



LEARNING STYLE AWARENESS & ACADEMIC PERFORMANCE

**PROF. MADYA DR. ARUNODAYA BARMAN
PUSAT PENGAJIAN SAINS PERUBATAN
(304/PPSP/61310018)**



LAPORAN AKHIR PROJEK PENYELIDIKAN JANGKA PENDEK

FINAL REPORT OF SHORT TERM RESEARCH PROJECT

Sila kemukakan laporan akhir ini melalui Jawatankuasa Penyelidikan di Pusat Pengajian dan Dekan/Pengarah/Ketua Jabatan kepada Pejabat Pelantar Penyelidikan

1. Nama Ketua Penyelidik: ARUNODAYA BARMAN

Name of Research Leader

☐ Profesor Madya/
Assoc. Prof.

☐ Dr./
Dr.

☐ Encik/Puan/Cik
Mr/Mrs/Ms

2. Pusat Tanggungjawab (PTJ): PPSP/ Department of Medical Education

School/Department

3. Nama Penyelidik Bersama: Rosniza Abd. Aziz, Yusniza Muhamed Yusoff

Name of Co-Researcher

4. Tajuk Projek: Learning style awareness & academic Performance

Title of Project

5. Ringkasan Penilaian/Summary of Assessment:

	Tidak Mencukupi Inadequate		Boleh Diterima Acceptable	Sangat Baik Very Good	
	1	2	3	4	5
i) Pencapaian objektif projek: <i>Achievement of project objectives</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Kualiti output: <i>Quality of outputs</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Kualiti impak: <i>Quality of impacts</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Pemindahan teknologi/potensi pengkomersialan: <i>Technology transfer/commercialization potential</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v) Kualiti dan usahasama : <i>Quality and intensity of collaboration</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi) Penilaian kepentingan secara keseluruhan: <i>Overall assessment of benefits</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6. Abstrak Penyelidikan

(Perlu disediakan di antara 100 - 200 perkataan di dalam **Bahasa Malaysia dan juga Bahasa Inggeris**. Abstrak ini akan dimuatkan dalam Laporan Tahunan Bahagian Penyelidikan & Inovasi sebagai satu cara untuk menyampaikan dapatan projek tuan/puan kepada pihak Universiti & masyarakat luar).

Abstract of Research

(An abstract of between 100 and 200 words must be prepared in Bahasa Malaysia and in English).

This abstract will be included in the Annual Report of the Research and Innovation Section at a later date as a means of presenting the project findings of the researcher/s to the University and the community at large)

Given in the report

7. Sila sediakan laporan teknikal lengkap yang menerangkan keseluruhan projek ini.

[Sila gunakan kertas berasingan]

Applicant are required to prepare a Comprehensive Technical Report explaining the project.

(This report must be appended separately)

Given in the report

Senaraikan kata kunci yang mencerminkan penyelidikan anda:

List the key words that reflects your research:

Bahasa Malaysia

Bahasa Inggeris

Gaya Pembelajaran

Learning style

Pencapaian akademik

Academic performane

Pendidikan kejururawatan

Nursing students

8. Output dan Faedah Projek

Output and Benefits of Project

(a) * Penerbitan Jurnal

Publication of Journals

(Sila nyatakan jenis, tajuk, pengarang/editor, tahun terbitan dan di mana telah diterbit/diserahkan)

(State type, title, author/editor, publication year and where it has been published/submitted)

Not published yet. Manuscript submitted to the Journal Of Nursing Education

- (b) **Faedah-faedah lain seperti perkembangan produk, pengkomersialan produk/pendaftaran paten atau impak kepada dasar dan masyarakat.**
State other benefits such as product development, product commercialisation/patent registration or impact on source and society.

Not applicable

** Sila berikan salinan/Kindly provide copies*

- (c) **Latihan Sumber Manusia**
Training in Human Resources

- i) Pelajar Sarjana: _____
Graduates Students
(Perincikan nama, ijazah dan status)
(Provide names, degrees and status)

*Yusniza Muhamed Yusoff, Master of Medical
Education, 2010.*

- ii) Lain-lain: _____
Others

9. **Peralatan yang Telah Dibeli:**
Equipment that has been purchased

Not applicable



Tandatangan Penyelidik
Signature of Researcher

24.10.10

Tarikh
Date

Komen Jawatankuasa Penyelidikan Pusat Pengajian/Pusat

Comments by the Research Committees of Schools/Centres

The project was been completed successfully
and all objectives completed.

The output include a paper submitted
to Journal of Nursing Education
on 6 September 2010

Other output include a Master of
Medical Education in 2010

The report was been assessed by an
independent assessor and approved
by the PFI PPD committee

PROFESSOR AHMAD SUKARI HALIM
Chairman of Research Committee
School of Medical Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Keratan, Kelantan

TANDATANGAN PENERUSI
JAWATANKUASA PENYELIDIKAN
PUSAT PENGAJIAN/PUSAT
Signature of Chairman
[Research Committee of School/Centre]

29/10/10

Tarikh
Date

BORANG LAPORAN HASIL PENYELIDIKAN
PPSP

Tajuk geran: Learning style awareness & academic Performance

Penyelidik: ARUNODAYA BARMAN

Jenis geran: Short term

Tempoh geran: 01 Mac 2010 to 28 Februari 2011

Jenis laporan: Laporan Kemajuan ☐ Alatan di beli ☐ Ya:nyatakan.....

Laporan Akhir*: ☒ ☐ Tidak

OBJEKTIF SPESIFIK KAJIAN (sama spt dalam proposal asal)	SECARA RINGKAS TERANGKAN PENCAPAIAN/HASIL	OBJEKTIF TERCAPAI ATAU TIDAK
1 To identify nursing students' learning style preferences in KPTM	Percentage of nursing students preferring specific learning style	Achieved
2. To determine whether learning style awareness among the students through a study skill workshop improves their academic performance	Change in the GPAs of students before and after learning style awareness	Achieved

- *Laporan Akhir perlu disertakan salinan manuskrip dan surat yang dihantar kepada mana-mana jurnal untuk penerbitan.*

Nama Penyelidik Utama (PI): ARUNODAYA BARMAN
Tarikh: 24.10 2010

t.t.:



Learning style awareness and academic performance of students

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Abstract

Introduction: Preferred approach to learning is one's own learning style. Learning style varies from individual to individual. When students learn in different ways; the approach preferred by them may be an important determinant in their academic performance. This study is intended to explore this association among the nursing students in Kolej Poly-Tech MARA. **Methods:** It was pretest-posttest experimental study. Learning style preferences of nursing students were identified using VARK learning style inventory. Students were informed of their preferred learning style and how to utilize their learning style strengths to improve learning for better academic performance in a one day workshop. Academic achievements of students in terms of GPA for the three consecutive examinations, two held before and one held after the workshop were collected from the academic departments.

Repeated measure ANOVA was done to compare the GPAs obtained by the students in those three examinations. **Results:** Study group of nursing students poses different learning style and approximately half of them having predominantly a single style preference. There was a significant improvement in the students' performance after the intervention ($F(1.69, 506.92) = 237.22, P < .001$). **Discussion:** Students' awareness of their strengths such as learning style preferences and how to utilize their strengths may improve their academic performance. Students should have awareness of their learning style and how to maximize their learning potential in the very early days of enrollment in the academic institution.

Key words: Learning style, academic performance, nursing education

INTRODUCTION

The demand for nurses has increased tremendously for the past few years due to the rapid progression in the healthcare sector in Malaysia. At least 130,000 nurses need to be trained by the year 2020 in order to meet the nurse-to-resident ratio of 1:200 as required by the World Health Organization. (Nursing School and Colleges in Malaysia)

Producing a professional and clinically competence nurses is now a challenge to the colleges as well as universities. Current nursing education is quite different from that of the past. Kolej Poly-Tech MARA (KPTM) started the nursing program in September 2006 with 150 students. Currently, there are almost 2000 students finishing their study in Diploma in Nursing at KPTM nursing campus. Each academic session consists of an in-campus academic phase and a clinical phase. The academic phase takes about 14 weeks

where students need to commit to academic activities such as lectures, tutorials and practical in clinical laboratory. The clinical phase duration is between four to sixteen weeks according to the semester. Students need to practice their skills during the clinical attachment at selected hospitals.

Students are assessed for their theoretical knowledge and practical skills throughout the semester. Besides continuous assessment such as assignments and reports, they sit for OSCE and written examinations that include MCQs and essay questions. In year one (1st and 2nd semesters), most of the subjects are at the introductory level and considered necessary for the new students who are adapting to the program. After finishing their six semesters in the nursing program, graduates from KPTM need to sit for the Nursing Board Examination which is compulsory to all nurses before they can start their nursing profession.

In KPTM Kota Bharu, the first batch of 129 students completed their studies in March 2009 and was awarded with a Diploma of Nursing by KPTM. All of them took the Nursing Board Examination (NBE) in May 2009 but only 68 passed the exam resulting in a high failure rate.

One of the reasons for such a high failure rate may be unawareness of learning styles of the students and utilization of the strength of individual learning style. Learning styles have been shown to have an influence on students' academic achievement, how students learn, and student/teacher interaction (Garton, Spain, Lamberson, & Spier, 1999). Learning styles can simply be defined as characteristic ways that learners perceive, interact with and

respond to their environment (Grasha and Hicks, 2000). It is basically an individual's mode of gaining knowledge or their unique approach to learning based on strength, weaknesses and preferences (Kinshuk, Liu, & Graf, 2009).

Schroeder (1993) concluded that students are coming to institutions of higher learning with more diversity in their learning styles than ever before. They have different levels of motivation, different attitudes about teaching and learning, and different responses to specific classroom environments and instructional practices. Felder and Brent (2005) stated that one of the categories of diversity that have been shown to have important implications for teaching and learning are differences in students' characteristic ways of taking in and processing information. Understanding our particular learning style and how to best meet the needs of that learning style is essential to achieve better academic performance (Whitney, 2005). Identifying individual students' learning styles and sharing the results with them can provide them with valuable clues about their possible strengths and weaknesses and indications of ways they might improve their academic performance (Felder & Brent, 2005).

Studies show that appropriate study techniques that matched individual learning style preference will promote better academic performance. (Visser, Vreken, McChlery, 2006; Felder & Brent, 2005; Griggs & Shirley, 1991; Purdie & Hattie, 1999). O'Brien (1999) proposed that the single most important and yet simple thing a teacher or parent can do for students is to give them the knowledge of what their learning style is and how to use it. Students once realize their learning style and know how to make things fit their needs; they become more proficient learners (Susan 2009, Sims and Sims, 2006). Studies also

suggested that students' learning style influences their cumulative grade point average (Torres,1993; Torres & Cano, 1994; Purdie & Hattie, 1999).

Realizing that students of this study group were not really aware of their own learning style preferences, this experimental study was expected to generate some ideas to help the students achieve better results in their academic performance by raising their learning style awareness.

METHODOLOGY

This was a pre and post intervention study conducted at KPTM Nursing Campus in Kota Bharu. The study was carried out during the academic session of the forth semester student started in July 2009. Out of the whole group of three hundred and forty four (344) students three hundred and one (301) students have participated the study. Learning styles of the students were identified and the students were informed about their individual learning style. Students were taught on how to study and complete their assignment using their individual learning style strengths through a workshop conducted early in the semester. A comparison of GPAs of three successive examinations of this group of students were made; the first two GPAs (without intervention) and the third one on being aware of learning style and study skills (with intervention) in the above mentioned workshop.

VARK learning style inventory was used to collect data about the learning style preferences of the students and students' academic records (GPA) were collected from the academic office. The VARK method used in this study defines the preference in learning

style based on the sensory modality in which a student prefers to take in new information. The major sensory modalities are: visual (V), aural (A) read-write (R) and kinesthetic (K), collectively known as VARK (Fleming, 1995). Besides validity and reliability of the inventory, 16-item VARK questionnaire is considered simple and understandable. The students however, were guided by appointed instructors in a small group of twenty five (25) students to make sure that they really understand the meaning of the questions and therefore would produce the appropriate answers.

A formal workshop on study techniques appropriate for various learning styles was planned and presented. This workshop was offered in six sessions to cater to the whole group of three hundred and one (301) 4th semester students. Within this workshop, students first became aware of their preferred learning style(s) followed by multiple study techniques suitable for each style.

Each student's learning style (LS) was categorized to Visual (V), Auditory (A), Read & Write (R), Kinesthetic (K) or multimodal learner. In addition the academic performance of the nursing students was recorded as Grade Point Average (GPA) which varied from 0.00 – 4.00. The data were processed using excel 2007 and SPSS (12th version). Repeated Measure ANOVA was used in analyzing the data to see if there were any significant differences between mean of the scores (GPA) of three consecutive semester examination results.

RESULTS

Out of 301 students only 19 (6.3%) of them were males and the rest 282 (93.7%) students were females.

The percentages of single and multimodal preference learners were almost equal. Student who had more than one learning style preference was 51.50% (155 students) and another 48.50% (146 students) was single preference learners that included the visual (4.65%), auditory (18.60%), read & write (8.97%) and kinesthetic (16.28%) learners.

Of the total female students who preferred single modes of learning preferences, 4.26% of them preferred visual, 19.15% auditory, 9.57% read & write, and 17.02% preferred kinesthetic mode. For the male students, however, the single mode of preference V, A, and K were (10.53%), (10.53%), (5.26%) respectively with none selecting read & write (R) mode (Table 1). For the single learning style preference mode the percentage of female students were higher than the males in most categories except for visual.

Examinations of semester 2 and 3 were held before the intervention (workshop) and semester 4 after the intervention and the means students obtained GPAs were compared in order to see the impact of intervention on students' academic performance. All the results produced normal distribution and showed some significant difference in means. (Figure 1 and Table 2)

Using Repeated Measure ANOVA test, there was significant ($F(1.69, 506.9) = 237.2$; $p < .001$) difference of means in students' academic performance indicated by the GPAs in three consecutive semesters. The mean of GPA2 was 2.45, GPA3 dropped to 2.29 and GPA4 increased to 2.67.

DISCUSSION

Demographic data was collected, basically to see the ratio of the gender. The number of male compared to female nursing students was very small. This is a common scenario in most of nursing colleges in Malaysia where the intake of male students are somewhat restricted. Most probably, the obvious reason is due to the consideration that the nursing profession is more suitable for woman. Both genders received the same exposure and learning experiences. They had to finish the same kind of tasks and assignments in order to fulfill the requirements of the course.

This study found that most male nursing students (68.4%) preferred a combination style of learning which was multimodal and female students prefer unimodal learning. Female students who preferred a single mode of information presentation, either visual, auditory, read-write, or kinesthetic and multimodal were (50.17%) and (49.83%) respectively. The male students were noted not to prefer "read - write" as a learning style option and this may due to the carefree nature of male compared to female who tend to be more hardworking (conscientious). Wehrwein, Lujan, & DiCarlo (2007), reported that although it is known that students have a variety of learning style preferences, it is unknown if gender differences in learning style preferences exists among the students. However

Barman, Jaafar, & Rahim (2009) found significant differences of learning styles preferences by male and female students.

Examination conducted in every semester followed the same procedure as recommended by the Malaysia Qualification Agency (MQA) and Nursing Board (NB). All the three semesters' results were normally distributed with the average score of GPA varying from 2.29 – 2.67. The GPA of semester 3 was decreased to 2.29 most probably because the syllabus was getting tougher or less preparation by the students as they started the next level of the program. The GPA of semester 4 increased greatly (2.67) after the intervention. The improvement of GPA of semester 4 brought out ideas that the given workshop might have some impact on students' academic performance. Students, who had received some information and new ideas on learning styles and study skills during the workshop which had been conducted at early semester, might have applied it and these new knowledge and skills therefore promoted their academic performance in the final examination at the end of the semester.

Garton, Spain, Lamberson and Spier (1999) reported that there was a low relationship between the preferred learning style and academic performance. Purdie and Hattie (1999) reported that the typical study of this genre which specified a variety of study skills and then correlates the scores on tests that measure students' application of these skills with some achievement outcome, typically GPA.