombang reformasi pendidikan pada masa akan datang mengambil kira pengajaran nilai kerja, seperti kerjasama dan usaha berkumpulan, kepada pelajar.

Beberapa kajian yang telah dijalankan tentang nilai kerja memberi laporan yang berbeza berkaitan dengan hubungan beberapa variabel latar belakang dengan nilai kerja. Walau bagaimanapun, dalam kajian ini, hanya variabel latar belakang jantina, umur dan pengalaman bekerja sahaja ditinjau sama ada terdapat hubungan dengan nilai kerja.

## TUJUAN

Tujuan kajian ini ialah untuk mengenal pasti nilai kerja guru pelatih UPM. Untuk mencapai tujuan ini, soalan-soalan kajian berikut dikemukakan:

1. Apakah nilai kerja guru pelatih UPM?
2. Adakah terdapat hubungan yang signifikan antara nilai kerja dengan jantina, umur dan pengalaman mengajar guru pelatih UPM?

## METODOLOGI

Kajian ini merupakan kajian deskriptif-korelasi. Data diperolehi melalui soal selidik.

### *Populasi dan Sampel*

Populasi kajian terdiri daripada 430 orang guru pelatih UPM yang menjalani latihan mengajar dan praktikum kaunseling di sekolah menengah di Selangor, Kuala Lumpur, Perak Selatan, Negeri Sembilan, Melaka dan Johor Utara. Teknik persampelan kelompok berdasarkan program pengajian digunakan untuk mendapat sampel kajian. Berdasarkan jadual saiz sampel Krecjie dan Morgan (1970), bagi 440 orang sebagai populasi, sebanyak 205 orang diperlukan sebagai sampel. Melalui teknik persampelan ini, sebanyak 50% guru pelatih dipilih secara rawak bagi setiap program. Ini menjadikan sejumlah 215 guru pelatih terpilih sebagai sampel. Jumlah ini sudah melebihi jumlah minimum saiz sampel sepertimana yang diperlukan mengikut jadual saiz sampel Krecjie and Morgan (1970).

### *Instrumentasi*

Soal selidik dibentuk untuk mengumpul data. Soal selidik ini mengandungi dua bahagian. Bahagian pertama mengandungi soalan untuk mendapat maklumat tentang latar belakang responden. Bahagian kedua pula mengandungi item untuk mengukur nilai kerja responden. Item dalam bahagian ini telah dibentuk oleh penyelidik sendiri dan juga diubahsuai daripada item yang telah dibentuk oleh Super (1970) dan Wu (1985). Sebanyak 60 item telah dibentuk untuk mengukur 12 nilai kerja. Setiap nilai kerja mempunyai 5 item.

### *Kesahan dan Kebolehpercayaan*

Setelah instrumen atau soal selidik untuk mengukur nilai kerja dibentuk, instrumen berkenaan telah diserahkan kepada sekumpulan lima orang pensyarah Fakulti Pengajian Pendidikan, UPM untuk diteliti dan memberi komen. Tujuannya ialah untuk mendapat kesahan kandungan bagi instrumen berkenaan. Segala komen daripada panel pakar tersebut diambil kira semasa pengubahsuaian instrumen itu dilakukan.



Instrumen berkenaan telah dikaji rintis dengan menggunakan 25 orang pelajar yang tidak terlibat dalam kajian. Hasil kajian rintis digunakan untuk menentukan kebolehpercayaan instrumen berkenaan. Pekali kebolehpercayaan instrumen untuk mengukur 12 nilai kerja ialah di antara 0.76 dan 0.91. Pekali kebolehpercayaan bagi keseluruhan nilai kerja ialah 0.89. Soal selidik yang telah dibaiki berlandaskan kepada komen panel pakar dan hasil kajian rintis telah diposkan kepada responden yang sedang menjalani latihan mengajar dan praktikum kaunseling di sekolah. Tempoh masa dua minggu diberikan kepada mereka untuk mengesahkan kembali soal selidik yang telah siap diisi. Sebanyak 173 responden (80.5%) telah mengembalikan soal selidik. Kadar pulangan soal selidik ini adalah tinggi.

Data yang diperolehi dianalisis dengan menggunakan perisian statistik SPSS for Windows Release 6.0. Data deskriptif dianalisis dengan menggunakan kecenderungan memusat, frekuensi, min dan sisihan piawai. Hubungan antara variabel ditentukan dengan menggunakan pekali korelasi point biserial dan pearson product moment.

**DAPATAN**

*Latar Belakang*

Sebanyak 173 responden (80.5%) daripada 215 orang yang terpilih sebagai sampel telah mengembalikan soal selidik. Daripada jumlah itu, sebanyak 90 orang (52.0%) adalah lelaki dan 83 orang (48.0%) adalah perempuan. Majoriti responden (79.8%) berbangsa Melayu. Purata umur responden ialah 30.7 tahun. Responden tertua berumur 43 tahun dan responden termuda berumur 22 tahun. Sebanyak 105 responden (60.7%) berpengalaman mengajar dan 68 responden (39.3%) tidak pernah mengajar di sekolah sebelum menjalani latihan mengajar dan praktikum kaunseling. Bagi mereka yang berpengalaman mengajar, purata tahun pengalaman mengajar ialah 9.9 tahun.

*Nilai Kerja*

Secara keseluruhan, guru pelatih UPM mempunyai nilai kerja yang baik (Min = 3.2, sd = .30). Sebanyak 12 nilai kerja telah diukur. Nilai tersebut ialah perkembangan sendiri, ganjaran ekonomi, pekerjaan terjamin, kreativiti,

keadaan tempat kerja, stail hidup, autonomi, kepelbagaian, autoriti, hubungan sosial, risiko, dan prestij. Jadual 1 menunjukkan guru pelatih menganggap nilai kerja perkembangan sendiri, ganjaran ekonomi dan pekerjaan terjamin sebagai sangat penting bagi mereka. Nilai kerja seperti kreativiti, keadaan tempat kerja, stail hidup dan autonomi dianggap sebagai sederhana penting. Mereka menganggap nilai kerja kepelbagaian, autoriti, hubungan sosial, risiko dan prestij sebagai kurang penting kepada mereka.

JADUAL 1  
Nilai kerja guru pelatih UPM

Nilai kerja	Min	Sd
Perkembangan sendiri	3.6	.31
Ganjaran ekonomi	3.6	.43
Pekerjaan yang terjamin	3.4	.42
Kreativiti	3.3	.44
Keadaan tempat kerja	3.3	.42
Stail hidup	3.2	.40
Autonomi	3.2	.46
Kepelbagaian	2.9	.47
Autoriti	2.9	.50
Hubungan sosial	2.8	.46
Risiko	2.8	.47
Prestij	2.7	.65
Keseluruhan	3.2	.32

Skala: 1 = tidak penting, 2 = kurang penting, 3 = penting, 4 = sangat penting

*Hubungan Antara Variabel*

Hubungan antara nilai kerja dengan tiga variabel tidak bersandar (jantina, umur dan pengalaman mengajar) telah dicari. Hubungan rendah yang signifikan telah dikenal pasti antara keseluruhan nilai kerja dengan pengalaman mengajar (rpb = .15, p < .05) dan umur (r = -.18, p < .05). Guru pelatih yang muda dan bukan bekas guru didapati mempunyai nilai kerja yang lebih baik daripada guru pelatih tua dan berpengalaman mengajar.

Jantina didapati mempunyai hubungan rendah yang signifikan dengan nilai kerja kreativiti (rpb = .15, p < .05) dan autoriti (rpb = .21, p < .05). Guru pelatih lelaki didapati lebih mementingkan nilai kerja kreativiti dan autoriti daripada guru pelatih perempuan.

Umur didapati mempunyai hubungan yang rendah dan negatif tetapi signifikan dengan nilai stail hidup ( $r = -.20, p < .05$ ), autonomi ( $r = -.16, p < .05$ ), risiko ( $r = -.20, p < .05$ ) dan prestij ( $r = -.28, p < .05$ ). Hubungan yang negatif menunjukkan bertambah berumur guru pelatih, kurang penting nilai-nilai kerja stail hidup, autonomi, risiko dan prestij kepada mereka. Dengan kata lain, guru pelatih yang muda lebih mementingkan nilai-nilai kerja tersebut daripada guru pelatih yang lebih tua.

Pengalaman mengajar didapati mempunyai hubungan rendah yang signifikan dengan nilai kerja kepelbagaian ( $rpb = .16, p < .50$ ), risiko ( $rpb = .15, p < .05$ ) dan prestij ( $rpb = .22, p < .05$ ). Guru pelatih bukan bekas guru (tiada pengalaman mengajar) didapati lebih mementingkan nilai kerja kepelbagaian, risiko dan prestij daripada guru pelatih bekas guru (mempunyai pengalaman mengajar).

#### PERBINCANGAN

Dapatan kajian ini menunjukkan bahawa tidak ada hubungan yang signifikan antara jantina dengan nilai kerja secara umum. Ini menunjukkan tiada perbezaan nilai kerja antara guru pelatih lelaki dan guru pelatih perempuan.

Dapatan ini menyokong beberapa dapatan kajian lain yang juga menunjukkan bahawa tiada hubungan yang signifikan antara jantina dengan nilai kerja (Kaufman dan Feters 1980; Vodanovich dan Kramer 1989; Kanchier dan Unruh 1989). Walau bagaimanapun, terdapat banyak juga kajian mendapati perbezaan nilai kerja wujud antara lelaki dan perempuan (Skaggs 1987; Kraska 1991). Walau bagaimanapun, secara khususnya, kajian ini mendapati bahawa beberapa nilai kerja mempunyai hubungan yang signifikan dengan jantina. Antara nilai kerja tersebut ialah kreativiti dan autoriti. Guru pelatih lelaki didapati lebih mementingkan nilai kerja tersebut daripada guru pelatih perempuan.

Walaupun nilai kerja secara umumnya tidak mempunyai hubungan yang signifikan dengan jantina, ia mempunyai hubungan yang signifikan dengan umur dan pengalaman mengajar guru pelatih. Kedua-dua variabel tidak bersandar ini berkait antara satu sama lain. Sememangnya guru pelatih yang berpengalaman mengajar terdiri daripada mereka yang sudah berumur atau lebih tua daripada guru pelatih yang tiada pengalaman mengajar. Guru pelatih yang tiada pengalaman mengajar didapati mempunyai nilai kerja yang lebih baik daripada guru pelatih yang

JADUAL 2  
Hubungan antara variabel

Nilai kerja	Jantina (rpb)	Umur (r)	Pengalaman Mengajar (rpb)
Nilai kerja (keseluruhan)	.04	-.18*	.15*
Perkembangan sendiri	.10	.06	.00
Ganjaran ekonomi	.07	.15	.14
Pekerjaan yang terjamin	.05	.03	.05
Kreativiti	.15*	.06	.02
Kedudukan tempat kerja	.02	.012	.08
Stail hidup	.04	-.20*	.12
Autonomi	.04	-.16*	.10
Kepelbagaian	.10	.10	.16*
Autoriti	.21*	.02	.00
Hubungan sosial	.00	.13	.14
Risiko	.03	-.20*	.14
Prestij	.14	-.28*	.22*

\*  $p < .05$

rpb = Point Biserial

r = Pearson Product Moment

Skala: 1 = tidak penting, 2 = kurang penting, 3 = penting

4 = sangat penting



berpengalaman mengajar. Dengan kata lain, makin berumur seseorang guru pelatih itu, maka kepentingan nilai kerja pada dirinya makin berkurangan. Ini mungkin pekerjaan sebagai seorang guru, sebelum mereka meneruskan pengajian di UPM, menjadikan guru pelatih bekas guru kurang sensitif terhadap nilai kerja. Bagi mereka, yang penting, mungkin ialah mengejar sekeping ijazah yang menunjukkan peningkatan ilmu dan bukan peningkatan penghayatan nilai kerja. Guru pelatih berpengalaman mengajar juga didapati kurang mementingkan nilai kerja kepelbagaian, risiko dan prestij daripada guru pelatih yang tiada pengalaman mengajar. Ini mungkin kerana pengalaman di sekolah membuat seseorang guru itu memahami alam perguruan sebagai sesuatu yang rutin (tidak kepelbagaian), kurang risiko dan tidak begitu berprestij berbanding dengan banyak pekerjaan lain. Bagi guru pelatih yang tiada pengalaman mengajar dan masih muda, mereka seolah-olah merasakan pekerjaan pertama yang ingin diceburi adalah sesuatu yang mencabar (mempunyai risiko), kepelbagaian (tidak rutin) berprestij. Selain itu, mereka juga didapati mementingkan nilai kerja stail hidup dan autonomi lebih daripada guru pelatih berpengalaman mengajar. Bagi guru pelatih berpengalaman mengajar, semua nilai itu tidak menjadi sesuatu yang diigaukan kerana mereka sudah menyedari bahawa alam perguruan tidak menjanjikan nilai kerja tersebut kepada mereka.

#### CADANGAN

Berlandaskan dapatan kajian, beberapa cadangan berikut dikemukakan:

1. Untuk terus menarik minat guru dan bakal guru menceburi bidang perguruan, sistem saraan baru (SSB) dan ganjaran lain seperti kenaikan pangkat, guru pakar dan pengetua pakar perlu digalakkan dan diteruskan. Aktiviti-aktiviti ini jika dijalankan dengan baik akan menjadi daya penggerak kepada guru untuk terus memberi khidmat cemerlang mereka. Lebih baik lagi sekiranya pengajian para guru diperbaiki.
2. Untuk memberi autonomi kepada guru, maka beberapa perkara penting seperti sistem penilaian mestilah diserahkan kepada sekolah dan dikendalikan oleh guru dan bukan dilaksanakan secara berpusat seperti

sekarang. Kuasa tertentu yang sekarang dipegang oleh pegawai pendidikan di peringkat pusat perlulah diserahkan kepada pihak pengetua dan guru di peringkat sekolah. Dengan cara ini, pengetua dan guru mempunyai kuasa untuk membuat keputusan dalam hal-hal tertentu tanpa merujuk kepada pihak atasan. Dalam erti kata lain, konsep "empowerment" yang dilaung-laungkan oleh Kementerian Pendidikan Malaysia perlu dilaksanakan.

3. Walaupun kurikulum sekolah ditentukan oleh pihak pusat melalui Pusat Perkembangan Kurikulum (PPK), adalah wajar pihak berkenaan memberi garis panduan sahaja kepada guru tanpa terlalu terlibat dalam merangka kandungan dan cara menyampaikannya. Sepatutnya guru digalakkan menggunakan daya kreativiti masing-masing untuk mengolah kandungan mata pelajaran yang mereka ajar mengikut garis panduan yang disediakan oleh PPK.
4. Guru perlu digalakkan memberi sumbangan kepada masyarakat bukan sahaja melalui Persatuan Ibu Bapa dan Guru, malah melalui sebarang kegiatan yang dijalankan oleh masyarakat setempat seperti aktiviti Persatuan Belia, Persatuan Peladang dan sebagainya. Dengan cara ini, guru akan kembali dihormati oleh masyarakat.
5. Guru muda hendaklah diberi tanggungjawab yang mencabar oleh pihak sekolah. Usaha guru muda ini jika membuahkan hasil yang memuaskan perlulah diberi insentif atau ganjaran. Contohnya, jika mereka berjaya mendidik pelajar yang lambat sehingga mencapai kejayaan yang cemerlang dalam peperiksaan, maka guru muda ini bolehlah dianggap berjaya dan patut diberikan insentif atau ganjaran atas kejayaan mereka itu.
6. Kajian yang serupa perlu dijalankan ke atas guru pelatih lain, sama ada di UPM atau di institusi yang lain, untuk menentukan sama ada terdapat persamaan nilai kerja yang dianggap penting oleh mereka dengan guru pelatih yang telah terlibat dalam kajian ini. Jika dapatannya serupa, maka usaha tertentu perlu dilakukan untuk memastikan nilai

kerja yang dianggap penting oleh bakal guru itu selaras dengan apa yang terdapat dalam profesion perguruan. Jika tindakan tidak diambil, lambat laun profesion perguruan tidak akan dapat menarik minat generasi muda untuk menceburinya.

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## Selectivity and Timing: Evidence from the Performance of Malaysian Unit Trusts

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**Keywords:** unit trusts, market timing, selectivity, diversification

### ABSTRAK

Kajian ini mengkaji pemilihan dan pemasaan pasaran untuk 31 saham amanah yang beroperasi di Malaysia. Keputusan menunjukkan bahawa bagi jangka masa 1990-1995, saham amanah di Malaysia tidak mempunyai pemasaan pasaran kecuali saham amanah Kuala Lumpur Growth Fund. Namun demikian, terdapat bukti yang menunjukkan pengurus dana mempunyai kebijaksanaan dalam pemilihan saham-saham terpilih. Adalah didapati 81% saham amanah dalam kajian ini menghasilkan pulangan yang melebihi pulangan pasaran dan Kuala Lumpur Growth Fund mempunyai ukuran pemilihan yang tertinggi. Hubungan positif antara pemilihan dan pemasaan pasaran didapati dalam kajian ini dengan pekali korelasinya bernilai 0.53. Tahap mempelbagaian untuk 81% saham amanah adalah di bawah jangkaan dan ciri risiko-pulangannya adalah tidak konsisten dengan objektif yang telah ditetapkan.

### ABSTRACT

This paper presents an empirical examination of the selectivity and timing performance of 31 unit trusts in Malaysia. The empirical results indicate that during the 1990-1995 period, Malaysian unit trusts appear to possess no market timing ability, except for the Kuala Lumpur Growth Fund. However, there is some evidence of superior selection ability on the part of fund managers in picking up "good" stocks. Eighty-one per cent of the sample of unit trusts are able to beat the market return and the Kuala Lumpur Growth Fund ranked highest in terms of selectivity measure. The study found a positive correlation coefficient of 0.53 between selectivity and timing performance among the unit trusts. Further evidence suggests that 81% of the unit trusts have not achieved the expected level of diversification, and risk-return characteristics of the trusts are generally inconsistent with their stated objectives.

### INTRODUCTION

The development of the unit trust industry in Malaysia is still in its infancy and is expected to take off in the years ahead in the light of recent positive developments within the industry. Such developments include the introduction of new unit trusts (including the recently launched Amanah Saham Wawasan and several State unit trusts) and newly created unit trusts based on Islamic principles. In this respect, unit trusts will play an important role in the development of the Malaysian capital market through the proliferation of different types of funds to suit the various needs and risk-return profiles of investors.

Unit trust funds are classified into different risk categories to cater for investors with different

risk preference levels. There are six types of funds currently available in Malaysia: aggressive growth funds, growth funds, growth and income funds, income funds, balanced funds and bond funds. Bond funds are new in Malaysia the only such fund was launched in 1996.

#### *Overview of the Malaysian Unit Trust Industry*

In many developed and several emerging markets, unit trusts or mutual funds comprise a large section of the capital market. In the United States, for example, there are over 1,800 mutual funds with a staggering US\$2 trillion in assets. In neighbouring Thailand and Singapore, unit trusts constitute a bigger and faster growing share of market capitalization of equity markets than in Malaysia (Refer to Table 1).

TABLE 1  
Investment by unit trusts as a percentage  
of market capitalization

Country	% of Market Capitalization
Japan	48
Australia	40
United States	40
India	25
Thailand	16
Malaysia	5*

Source: *Business Times* 6/2/94

\* The latest published figure as at June 30 1995 is 7.9%, with total net asset value of RM43.1 billion, of which Amanah Saham Nasional and Amanah Saham Bumiputera accounted for RM27.9 billion.

However, in the past few years, the Malaysian unit trust industry has been rapidly making up for lost time and 1994 seems to have been the year of unit trusts, judging from the proliferation of unit trusts funds and the rapid increase in their popularity. As much as RM3 billion was invested by the middle of 1994 and doubtless, more will be channelled into new funds in the future. Presently, there are 29 unit trust management companies, including 4 property trust companies, managing a total of 57 (69 according to the latest statistics) funds in the Malaysian market. The unit trust industry is expected to play a more important role in the economy and garner at least 20% of the market capitalization by the year 2000 given the strong economic fundamentals and the government's encouragement of savings.

Many unit trust companies declare dividends of over 10 per cent per annum and combined with unit value capital gains ensure many investors a return of over 10% per annum on their investments. Given these returns, who would not want to invest in unit trusts? However, two critical issues need to be addressed namely, timing and selection abilities. Timing ability refers to a fund manager's ability to forecast price movements of the general market as a whole, while selection ability involves identification of individual stocks which are good bargains.

*Timing and Selection Abilities*

Fama (1972) suggested portfolio managers' forecasting skills could be partitioned into two

distinct components: (1) forecasts of price movements of selected individual stocks (security analysis or micro-forecasting); and (2) forecasts of price movements of the general stock market as a whole (market timing or macro-forecasting). This partitioning of forecasting skills is also evident in Treynor and Black (1973), who have shown that portfolio managers can effectively separate actions related to security analysis from those related to market timing.

Micro-forecasting or security analysis involves identification of individual stocks which are undervalued or overvalued relative to equities in general. Within the specification of the capital asset pricing model (CAPM), a micro-forecaster attempts to identify securities having expected returns that lie significantly off the security market line. Specifically, the micro-forecaster only forecasts non-systematic or security specific components of security return. Following Jensen (1972: 132) the excess return on portfolio can be written as:

$$R_{jt} = \beta_j R_{mt} + e_{jt} \tag{1}$$

where  $R_{jt}$  is the excess (net of risk-free rate) return on  $j_{th}$  portfolio,  $R_{mt}$  is the excess (net of risk-free rate) return on the market portfolio.  $\beta_j$  measures the sensitivity of the portfolio return to the market return and  $e_{jt}$  is a random error which has an expected value of zero. Within this framework, microforecasts about the  $j_{th}$  portfolio would involve concentrating in  $e_{jt}$ . If the portfolio manager is a superior forecaster (perhaps because of special knowledge not available to others) he will tend to select securities which realize  $e_{jt} > 0$ . Hence, his portfolio will earn more than the 'normal' risk premium for its level of risk. Allowance for such forecasting ability can be made by simply not constraining the estimating regression to pass through the origin. That is, we allow for the possible existence of a non-zero constant in equation (1) as follows:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + u_{jt} \tag{2}$$

The new error term  $u_{jt}$  will now have an expected value of zero. Thus if the portfolio manager has an ability to forecast security prices, the intercept  $\alpha_j$  in equation (2) will be positive. A passive strategy (random buy and hold policy) can be expected to yield a zero intercept.



On the other hand, if the manager is not doing as well as a random selection buy and hold policy,  $\alpha$ , will be negative. Such results may very well be due to large expenses in unsuccessful forecasting attempts.

Macro-forecasting or market timing refers to forecasts of future realizations of the market portfolio. A macro-forecaster will attempt to capitalize on any expectation he may have regarding the behaviour of the market return in the next period. If the manager believes that he can make better than average forecasts of market returns, he will adjust his portfolio risk level in anticipation of market movements. If successful, he will earn abnormal returns relative to an appropriate benchmark. For example, if the manager (correctly) perceives that there is a high probability that the market return will rise next period, he will be able to increase the return on his portfolio by increasing its risk. On the other hand, if the market return is expected to fall next period, he can reduce the losses on the portfolio by reducing the risk level of the portfolio.

Practically, a portfolio manager can adjust his portfolio risk by changing the asset mix such as the stocks versus money market (cash) securities in a common stock mutual fund, and /or readjusting the proportion of aggressive vs. defensive stocks. In either case, the systematic risk of the portfolio should be altered. Indeed, the market timer switches from more risky to less risky securities (or vice versa) in an attempt to outguess the movement of the market. Therefore, we can allow for the existence of timing ability in equation (2) by permitting the sensitivity coefficient ( $\beta_j$ ) to be stochastic. Market-timing ability will be present where  $\beta_j$  and  $R_{mt}$  are positively correlated.

Substantial research in the area of unit trust performance has concentrated on the portfolio manager's investment decision making ability. One weakness of this approach is that it fails to separate the aggressiveness of a fund manager from the quality of the information he possesses. It is apparent that superior performance occurs when fund manager is able to "time" the market (market timing) and forecast the returns on individual assets (selection ability).

Thus, attention has been shifted toward the distinction between security selection and market timing abilities. This distinction not only allows one to more finely measure the performance of

portfolio managers based upon their expertise, but also deals with the question of which activities are more economically rewarding. In addition, it is important for regulators that formulate policy concerning the operations of the marketplace.

#### *Research Objective*

This study focuses on the performance of 31 unit trusts funds in Malaysia for the period 1990-95. The main objective of this study is to examine the selectivity and timing ability of Malaysian unit trusts managers. Specifically, this paper attempts to investigate the following issues:

1. Correlation between mutual fund's selectivity and timing performance.
2. Degree of diversification of unit trusts.
3. Risk-return characteristics of unit trusts.
4. Fitness of the Treynor and Mazuy model.

#### **REVIEW OF PRIOR STUDIES**

Studies on the performance of unit trusts in developed economies were prompted by the need to compare their performance with other investments, which was facilitated by the availability of composite measures of performance. This section reviews the findings of some of these studies.

#### *Significant Timing and Selection Performance at Individual Fund Level*

Few studies found significant timing and selection performance at the individual fund level (Kon 1983; Lehmann and Modest 1987). Bhattacharya and Pfeleiderer (1983) also indicated that at the individual fund level there is some evidence of fund manager's superior forecasting ability. This implies that funds with no forecasting skills might only consider a totally passive management strategy and just provide a diversification service to their shareholders.

Grinblatt and Titman (1989a) examined the Jensen measure for a sample of 274 funds during the period 1974-84 and their results indicated that superior performance may in fact exist, particularly among aggressive growth and growth funds and those funds with the smallest net asset values. Lee and Rahman (1990) also found a positive correlation of 0.47 between stock selection and market timing performance, indicating that the funds did not exhibit particular specialization in one forecasting skill.



They found evidence of superior timing and selection at the individual fund level.

However, a couple of studies offer a different set of results. Sharpe (1966) studied 34 open-ended unit trusts with annual data for the period 1954-63 and found that on average, unit trusts did not outperform the market. Out of the 34 unit trusts, only 11 did better than the DJIA (Dow Jones Industrial Average). Another study carried out by Jensen (1968) for the period 1945-64 also reported similar results. The evidence on unit trust performance indicates not only that the 115 unit trusts examined were on average not able to predict security prices well enough to outperform a buy-the-market-and-hold policy, but also that there is very little evidence that any individual fund was able to perform better than expectations. The conclusions discussed were valid even when the returns were measured gross of management expenses (that is assume their bookkeeping, research and other expenses except brokerage commissions were obtained free). Thus, on average the funds were apparently not quite successful enough in their trading activities to recoup even their brokerage expenses. However, the question of diversification was not considered.

Firth (1977) studied the performance of 72 unit trusts in the United Kingdom using the capital asset pricing model and Sharpe's reward-variability index for the period 1965-75 showed that on average, managers of unit trusts were not able to forecast share prices accurately enough to outperform a simple buy and hold policy. None of the unit trusts examined provided investors with the opportunity to invest in a portfolio of greater volatility than the market portfolio. The results also imply that unit trust managers have no superior investment selection ability, this perhaps is not surprising in view of the competitive nature of the British stock market.

Kon and Jen (1979) examined the possibility of changing levels of market-related risk over time for unit trust portfolios. They separated their data sample into different risk regimes and found that a large number of funds engage in timing activities. There are also a number of studies documenting negative timing skill of unit trust managers. Coggin *et al.* (1993) studied the performance of US equity pension fund managers and found that the average timing measure was negative regardless of the choice of

benchmark portfolio or estimation model. These results are consistent with those of previous studies on unit trust performance (see Kon 1983; Chang and Lwellen 1984; Henriksson 1984; Lehmann and Modest 1987; Cumby and Glen 1990; Connor and Korajczyk 1991; Coggin and Hunter 1993). These studies found more evidence of negative market timing than positive, and also found some evidence of negative selection ability of unit trusts.

#### *Negative Correlation between Selectivity and Timing*

Studies of the micro and macro-forecasting ability of mutual fund managers generally find a zero or negative performance for the average fund, suggesting that the average fund manager displays no significant selection or timing ability. Further, a negative correlation between selection and timing performance, suggestive of reverse skills or activity specialization, is reported by Kon (1983), Henriksson (1984) and Chang and Lewellen (1984). Similar results were also reported by Chen *et al.* (1992). They studied a sample of 93 unit trusts with monthly data for the period 1977-84 and found that 62% of the funds exhibited negative timing parameters, indicating a lack of timing ability for average portfolio managers. Furthermore, the results also suggested that there was a trade-off between security selection and market timing for funds involved in both activities.

However, Jagannathan and Korajczyk (1986) argued that such results could arise from artificial market timing due to the differential leverage of the firms in the indices and those invested in by the unit trusts. They theoretically and empirically demonstrated how to create a portfolio that would exhibit positive (negative) timing performance and negative (positive) security selection when no true timing or selectivity exists. They suggested that funds invest in highly levered stocks will show a positive market timing performance while those investing in little or no risky debt stocks will show a negative timing performance.

Unlike the predictions in Jagannathan and Korajczyk (1986), Lehmann and Modest (1987) found no systematic evidence that funds with large negative timing terms have large positive selectivity. Specifically, they were unable to detect any substantive correlation between selectivity and timing terms. Bello's (1995) study also hypothesized that the preponderance of negative



timing performance and the negative correlation between timing performance and selectivity were explained by the form of the return-generating model used in those studies and not by the leverage characteristics of the fund's assets. Therefore, the negative correlation between selectivity and timing presents a problem of interpretation.

Another study carried out by Hunter *et al.* (1992) showed that the correlation between the estimates of selectivity and timing will necessarily be negative if the regression model is being used. They showed that this is because the sampling errors for the two estimates are negatively correlated. Similar result was also reported by Coggin *et al.* (1993). Grinblatt and Titman (1989b) have shown that many of the desirable properties of a performance measurement model which seeks to estimate both selectivity and market timing skill are not present if selectivity and timing are correlated. Therefore, the correlation between selectivity and market timing is an unsettled question in the literature.

*Models of Selectivity and Timing*

At present, it is an accepted practice to model selectivity and timing simultaneously. Jensen (1968, 1969) formulated a return-generating model to measure performance of managed portfolios. The model is:

$$R_{pt} = \alpha_p + \beta_p R_{mt} + \mu_{pt} \tag{3}$$

where  $R_{pt}$  is the excess (net of risk-free rate) return on the  $p_{th}$  portfolio.  $R_{mt}$  is the excess (net of risk-free rate) return on the market portfolio,  $\alpha_p$  is a measure of security selection ability,  $\beta_p$  measures the sensitivity of the portfolio to the market return,  $\mu_{pt}$  is a random error which has expected value of zero and  $t$  denotes time. This specification assumes that the risk level of the portfolio under consideration is stationary through time and ignores the market timing skill of the managers. Indeed, portfolio managers may shift the overall risk composition of their portfolio in anticipation of broad market price movements. Fama (1972) and Jensen (1972) addressed this issue and suggested a somewhat finer breakdown of performance.

Treynor and Mazuy (1966) added a quadratic term to equation (3) to test for market timing skill. They argued that if a manager can forecast market returns, he will hold a greater

proportion of the market portfolio when the return on the market is high and a smaller proportion when the return on the market is low. Thus, the portfolio return will be a non-linear function of the market return as follows:

$$R_{pt} = \alpha_p + \beta_p R_{mt} + \gamma(R_{mt})^2 + \epsilon_{pt} \tag{4}$$

A positive value of  $\gamma$  would imply positive market timing skill.

Jensen (1972) developed a similar model to detect selectivity and timing skill of managers. Jensen's measure of market timing performance calls for a fund manager to forecast the deviation of the market portfolio return from its consensus expected return. By assuming that the forecasted return and the actual return on the market have a joint normal distribution, Jensen shows that a market timer's forecasting skill can be measured by the correlation between the market timer's forecast and the realized return on the market.

Bhattacharya and Pfleiderer (1983) extended the work of Jensen (1972). By correcting an error made in Jensen (1972), they show that one can use a simple regression technique to obtain measures of timing and selection ability. Jensen assumed that the manager uses unadjusted forecast of the market return in the timing decision. Bhattacharya and Pfleiderer assume that the manager adjusts forecasts to minimize the variance of the forecast error. They specify a relationship in terms of observable variables, which is similar to the Treynor and Mazuy's (1966) model:

$$R_{pt} = \alpha_p + \theta E(R_{mt})(1-\Psi)R_{mt} + \Psi\theta(R_{mt})^2 + \theta\Psi\epsilon_t R_{mt} + \mu_{pt} \tag{5}$$

where

- $\alpha_p$  = security selection ability,
- $\theta$  = fund manager's response to information, i.e., risk level deviation from the target risk level depending on the optimal forecast of the market return.
- $\Psi$  = coefficient of determination between the manager's forecast and the excess return on the market, and
- $\mu, \epsilon$  = the error of the manager's forecast.

The quadratic regression of  $R_{pt}$  on  $R_{mt}$  will detect the existence of stock selection ability, as revealed by  $\alpha_p$ . The disturbance term in equation (5) :



$$\bar{\omega}_t = \theta\Psi\epsilon_t R_{mt} + \mu_{pt} \quad (6)$$

contains the information needed to quantify the manager's timing skill by regressing  $(\bar{\omega}_t)^2$  on  $(R_{mt})^2$ :

$$(\bar{\omega}_t)^2 = \theta^2\Psi^2 (\sigma\epsilon)^2 (R_{mt})^2 + St \quad (7)$$

The proposed regression produces a consistent estimator of  $\theta^2\Psi^2\sigma^2\epsilon$ , where  $(\sigma\epsilon)^2$  is the variance of the manager's forecast error. Using the consistent estimator of  $\theta\Psi$ , recovered from equation (5) we can obtain  $(\sigma\epsilon)^2$ . This, coupled with knowledge about  $(\sigma\pi)^2$ , the variance of excess return on the market, allows us to estimate  $\Psi = (\sigma\pi)^2 / [(\sigma\pi)^2 + (\sigma\epsilon)^2] = \rho^2$ , where  $\rho$  is the correlation between the manager's forecast and excess return on the market and truly measures the quality of the manager's timing information. It should be noted that the disturbance term is heteroscedastic and does not produce the most efficient estimates of the parameters.

The Bhattacharya and Pfeleiderer (1983) model of equation (5) is a refinement of the Treynor and Mazuy model. It focuses on the efficient of the squared excess market return as an indication of timing skill. It was the first model to analyse the error term to identify a manager's forecasting skill. Such a refinement should make the model more useful than previous ones. However, as noted in Coggin and Hunter (1993), one weakness of the Treynor and Mazuy and the Bhattacharya and Pfeleiderer models is that they ignore negative or inferior market timing.

There are other models in the literature that permit identification and separation of selectivity and timing skills of portfolio managers, e.g., models by Grinblatt and Titman (1989b), Henriksson and Merton (1981), and an alternative to the Henriksson and Merton model proposed by Kon and Jen (1978, 1979). The Grinblatt and Titman model requires the historical sequence of portfolio weights (i.e., the amount invested in each stock) for the manager. Unfortunately, data on portfolio weights are very costly, time-consuming, and often not available.

**DATA AND METHODOLOGY**

To detect selection ability and market timing skill of Malaysian mutual fund managers, monthly returns for 62 months (July 1990 to August 1995) for a sample of 31 unit trusts were used.

The sample was grouped into 3 investment objectives, consisting of 18 balanced funds, 10 growth funds and 3 income funds. The monthly rate of return on the KLSE Composite Index was used to proxy for the market's return. Both monthly unit trust data and dividend data were obtained from New Straits Times Sdn Bhd's database. The yield on 91-day Treasury Bills was obtained from *Bank Negara's Quarterly Bulletin*.

*Treynor and Mazuy Model (TM Model)*

The stock selection and market timing performance of each managed portfolio are estimated with Treynor and Mazuy (1966) equation:

$$R_{pt} = \alpha_p + \beta_1 R_{mt} + \beta_2 R_{mt}^2 + \epsilon_{pt}$$

where

- $R_{pt}$  = the dividend-adjusted return on portfolio p in month t minus the yield on 91-day Treasury bills in month t ( $R_{ft}$ );
- $R_{mt}$  = the observed return on the KLSE Composite Index in month t minus  $R_{ft}$ ;
- $\alpha_p$  = the estimated selectivity;
- $\beta_1$  = the beta risk of unit trust;
- $\beta_2$  = the estimated timing performance;
- $\epsilon_{pt}$  = the residual excess return on portfolio p in month t.

*Computation of Variables*

The dividend-adjusted return on the unit trust ( $R_{pt}$ ) was calculated as follows:

$$R_{pt} = \frac{P_t + D_t + P_{t-1}}{P_{t-1}}$$

where

- $P_t$  = fund's selling price at the end of month t
- $P_{t-1}$  = fund's selling price one month before t
- $D_t$  = dividends distributed at time t

The return on the market index ( $R_{mt}$ ) was measured as follows:

$$R_{mt} = \frac{I_t - I_{t-1}}{I_{t-1}}$$



TABLE 2  
Selection and timing performance: TM model

Unit Trust	$\alpha$	$\beta_2$	Unit Trust	$\alpha$	$\beta_2$
1 <sup>st</sup>	0.0035	-0.6015	M.berjaya	0.0052	-0.3769
2 <sup>nd</sup>	0.0011	-0.3710	M.equity	0.0091	-0.2179*
3 <sup>rd</sup>	0.0076	-0.4099*	M.commer	0.0018	-0.1809
4 <sup>th</sup>	0.0053	-0.4425	Arab1 <sup>st</sup>	-0.0012	-0.4620
5 <sup>th</sup>	0.0059	-0.4808	BB-trust	-0.0014	-0.3916*
6 <sup>th</sup>	0.0056	-0.3729	BB-prime	-0.0003	-0.3095*
7 <sup>th</sup> inc.	0.0059	-0.4298	BHLB	-0.000	-0.5402
7 <sup>th</sup> acc.	0.0045	-0.3560	KL-saving	0.0091	-0.3816
warrior	0.0062	-0.5138	KL-growth	0.0315	0.4555*
8 <sup>th</sup>	0.0051	-0.4847	KL-index	0.0080	-0.1703*
9 <sup>th</sup>	0.0051	-0.4115	MBF-1 <sup>st</sup>	0.0004	-0.5490
10 <sup>th</sup>	0.0066	-0.5333*	MIC	-0.0074	-0.1132*
11 <sup>th</sup>	0.0051	-0.5628	ASJ	0.0051	-0.5790
M.invest.	0.0075	-0.3382	TBJK	-0.0044	-0.2679*
M.progress	0.0115	-0.3569	ASN	0.0062	-0.3004
M.security	0.0031	0.3129			

Note : \* Significant at 5%

where

$I_t$  = Market Index in month t

$I_{t-1}$  = Market Index one month before t

The coefficient  $\beta_2$  which measures the market timing was estimated by regressing the returns on the unit trust with the squaring returns of the market as proxied by the KLSE Composite Index. Treynor and Mazuy (1966) suggest that a positive value of  $\beta_2$  is indicates timing ability since it implies that the rates of return on the portfolio are more sensitive to large positive market returns than to large negative market returns. The usual statistical tests were employed in evaluating the significance of the relationships between unit trust returns and the market benchmark returns.

## RESULTS

### *The Selectivity and Timing Performance of Unit Trusts*

This section examines the selectivity and market timing performance of the 31 unit trusts using the Kuala Lumpur Composite Index (KLCI) as a benchmark. The null hypotheses of no selectivity and timing ability are that  $\alpha = 0$  and  $\beta_2 = 0$  respectively. Significant positive  $\alpha$  and  $\beta_2$  are evidence of superior selectivity and market timing abilities. Measures of selection and timing performance,  $\alpha$  and  $\beta_2$  respectively, estimated

using TM model are shown in Tables 2, 2(a), and 2(b).

TABLE 2(a)  
Summary statistics of selectivity and timing performance measures

	$\alpha$	$\beta_2$
Average	0.0049	-0.3666
t-ratio	4.27*	-10.56*

Note. \* Significant at 5%

TABLE 2(b)  
Average selectivity and timing performance measures according to fund's objective

Fund's Objective	$\alpha$	$\beta_2$
Balance	0.0039 (4.14)*	-0.4295 (-15.00)*
Income	0.0041 (1.86)	-0.4100 (-13.54)*
Growth	0.0068 (2.32)*	-0.2402 (-2.98)*

Notes: T statistics in parentheses.

\* Significant at 5%

Table 2 reveals that the number of positive selectivity measures (25) found significantly exceeds the negative measures (6). This implies that 81% of the unit trusts are able to beat the market returns. The highest selectivity measure is the Kuala Lumpur Growth Fund with the  $\alpha = 3.15\%$ , followed by the Malaysia Progress Fund ( $\alpha = 1.15\%$ ), Malaysia Equity Fund and Kuala Lumpur Savings Fund ( $\alpha = 0.91\%$ ) and Kuala Lumpur Index Fund ( $\alpha = 0.80\%$ ). Four of these 5 funds are growth funds. Although some selection ability of fund manager is present, it is generally weak because most of the values are below 1%.

For the entire sample (refer to Table 2(a)), the TM model shows a positive selectivity measure of 0.49%, which is statistically significant at the 5% level. This result is consistent with Lee and Rahman's (1990) evidence of superior selection ability on the part of mutual fund managers.

Manager's timing ability is measured by  $\beta_2$ . There are 30 negative timing parameters (97%), about 10 of which are statistically significant. This suggests that about 10 funds have attempted to shift their portfolio betas in a way that was not generally consistent with the direction of changes in the market portfolio. There is only one fund (Kuala Lumpur Growth Fund) which has significant positive timing parameter in the entire sample. When all unit trusts are examined together (refer to Table 2(a)), the timing parameter is found to be negative ( $\beta_2 = -0.37$ ), indicating a lack of timing ability for fund managers. This is consistent with most of the previous findings (Henriksson 1984; Connor and Korajczyk 1991; Coggin *et al.* 1993; Fletcher 1995).

Further evidence of the selectivity and timing performance of the trust is reported in Table 2(b). The trusts are classified into 3 groups based on their investment objectives (growth, balance and income). T statistics are also presented to determine the significance of the results. Column 1 reports on the selection ability of fund managers. It appears that growth funds generally exhibit better selectivity ( $\alpha = 0.68\%$ ) than income funds ( $\alpha = 0.41\%$ ) and balance funds ( $\alpha = 0.39\%$ ). These findings imply that the fund managers generally have demonstrated their selection abilities irrespective of the fund's objective.

Market timing abilities are reported in column 2. The empirical evidence reveals that

none of the groups exhibit positive timing parameters. All 3 groups have significant negative timing measures with balance funds having the poorest timing ability ( $\beta_2 = -0.43$ ) compared to the income funds ( $\beta_2 = -0.41$ ) and growth funds ( $\beta_2 = -0.24$ ).

In summary, the results suggest that Malaysian fund managers are generally better stock pickers than market timers. This also implies that there is a trade-off between security selection and market timing.

*Correlation between Selectivity and Timing Performance*

Table 3 reports the correlation between selectivity and timing performance based on the TM Model. A strong positive correlation coefficient of 0.53 is observed in the entire sample, indicating that selectivity and timing performance of the trusts are moving in the same directions. These findings are consistent with that of Lee and Rahman (1990) though they used a different modification of the TM Model to arrive at a positive correlation coefficient of 0.47.

TABLE 3  
Pearson's correlation between selectivity and timing performance

Fund's objective	Correlation coefficient(r)
Balance	-0.55*
Income	0.81
Growth	0.89*
Entire sample	0.53*

When the funds are grouped on the basis of their investment objectives, it appears that balance funds have significant negative correlation coefficients ( $r = 0.55$ ), while the other two groups have positive correlation coefficients. This result supports Bello's (1995) findings that the correlation between selectivity and timing turned positive for the average domestic and international funds, and for each investment objective group when a modified version of TM Model was being used. Although a number of previous research studies documented negative correlation between selectivity and timing performance (Henriksson 1984; Jagannathan and Korajczyk 1986; Bhattacharya and Pflleiderer 1983; Coggin *et al.* 1993; Fletcher 1995), the cause of such correlation still remains an unresolved issue, thus proving an avenue for further research in this area.



TABLE 4  
Extent of diversification\* of unit trusts in Malaysia

Unit Trust	$R^2$	Rank	Unit Trust	$R^2$	Rank
8th Bumi	0.57	1	M, Progress	0.41	17
6th Bumi	0.54	2	ASJ	0.38	18
7th Acc.	0.53	3	1st Bumi	0.38	19
4th Bumi	0.52	4	M. Commer	0.37	20
2nd Bumi	0.51	5	11th Bumi	0.34	21
M. berjaya	0.51	6	M. security	0.31	22
Warrior	0.49	7	BBMB Trust	0.25	23
7th inc.	0.48	8	10th Bumi	0.24	24
M. invest.	0.47	9	BBMB Prime	0.23	25
BHLB	0.47	10	5th Bumi	0.23	26
ASN	0.45	11	3rd Bumi	0.21	27
9th Bumi	0.45	12	KL Index	0.15	28
KL Saving	0.42	13	MIC	0.13	29
M. Equitu	0.41	14	TBJK	0.06	30
Arab 1st	0.41	15	KL growth	0.01	31
MBF 1st	0.41	16			

\* The average  $R^2 = 0.37$ . The  $R^2$  for perfect diversification = 1.00.

#### *Diversification of the Unit Trusts*

Spreading risk and capitalizing on future growth potential have become the cornerstone of the prudent investor's strategy following the October 1987 stock market crash. That is why many small investors are increasingly turning to unit trusts. By pooling the financial resources, the small investors can gain access to the services and expertise of top money and fund managers. They can also benefit from the fund's ability to invest in different security markets and diversification in investment portfolio in each market otherwise available only to institutions and wealthy individuals. The degree of diversification of a unit trust is measured by the  $R^2$  statistic which ranges in value from 0 to 1. The  $R^2$  statistic can be estimated by the extent to which the unit trust returns covary with the market. The  $R^2$  statistics of the total sample and sub-sample are summarized in Tables 4 and 4(a), respectively.

Table 4 exhibits that the  $R^2$  statistic of the 31 unit trusts range between 0.01 to 0.57. The result shows that 81% of the unit trusts are not well-diversified, with the  $R^2$  values below the 0.5 cut-off points. Only 6 funds in the sample (19%) have achieved the expected level of diversification with the  $R^2$  values above 0.5; 5 of these 6 funds are Mara Bumiputera Funds. The average value

of  $R^2$  is 0.37, which implies that the unit trusts have about 37% diversification. Of the 31 funds in the sample, 20 (65%) have achieved the average diversification with the  $R^2$  values above 0.37. However, there are 2 least diversified funds (TBJK and KL Growth) in the sample with the  $R^2$  values below 10%.

We can conclude that the degree of diversification of unit trusts appears to be low in Malaysia. This may be due to the stringent trust provisions that discourage fund managers choosing more risky stocks to include in their funds or the management's strategy to sacrifice diversification to earn a higher return. The investment constraints imposed by the Securities Commission (SC) on unit trusts include the following:

- The maximum size of a unit trust fund shall not be more than 500 million units.
- A unit trust fund is only permitted to invest up to 10% in the securities listed on a foreign stock exchange, and prior approval of the SC must be obtained before undertaking such investments.
- A unit trust fund shall not invest more than 50% of the fund in non-trustee securities.
- Investment in the securities of any company shall not exceed

- (i) 10% of the net asset value of the fund;  
or
- (ii) 10% of the issued capital of the company, whichever is lower.
- Investment in any group of companies shall not exceed 15% of the net asset value of the fund.
- At least 10% of the net asset value of the fund should be maintained in the form of liquid assets at all times.
- The trust fund is not allowed to guarantee or grant any loans or engage in any short selling of securities.

other categories, none have achieved the expected level of diversification ( $R^2$  greater than 0.5). These findings imply that Malaysian unit trusts have very little diversification relative to those reported in more developed markets (Ippolito 1989) where the average degree of diversification is as high as 0.70. Therefore, there is room for further diversification and fund recomposition.

*Market Risk of Unit Trusts*

An important characteristic of the unit trusts is their market risk or  $\beta$  which measures the amount of non-diversifiable marketwide risk. Tables 5 and 5(a) summarize these beta values for the 31 unit trusts.

Table 5 shows that all 31 unit trusts in the sample possess low market risk with beta values substantially below 1.00. This makes intuitive sense given partial diversification benefits, as explained by modern portfolio theory. The average market risk is 0.39, which makes the unit trust investments relatively safer than in markets where the beta is close to 1.00. The KL Growth Fund appears to have the lowest risk ( $\beta = -0.26$ ) fund in the sample. Strictly speaking, negative beta does not offer any intuitive interpretation of rule. The other funds have a risk of 0.23-0.53.

TABLE 4(a)  
Diversification measure of unit trusts with different investment objectives

Fund's objective	$R^2$
Income	0.46
Balance	0.38
Growth	0.31

Table 4(a) shows that the income funds are relatively more diversified (0.46) than balance funds (0.38) and growth funds (0.31). Although the income trusts are marginally better than

TABLE 5  
Measure of market risk\* in unit trusts

Unit Trusts	$\beta_1$	Rank	Unit Trusts	$\beta_1$	Rank
KL-growth	-0.26	1	9th	0.43	17
MIC	0.23	2	MBF-1st	0.43	18
M. commer	0.25	3	7th inc.	0.44	19
KL-index	0.25	4	M. progress	0.44	20
M.security	0.33	5	BHI.B	0.44	21
TBJK	0.34	6	3rds	0.45	22
5th	0.37	7	4th	0.45	23
6th	0.38	8	KL=saving	0.46	24
7th acc.	0.39	10	ASJ	0.47	26
ASN	0.39	11	8th	0.48	27
2nd	0.40	12	M. berjaya	0.50	28
Warrior	0.42	13	10th	0.51	29
M. invest	0.42	14	Arab 1st	0.52	30
BB-prime	0.42	15	11th	0.53	31
1st	0.43	16			

\* The average  $\beta_1 = 0.39$ . The  $\beta_1$  for the market is 1.00



TABLE 5(a)  
Measure of market risk according to investment objectives

Fund's objective	$\beta_1$
Income	0.46
Balance	0.42
Growth	0.32

TABLE 6  
Co-relation of returns between type of fund and the market returns (KLCI)

Fund's Objective	KLCI
Balance	0.60 (18.65)*
Income	0.68 (48.37)*
Growth	0.53 (9.34)*

*Correlation of Return between Unit Trust and Market*

Unit trusts are managed by professional managers, and investors expect returns on their investment to be higher than that of a naive buy-and-hold strategy with equivalent risk. The usual benchmark used by investors to evaluate the investment performance of unit trusts is the returns on the market portfolio proxied by the market index (KLSE Composite Index). The correlation of returns between types of funds and the market return are presented in Table 6.

Table 6 illustrates the correlations for the balance, income and growth funds are 60, 68 and 53% respectively. The income fund is relatively more diversified and the growth fund is least diversified. Since the growth fund goes for capital gains, it is expected to be the least diversified.

*Regression Quality*

The strength of the relationship between dependent variable (return of unit trusts) and independent variable (KLSE Composite Index) as a whole is measured by the F statistic. Table 7 shows that 90% of the F statistics are statistically significant at the 5% level, thus indicating the TM model has provided a good fit to unit trust data. However,  $R^2$  which measures the explanatory power of the TM model was within a range of 0.01 to 0.57. This shows that the model has partial explanatory power. Collectively, the TM model is still applicable in

TABLE 7  
F statistics and  $R^2$  : TM model

Unit Trust	F	$R^2$	Unit Trust	F	$R^2$
1st	11.835	0.3757	M. Berjaya	20.527	0.5107
2nd	20.576	0.5113	M. equity	13.831	0.4129
3rd	5.355	0.2140	M. Commer	11.580	0.3706
4th	20.908	0.5153	Arab 1st	13.746	0.4114
5th	5.868	0.2298	BB Trust	6.563	0.2502
6th	22.857	0.5386	BB Prime	4.743	0.2324
7th Inc.	18.477	0.4844	BHLB	14.039	0.4726
7th Acc.	22.482	0.5334	KI. Savings	14.365	0.4221
Warrior	18.566	0.4856	KL Growth	0.109*	0.0055
8th	25.932	0.5687	KL Index	2.083	0.1515
9th	15.871	0.4466	MBF-1st	10.914	0.4106
10th	6.238	0.2408	MIC	2.934	0.1298
11th	10.226	0.3421	ASJ	11.850	0.3760
M. Invest.	17.737	0.4742	TBJK	1.273*	0.0608
M. Progress	13.543	0.4078	ASN	14.275	0.4469
M. Security	8.856	0.3105			

Note: \*Not significant at 5%

evaluating the selectivity and timing performance of fund managers in Malaysia although the explanatory power is poor.

### CONCLUSION

This paper applies the TM model to examine selectivity and timing performance of 31 unit trusts for a period of 62 months (July 1990-August 1995). The selectivity performance of the trusts is on average positive, but the timing performance is on average negative. Only one fund possesses a superior timing ability, i.e. Kuala Lumpur Growth Fund, while the other 30 funds show inferior timing ability, implying that most unit trusts do not possess market timing ability. However, some appear to exhibit superior selection ability as 81% of the sample of unit trusts are able to outperform the market returns and the Kuala Lumpur Growth Fund ranked highest in term of selectivity measure. The study also found a positive correlation between selectivity and timing performance which is consistent with previous studies of unit trust performance (Lee and Rahman 1990; Bello 1995).

The degree of diversification of unit trusts and risk-return characteristics associated with the unit trusts were also examined. The findings indicate that the degree of diversification of the Malaysian unit trusts are generally below expectations and risk-return characteristics of the trusts are inconsistent with their stated objectives. The lackadaisical performance of these unit trusts could be partially attributable to the regulatory constraints imposed by the Security Commission, strict advertising code for the unit trust industry and lack of fund managers' expertise. However, with Malaysian's salient economic performance, unit trusts provide an extra investment vehicle for investors at large and promise a bright future.

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## Auditing Firm Reputation, *Ex Ante* Uncertainty and the Underpricing of Initial Public Offerings on the Second Board of the Kuala Lumpur Stock Exchange: 1990-1995

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**Keywords:** underpricing, initial public offers, auditor firm reputation, second board

### ABSTRAK

Firma-firma audit mempunyai insentif untuk menyemak secara terperinci dan melaporkan kesahihan segala aktiviti yang tercatat dalam penyata-penyata kewangan yang disediakan oleh pihak pengurusan firma yang memohon untuk disenaraikan di Bursa Saham Kuala Lumpur. Insentif ini berdasarkan keinginan untuk mempertahankan reputasi mereka sebagai agensi yang bertanggungjawab. Oleh itu pelabur dapat menjangkakan nilai sebenar firma-firma yang akan disenaraikan itu dengan lebih tepat dan ini mengurangkan tahap ketidakpastian *ex-ante* dan dijangka menghasilkan premium yang rendah sewaktu penyenaian. Kajian mengenai kaitan reputasi firma audit dan tahap premium sewaktu penyenaian telah dibuat atas 100 firma yang di senarai di papan kedua Bursa Saham Kuala Lumpur, untuk jangkamasa 1990 hingga 1995. Enam firma audit yang terkenal di kelaskan sebagai *big-six* dan firma audit yang selainnya dianggap mempunyai tahap reputasi yang lebih rendah dan dikelaskan sebagai *non big-six*. Penemuan kajian menunjukkan tidak ada kaitan signifikan antara reputasi firma audit dengan tahap premium penyenaian yang diperolehi oleh firma yang diaudit. Ini bermaksud, pelabur di Malaysia menganggap bahawa semua firma audit yang berlesen memberi perkhidmatan homogen. Penemuan kajian menunjukkan reputasi penaja jamin dan prestasi keuntungan yang lepas ada kaitan negatif, manakala, arah aliran pasaran saham dan sisihan piawai pulangan sekitar penyenaian ada kaitan positif dengan tahap premium yang di perolehi semasa penyenaian.

### ABSTRACT

Reputable auditing firms have an incentive to investigate and report irregularities since their reputation is at stake, therefore engaging their services enables investors to estimate the value of the firm more precisely and reduce *ex ante* uncertainty. This will attract more investors to bid for the IPO shares and consequently IPOs attested by reputable auditing firms will have a lower premium level. This study tests the conjectured inverse effect of reputation of auditing firms on the level of IPO underpricing of 100 companies listed on the second board of the Kuala Lumpur Stock Exchange, for the period 1990-1995. The reputable auditing firms are the Big Six accounting firms; the others are classified as less reputable. The findings do not support this conjecture, which implies that Malaysian investors assume that all qualified and licensed auditing firms provide homogeneous services. However, the findings show that the underwriter reputation (UW) and the past profitability of the firm (NPM) variables are inversely related, whereas the market trend and the standard deviation variables are positively associated to the level of IPO underpricing.

### INTRODUCTION

Documented evidence on the premiums earned by investors in initial public offers (IPOs) in developed share markets (Ibbotson 1975; Ibbotson and Jaffe 1975; Ritter 1984; Aggrawal and Rivoli 1990) suggests a general underpricing. Studies on the underpricing of Malaysian IPOs (Ariff and Johnson 1990; Shamsheer *et al.* 1994)

suggest an average underpricing of 130% at the end of the first day of listing and 77% if the shares are held and sold three years after listing. This excessive underpricing is the highest in the world and cannot be completely explained by the fundamental and market factors. Unlike other markets, there is little documented evidence on the explanations for the



underpricing of IPOs in Malaysia. However, Shamsher *et al.* (1994) suggest that the public policy goal of equitable wealth distribution among the various ethnic groups as a rationale for the intentional excessive underpricing. Various factors have been suggested in the literature as the possible reasons for underpricing, such as *ex ante* uncertainty and state of the market prior to issue (McGuinness 1992), asymmetric information between underwriter and issuer (Leyland and Pyle 1977), adverse selection problem of uninformed and informed investors (Rock 1986), adverse incentives of underwriters to reduce underwriting risk (Baron 1982), insider signalling to differentiate the quality of issues (Ritter 1984; Beatty and Ritter 1986), and price pressures during the initial period of issue (Aggrawal and Rivoli 1990). The inverse effect of auditing firm reputation on the level of IPO underpricing is documented in the literature, but the findings are inconclusive as Balvers *et al.* (1989) and Beatty (1989) suggest a significant inverse relationship whereas McGuinness (1992) and Ng *et al.* (1994) suggest no significant relationship.

This study focuses on the effect of reputation of auditing firms on the level of IPO underpricing on the second board of the Kuala Lumpur Stock Exchange. One hundred IPOs were analysed for the period 1990-1995.

#### THEORETICAL RELATIONSHIP BETWEEN AUDITOR FIRM REPUTATION AND IPO UNDERPRICING

Managers of IPOs are assumed to have private information about the future prospects of the company and it is in their interest to convey the information to prospective investors to reduce underpricing of the IPOs. This information is usually provided through a prospectus which includes information on financial status, future prospects and audited financial statements. In Malaysia, it is a mandatory requirement under the Companies Act 1965 for IPOs to issue a prospectus including audited financial statements, which are considered an important element in the prospectus. Financial statements audited by more reputable auditing firms are perceived to be more credible to prospective investors than those audited by less reputable auditing firms. This preference on the part of prospective investors may be explained in terms

of the need to minimize monitoring cost. Auditing services are demanded as monitoring devices to minimize agency cost because of the conflict of interest between owners and managers (Watts and Zimmerman 1983).

Since very little is known of the IPOs, and prospective investors must rely on the disclosures in a prospectus to evaluate the future prospects, credible financial statements are required to enable investors to trust the disclosed information to eliminate the need to search for alternative sources of information for verification purposes. Since in Malaysia the allocation of shares to the public is based on the lottery system, the costs of an information search (if verification is required) may not be compensated by the number of shares allocated, therefore requiring a greater level of underpricing to attract potential investors. The provision of credible financial statements serves to reduce the monitoring cost.

DeAngelo (1981) and Simunic and Stein (1987) suggest that the credibility of financial statements depends on the perceived quality of the audit. A higher perceived quality of audit is more likely to be associated with a more reputable auditing firm because of their larger collateral properties (and therefore greater presumed reputation at stake) and confidence of investors in the auditing firm's reputation for accuracy and reliability of information audited. Therefore, the more reputable the auditing firm employed by an IPO, the less the chance of misrepresentation by the managers' disclosures, consequently lower costs of monitoring and lower underpricing of the IPO.

Beatty and Ritter (1986) suggest that the greater the *ex ante* uncertainty, the greater the expected underpricing of the IPO. The owners of the company have an incentive to signal their private information about the firm's future prospects to reduce *ex ante* uncertainty. However, the effectiveness of this mechanism is mitigated by the IPO companies with relatively high *ex ante* uncertainty to signal low *ex ante* uncertainty. The role of an auditing firm in providing credentials to disclosed information is important to mitigate this problem.

Reputable auditing firms have an incentive to investigate and report irregularities since their reputation is at stake, therefore engaging their services enables investors to estimate the value of the company more precisely and reduce *ex ante* uncertainty. This will attract more investors



to bid for the IPO shares, and consequently IPOs attested by reputable auditing firms will have lower level of premiums.

This study tests whether there is a significant inverse relationship between auditing firm reputation and underpricing of Malaysian IPOs. Specifically, IPO companies that engage the services of more reputable firms should exhibit lower underpricing than companies that engage the services of less reputable auditing firms. For the purpose of this study, the reputable auditing firms are those that are internationally classified as the Big Six operating in the market and the rest are classified as non-Big Six.

### DATA AND METHODOLOGY

The data for this study were drawn from 100 IPOs from the second board of the Kuala Lumpur Stock Exchange for the period 1990-1995. The source for the variables used in the regression analysis was the companies' prospectuses, and the share prices were extracted from the daily diary published by the Kuala Lumpur Stock Exchange. Following the guidelines by McGuinness (1992) and Ng *et al.* (1994), a regression model was used to test the conjectured inverse relationship between auditing firm reputation and level of IPO underpricing. The factors of *ex ante* uncertainty, perception of company value, other reputation effects and state of the market prior to the IPO were controlled in the step-wise regression model. The auditor reputation conjecture was tested by the estimated coefficients of the more reputable auditing firms (Big Six) and the less reputable auditing firms (non-Big Six) indicator variables. The linear regression model is expressed as follows:

$$UP_i = b_0 + b_1 (AGE_i) + b_2 (\%OFFER_i) + b_3 (SD_i) + b_4 (NPM_i) + b_5 (UW_i) + b_6 (MKT_i) + b_7 (AUD_i) + e_i$$

where

- UP = the level of underpricing at the end of first day after listing;
- AGE = operating history of the company; a dummy variable approach is used with a benchmark of 10 years;
- %OFFER = percentage of shares owned by outside investors after the offering;
- SD = standard deviation of daily returns

for days 2-14 after first trading day;

- NPM = the company's average profit margin for the last 5 years;
- UW = underwriter reputation group; indicator variable takes a value of 1 if it is from reputable group, otherwise 0;
- MKT = the state of the market prior to the listing, measured by the moving average of 15 days' returns on the KLSE Composite Index;
- AUD = auditor reputation group; indicator variable takes a value of 1 if it is from the reputable group (Big Six), otherwise 0;
- e = error term

The AGE variable represents the age of the IPO company from the date of incorporation. A longer operating history provides more information on the quality of management and enables investors to evaluate the prospective value of the company from past information. An arbitrary benchmark of 10 years was chosen with the hope that a longer history reduces investor *ex ante* uncertainty about the true value of the company, and therefore results in less underpricing of the IPO.

The % OFFER variable reflects the expected monitoring costs. Jensen and Meckling (1976) suggest that the lower the percentage of shares held by insiders (therefore the higher percentage held by outsiders) the higher the monitoring costs and the lower the level of underpricing. In this respect, Downes and Heinkel (1982) and Beatty (1989) show that the percentage retained by insiders signals private information to outsiders.

The standard deviation of returns (SD) variable denotes the *ex post* proxy for the *ex ante* uncertainty to control for *ex ante* uncertainty in the sample. Beatty and Ritter (1986) suggest a positive relationship between SD and level of underpricing. The average net profit margin (NPM) for the last five years reflects the expected future performance of the the company.

Higher expected future performance reduces the risk of buying the IPO and therefore reduces the level of underpricing.

The underwriter reputation variable (UW) controls underwriter reputation as Balvers *et al.* (1989) found that underwriter reputation has



an impact on the level of IPO underpricing. IPOs with reputable underwriters have a lower level of underpricing. The reputation of the underwriters is proxied by their turnover during the period of study, assuming large underwriters have a greater reputation at stake.

The state of the market prior to the date of listing of the IPO is controlled by the variable MKT in the regression model. The underpricing of IPOs is conjectured to be larger during bullish markets (therefore positive coefficient for this variable) than during bearish markets. For example, the average underpricing of IPOs on the second board during 1990-1992 (bearish period) was 40% whereas in 1993-1995 (the bullish period) the average premiums were 85% (Cheng *et al.* 1996). The MKT variable is measured by the first-order moving average of the 15-day market trend prior to the first day of listing. The market trend is proxied by the daily returns on the Kuala Lumpur Stock Exchange's Composite Index.

## FINDINGS

### Descriptive Analysis

Table 1 shows the statistics for the second board IPOs. The average underpricing is 74%, which is relatively high and is a common feature of the Malaysian IPOs. Among the Big Six auditing firms, KPMG Peat Marwick, Ernst & Young and Coopers and Lybrand audited 45 IPOs in total, which is 70% of those audited by the Big Six. The level of average underpricing within the Big

TABLE 1

Descriptive analysis of average underpricing by auditing firms and auditing firm reputation of IPOs on the Second Board of KLSE

Auditing Firm	Number Of IPOs	Average Underpricing (%)
<i>By Classification</i>		
<b>Big Six</b>		
KPMG Peat Marwick	19	79.6
Ernst & Young	14	59.6
Coopers & Lybrand	12	65.4
Arthur Andersen	9	85.3
Price Waterhouse	7	101.6
Deloitte Ross Tohmatsu	2	75.1
<b>All Big Six</b>	<b>63</b>	<b>75.6</b>
<b>Non Big six</b>	<b>37</b>	<b>72.3</b>
<b>Overall</b>	<b>100</b>	<b>74.4</b>

Six ranges from 59 to 101% and there is no significant difference ( $F = 0.18$ ) between the average level of underpricing among them. The level of average underpricing for all the Big Six firms was 76% and not significantly different ( $F = 1.11$ ) from the 72% for the Non Big Six firms.

Table 2 presents the correlation matrix for the independent variables used in the study. The correlation matrix indicates that the correlation among the independent variables is small (less than 0.20), implying that there is no significant multicollinearity problem that could affect the interpretation of the results of the regression analysis. Kaplan (1982) and Emory (1982) suggest that multicollinearity could be a problem when the correlation exceeds 0.80.

TABLE 2

Correlation matrix for the explanatory variables in the regression analysis (Second Board IPOs)

	AGE	AUD	INSIDER	NPM	SD	UW
AGE	1.00	-0.0456	-0.0315	-0.151	-0.0818	.00082
AUD		1.00	0.2674	0.1083	0.1226	-0.1607
INSIDER			1.00	0.0783	-0.0688	0.0845
NPM				1.00	0.1096	0.0896
SD					1.00	0.1679
UW						1.00

### (b) Regression Results

TABLE 3

Regression Results for the auditor firm reputation model (Second Board)

	Coefficient	Standard Error	t - Statistic	Expected Sign
Intercept	-0.805	1.371	-0.587	
AGE	-0.251	0.869	-0.289	-
INSIDER	-0.873	0.137	-6.37	-
SD	6.41	2.44	2.63*	+
NPM	-0.256	0.091	-2.87*	-
UW	-0.864	0.091	-9.49*	-
MKT	0.026	0.007	3.71*	+
AUD	-0.348	0.916	0.379	-

$R^2=8.53$

$F=1.94$

$N=100$

### Regression Results

Table 3 summarizes the results of the regression analysis of second board IPOs. All the signs of the coefficients are in the expected direction. The standard deviation (SD) and the net profit margin (NPM) variables are significant at 5%

level whereas the underwriter reputation (UW) and the market trend variable (MKT) are significant at 1% level. These findings suggest that the underpricing of IPOs is positively related to the *ex ante* uncertainty and underpricing of IPOs is larger during bullish rather than bearish markets, consistent with the findings of Beatty and Ritter (1986). The financial measure of expected IPO value as estimated by the NPM variable suggests that the level of premiums is inversely related to the expected financial performance. The underwriter reputation is perceived as risk surrogate by investors as the level of premiums is inversely related to this variable. The AGE and the INSIDER variables are not significant. The variable of interest, auditor reputation, does not support the conjecture that the level of premiums is inversely related to the auditor reputation. The measure of auditor firm reputation based on the Big Six or otherwise is a crude measure and therefore a more robust measure would be in terms of the compensation paid to the auditing firm, since the larger the compensation of the reputable auditing firm, the less *ex ante* uncertainty and therefore the lower the level of premiums. However, information on the amount of compensation to the auditing firms and the costs of performing the audit (this information is required to run the two-stage least square regression) is not made available upon request. Therefore the refinement of the present analysis is not possible. Another possible surrogate of auditor firm reputation variables is the number of the companies audited by the auditing firms within the Big Six group. A dummy variable regression was run to test the auditor reputation hypothesis with a value of 1 assigned for IPOs audited by KPMG Peat Marwick, Ernst & Young and Coopers & Lybrand, and zero otherwise. The results (not reported here) are not significantly different from those reported in Table 3, suggesting no significant relationship between auditor firm reputation and the level of underpricing of second board IPOs. These results, however, could be due to the weakness of the surrogate variable of auditor firm reputation.

### CONCLUSION

In this study it is conjectured that the reputable auditing firms attest to the accuracy of the IPO management disclosures in prospectuses and

therefore reduce the *ex ante* uncertainty regarding the potential value of the firm. This implies an expected inverse relationship between levels of underpricing of IPOs associated with reputable auditing firms. The findings, however, do not support this conjecture. The coefficient of the auditor reputation variable (AUD) is negative but not statistically significant, even after taking another surrogate (the number of the companies audited by each of the big-six audit firms) of auditing firm reputation. The findings imply that Malaysian investors do not differentiate between the services of reputable and those considered less reputable auditing firms. The investors assume that all qualified and licensed auditing firms provide homogeneous services. These findings are inconsistent with those of Balvers *et al.* (1989) and DeAngelo (1981) on the US market and consistent with the findings of Ng *et al.* (1994) on the Hong Kong market. The findings on the US market suggest that investors do differentiate between the services of reputable auditing firms and those considered less reputable, whereas the study on the Hong Kong market suggests a supply of homogenous auditing services.

However, the findings show that the underwriter reputation (UW) and the past profitability of the company (NPM) variables are inversely related to the level of second board IPO underpricing. The market trend and the standard deviation variables are positively associated to the level of IPO underpricing. These findings supports the *ex ante* uncertainty hypothesis suggested by Beatty and Ritter (1986).

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