

Efficacy of Preferred Learning Styles and Teaching Methods of Post Graduate Nursing Students Enrolled In a Master's Degree Program on Exam Achievements

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Abstract

Background: Learning preference refers to one's choice of specific learning style situations or environments over the other. It is one of the factors needed to be considered in planning curriculum and in designing instructional units to improve learning outcomes.

Aim of the study to: 1. Assess & characterize post graduate nursing students enrolled in master degree preferred learning style and teaching method .2. Implement the 3 P Model & Evaluate Post graduate Nursing Students achievement score of final exam of the subject entitled new concepts of nursing

Research hypothesis: 1. Post graduate Nursing Students enrolled in a master degree exhibit deep approach learning style. 2. Post graduate Nursing Students achieve a higher achievement score in their sum score of final exam in new concepts in nursing and concepts in specialty subject.

Materials and Methods: One tool was used to conduct this study. It consists of 3 parts part one sociodemographic characteristics of students was developed by the researcher ,Part two Revised study process questionnaire (R-SPQ-2F) a twenty items questionnaire sheet was used to measure the students' attitudes towards their studies in their usual way of studying. the questionnaires was administered among post graduate nursing students enrolled in a master's degree program in new concepts in nursing and concepts in specialty subject at the preparatory level and it was developed by Biggs (2001) and was adopted by the researcher . Part three a questionnaire developed by the researcher to assess the post graduate nursing students preferred teaching methods after review of relevant literature. Method: Permission was obtained from administration of the Faculty of Nursing at Tanta University.

Ethical considerations: Written consent was obtained from the student. The Preferred learning and teaching style tool was consists of three parts, part one and three was developed by the researcher after review of relevant literatures while part two was the revised two factor process questionnaire2001, The 3 Ps model of teaching and learning style used by the researcher to collect data concerning student preferred learning style . Nine experts in the field of nursing revised the tool for validity of the tool. Pilot study was done on nine students to test reliability and the necessary modifications were done. Each nursing students interviewed individually .The study was conduct on three phases ,assessment , implementation & evaluation and statistical analysis for collected data was done using computerized SPSS package Version 18.

Results: all study post graduate nursing students were female within age range from 24 to 40 years with the mean years of nursing experience range from minimum to maximum equal zero to 34 years .Majority of post graduate nursing students 83.3 % were used deep approach learning style and prefer the method of teaching of students using PPT and give them handouts. Also statistical significant association was found between years of experience and the approach of learning style used by graduate nursing students while the age of students and their workplace were found to be insignificant with their learning style approach. Significant association was found between learning style and teaching methods. Moreover near two third of post graduate nursing student achieve higher score equal to very good &more than one third of them achieve higher score equal to excellent level in the year 2012. There was a relationship between learning style, teaching method and students' achievement.

Conclusion and recommendation: The teacher of nursing subjects must use of 3 P s model questionnaires for assessment and evaluation of post graduate nursing students preferred learning styles for improvement of quality of education process outcomes as well as assessment & evaluation of teaching styles. Deep approach of learning is the preferred style of post graduate nursing students enrolled in master degree course.

Keywords: Learning style preferences, postgraduates nursing students, teaching methods, student achievements, Quality of education process.

I. Introduction

A movement in nursing education toward investigating learning styles and preferences for a particular approach to learning may influence the degree of learning that take place has been inspired by the uniqueness of traditional and non tradition **Moura (2006)**. **Grasha (1990)** defined Learning style as the preferences student has for thinking, relating to others and type of particular classroom environments and experiences. Learning styles was defined by **Duff and Duffy (2002)** that they were the composite of cognitive characteristics; affective and psychological factors that influence the way individuals interact and respond to learning environments. Learning style expelled to be the cognitive characteristics, affective and psychological behaviors that indicate the way learners perceive, interpret and react to learning environments. Also it refers to the way students concentrate on, process, internalize, and recall new and difficult information **by Rochford, (2003)** and a person's preferred way of learning by **Warn (2009)**. For many decades a focus of researches were on learning styles and the promotion of effective learning environments **Terry (2009)**. Several theoretical models have been proposed to explain learning style preferences and several instruments have been developed to diagnose these preferences for instance, Kolb experimental model, learning style inventory and Witkin's field independence-dependence model.

Student strategy use is dependent upon a host factors, such as students' values & motives, their perceptions of task demands, teaching and assessment methods, classroom climate and so on. Powerful idea of learning approach came up by studying how students perceived a particular reading task and then went to learn about it which became the point of departure for the emerging contextual framework known generically as "student approaching to learning" (SAL) theory. Part of the total system which an educational event is located, as schematized in the Presage, the Process, the Product (3 P) model are forming students' approaches to learning. In the (3 Ps) model student factors, teaching context, on task approaches to learning and the learning outcomes is mutually interact, forming a dynamic system **Biggs et.al, (2001)**.

The "3P" model developed by **Biggs (2003)** suggests that presage, process and product factors of the learning environment have a great effect on the student's success in the course. **Presage factors**, in their turn are divided into student and institutional presage factors. **Presage Factors of the Learning Environment** involves student. Student's prior knowledge, abilities, preferred learning styles, values and expectations are among the student presage factors **Abd El-Fattah (2005)**. **Institutional Presage Factors:** Institutional presage factors encompass curriculum, institutional values, teaching methods and assessment. This means that all these factors directly influence students' learning experience and success in the particular course. School should be designed the classes in such a way that students' activities are supported and encouraged. Also it should be very well thought over in order to adequately reflect the students' success and efficiency in comprehending the course material assessment and evaluation. Such assessment, according to **Sitthiworachart et al; (2008)**, should "stimulate higher order thinking skills and provide personalized feedback". **Process factors** that influence, learning and teaching, for instance of process factors may be the learning environment itself, which includes, for example, efficiency of attitudes and motivation, emotions, communication and interaction **Haiboss.com, (2007)**. These factors affect student's learning experience and influence right in the process of studying. Finally **Product Factors** are the third integral element of student's success in the class. The success thus, will depend on how much and how well the student has studied in the process. The basis for further success or failure in the class as a result become such learning outcomes **Garfield et.al; (2002)**.

Because they engaged in an educational pursuit to provide complex nursing care that requires specialized skills and a dynamic level of knowledge active learners are needed for the nursing profession. The changing arena of health care systems demands an increased ability to learn on the part of all health professionals in actual practice **Mura (2006)**.

In relation to approaches of learning, it refers to the learners' different ways of relating to the learning task- 'how' and 'why' a learner learns'. The 'how' are the strategies devised by the learner to solve the problems defined by their motives (the why of learning). This combination of motive and strategy is called "an approach to learning". By contrast a deep motive is intrinsic, and meaning oriented. The deep strategy includes wide reading and an attempt to integrate new material into previous knowledge. The deep approach is the approach to learning resulting from combination between motive and strategy. A surface motive is an instrumental one in which the main purpose is to meet minimum requirements for assessment. Surface strategy is focus on recalling the essential element of content through rote learning so it is a reproductive one. Surface approach is the superficial approach to learning resulting from this motive – strategy combination. The strategies students employ for learning, the goal set by the students, and motivations are in a close link. Also a relationship between deep approach to learning, and students' motivation and anxiety levels is found **Shelly (1999), Felder and Brent (2005)**.

Defining the future of nursing, needed to find ways and to encourage the two different cultures of students and faculty members to actively participate and to dialogue productively. The more thoroughly instructors understand the differences, the better chance they have of meeting the diverse learning needs of all of

their students. Differences in students' learning styles such as characteristic ways of taking in and processing information, approaches to learning involves surface, deep, and strategic, and intellectual development levels are attitudes about the nature of knowledge and how it should be acquired and evaluated are the three categories of diversity that should have paramount implications for teaching and learning. Students at the graduate level should be able to monitor their learning and actively find answers to their questions with greater skill than students at the undergraduate level, who may still need help in developing their ability to absorb information, think about information and evaluate its application in real world situations **Mura (2006)**.

Today to emphasize learning there is a need for education to move towards a perspective away from an emphasis upon teaching. This orientation, provides a conceptual framework for describing how a learner defines his or her world of learning and comes to terms with it by engaging in the process of learning he or she finds relevant to personal goals and interests often referred to as 'learner centeredness' **Tam (1999)**. The process level, where the learning related activity produces or does not produce the desired outcomes is the heart of the teaching/learning system. As Shuell puts it, if students are to learn desired outcomes in a reasonably effective manner, then the teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving those outcomes. It is paramount to remember that what the student does is more important than what the teacher does **Biggs (2003)**.

There are many possible interactions between student perceptions and teaching demands. A generic way of describing "what the student does" is precisely in terms of their ongoing approaches to learning. A student who typically picks out likely items for assessment and rote learns them, finds that strategy won't work under portfolio assessment, and so goes deep. Another student, who normally interacts deeply, may decide to go surface in a module that is overloaded with content and assessed by MCQ. Indeed the generic aim of good teaching is precisely to encourage students to adopt a deep approach and to discourage the use of a surface approach **Biggs, (1989)**. An index of the quality of the teaching in the class given by the mean of the approaches of the students in a class so may then refer to one outcome of teaching as a "contextual approach to learning."

It is therefore quite inappropriate to categorize students as "surface" or "deep" learners on the basis of student preferences questions (SPQ) responses, as if an approach score measured a stable trait of the individual. SPQ responses are a function of both individual characteristics and the teaching context. Both teacher and student are jointly responsible for the outcome, the teacher for structuring the enabling conditions, the learner for engaging them. Thus, an approach to learning describes the nature of the relationship between student, context, and task **Biggs, (1989)**. In an ideal system, all students would be expected to engage the highest level learning activities and thus to handle the task, or to solve the problem, appropriately. In fact this is the generic definition of a deep approach, while a student using a surface approach would use lower order verbs instead of the higher order. The following illustrates this clearly: you'll get a good mark if you can give a bit of factual information and so did that, and concluded that for two sides of writing **Biggs et.al;(2001)**.

A surface approach often encourage when teaching and assessment methods are not aligned to the aims of teaching the subject. The presence of a surface approach signals that something is out of kilter in teaching or in assessment methods, that it is something hopes to address. The approaches that predominate tell us something about the quality of the teaching environment **Cassidy, (2004)**. **Sriphai, et.al; (2011)** pointed out that , learning style was a dispositional or trait concept in that it was about how someone usually approaches learning that were, how they learn. It was not about a state, a specific way of learning particular skills or knowledge. The research reported in nursing literature concerning learning style of post graduate students is scarce & has been limited to undergraduate learning nursing students, therefore a study of the efficacy of learning styles & teaching methods preferences of nursing on students' achievements in graduates programs would expand knowledge related to this important topics so the current study was done.

Aim of the study to: 1. Assess and characterize post graduate Nursing Students enrolled in master degree program in new concepts of nursing subject at the preparatory level and to identify their preferred learning styles and teaching methods. 2. Implement 3 P Model & Evaluate post graduate nursing students' achievement score in their sum of total score of final exam in the subject entitled new concepts of nursing studying and concepts in specialty.

Research hypothesis: 1. Postgraduate Nursing Students enrolled in a master degree exhibit deep approach learning style. 2. Post graduate Nursing Students achieve a higher achievement score in their sum score of final exam in new concepts in nursing and concepts in specialty subject after application of the 3 P's model.

II. Materials and method

Design Quasi experimental design was used to collect data of this study.

Setting: Faculty of Nursing Tanta University affiliated to Ministry of Higher Education & Scientific Researches in Egypt.

Subjects: All post graduate nursing students enrolled in a master degree (76) students at preparatory phase by Law, studying subject the new concepts of nursing in the year 2011(33 students } & 2012 (43 students }.

Tools of the study: One tool entitled preferred learning and teaching style tool was used to collect data. It consists of 3 parts.

Part one: Sociodemographic characteristics of post graduate student which includes age, sex, years of experience, & work setting.

Part two: The revised two factor study process questionnaire the 3 P's model of teaching and learning style 2001, was adopted from John Biggs et.al, David Kember & Doris YP Leung 2001 was used by the researcher. This scale consists of two deep and surface factors each with 10 items. Within each of these two factors it was possible to distinguish strategy and motive subscales. Each of subscales consisted of five items. The final version of scale therefore has two main scales, Deep Approach (DA) and Surface Approach (SA), with four subscales, Deep Motive (DM), Deep Strategy (DS), Surface Motive (SM), Surface Strategy (SS) the Cronbach's alpha values are 0.73 for DA and 0.64 for SA which are considered acceptable however the scale internally consistent. However the DA has two indicators DM and DS, and SA has two indicators SM & SS were created by summing the five corresponding items. The two higher order constructs DA and SA are negatively related. The responses to items are scored as follows: A= 1, B=2, C=3, D=4, E=5. To obtain main scale scores add item scores as follows: DA=1+2+5+6+9+10+14+17+18. SA=3+4+8+11+12+15+16+19+20. Subscale scores can be calculated as follows: DM= 1+5+9+13+17, DS= 2+6+10+14.

SM= 3+7+11+15+19, SS= 4+8+12+16+20 since A= never/ only rarely, B= sometimes true of me, C= is true of me about half of time, D= frequently true of me, E= always / almost. However in conclusion this Revised two factors Study Process Questionnaire (R- SPQ-2 F) are twenty questions, of these ten questions for deep motive and deep strategy learning style five questions for each and other ten questions for surface motives and surface strategy learning style. The score for responses of this scale was measured using, five point likert. Also this scale was used to characterize the teaching context. In sum SPQ scores can be quality indicators at presage, process and product levels, as referring to preferred, ongoing and contextual approaches to learning: 1. at presage level, they may describe how individual differ within a given teaching context (preferred approach), 2 at process level, they may describe how specific tasks handled (ongoing approach), 3. at product levels they may describe how teaching context differ from each other (contextual approaches) and this score tell us when motive and strategy are deep or surface.

Part three: Preferred teaching style questionnaire which encompass seven questions about preferred method of teaching e.g. lectures, discussion, visual, auditory, student presentation using ppt with and without handout.

Methods: Permission was obtained from administration of the Faculty of Nursing at Tanta University.

Ethical considerations: Written consent was obtained written from the student after explanation of the research study aims and content. Confidentiality of data was ensured using code number instead of their names and withdrawal from the study was reserved.

Tool development: one tool was developed to conduct this study. This Tool was **Post graduate nursing student Preferred learning style and teaching methods**. this tool was consists of three parts, part one and three was developed by the researcher after review of relevant literatures while part two was The revised two factor process questionnaire 2001, The 3 Ps model of teaching and learning style was adopted from John Biggs et.al, David Kember & Doris YP Leung 2001 was used by the researcher. Nine experts in the field of nursing revised the tool for validity.

Pilot study was done on nine students to test reliability and the necessary modifications were done. Each nursing students interviewed individually to maintain individual differences. The tool was used at the beginning of studying course. Students' achievements' a final oral and written exam was summated by law and was compared. Computerized program SPSS version 18 software was used to analyze data. **The study was conduct on four phases.**

Phase one: assessment phase in which the tool was used to assess the **presage factors** (preferred learning style) and **intuitional presage factor** (teaching style of the students).

Phase two: Planning phase : based on the findings of student preferences of learning styles and teaching methods in assessment phase the researcher plan to use the students preferred teaching methods and take into consideration their preferred learning style for conduction the study,

Phase three: Implementation phase, **process factors of the 3 Ps model** which encompass the researcher use the post graduate students preferred learning styles and preferred teaching methods , discussion method & other preferred methods of teaching with the students and visual seminar presentation using ppt presentation and data show and providing the students with handout for the studying the subject .

Phase four: Evaluation phase: the product factors of the 3 Ps model which encompass the student success .The researcher was used the students overall achievements score of final exams as declared by law of the faculty to evaluate the efficacy of teaching style used and students preferred learning style on the overall

achievements scores. The scoring system of achievements was as the following: High score equal to 75% and more allocated score 3 and Good score equal 65% to less than 75% allocated score equal to 2 and Not pass or absents equal to less than 60% allocated score equal to 1 .

III. Results

Table1: Characteristics of the postgraduate nursing students.

The post graduate nursing students enrolled in master program, age ranges from 24 to 40 years and the mean age and standard deviation was 26.8 ± 3.2 . Also the years of nursing experience range from zero to 34 years with the mean years of experience 4.3 years and 48.7% of students were hospital staff nurse while only 10.5 % were faculty nursing staff.

Table 2: Distribution of the post graduate nursing students (n = 76) according to the learning styles based on the Revised Two Factor Study Process Questionnaire (R-SPQ-2F)

More than one third 35.5 % of post graduate nursing students were come to most classes with questions in their mind they want answer & this reflect that they use deep motive learning style. Also one third 31.5 % of them were always work hard at their studies because they find the material interesting while only rarely find that a time studying give them a feeling of personal satisfaction. One third of post graduate nursing students 31.6% & 28.9 % frequently & always find at times studying give them a feeling of deep personal satisfaction respectively & this means that they have a deep motives & use a deep strategy learning style since one third of them 32.9 % have to do frequently enough work on a topic that they can form their own conclusion before they satisfied.

Also more than one third 35.5 % of post graduate nursing students have deep motive because they work hard at their studies because they find the material interesting & use deep strategy learning style since one third of them sometimes spend a lot of their free time for finding out more about interesting topics which have been discussed in different class .

In relation to post graduate nursing student (PGNS) who are used deep strategy learning style, it was found that one third 32.9 % of them frequently test themselves on important topics until they understand it completely and also more than quarter tend to have deep motive almost half time.

Moreover this table shows that one third 31.6 %, 32.9% of PGNS were always used deep strategy & they have deep motive to learn this is clarified since they were choose the statements, I feel that virtually any topics can be highly interesting once I get into it and I find most new topics interesting & often spend extra time trying to obtain more information about them. Furthermore this table revealed that only rarely or never more than half 57.9%, 52.6% of PGNS were used surface motive strategy and have surface motive to learn since they choose the statement 4, I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics, & statement 4I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined. Finally one third 30.3 % of the study subjects were always used superficial strategy, since they choose statement 5 I find the best way to pass examination is to try to remember answers to likely questions while they have sometimes surface motive in 40.8% of them since they choose the statement 5, I see no point in learning material which is not likely to be in the examination.

Table 3: Scores of post graduate nursing students (n = 76) according to their learning style illustrates that post graduate nursing students were used deep approach learning style with median score %67 while superficial approach were used with a median % 45 . Also more than two third of students have deep motives and use deep strategy of learning style with median level 66.6 ± 14.7 and 68.4 ± 14.5 respectively.

Fig 1: Percent distribution of post graduate nursing students' by learning style based on their total percent scores on the Revised Two Factor Study Process Questionnaire (R-SPQ-2F)

Near two third 61.5% of post graduate nursing students were used deep approach of learning style and one third 38.2% were used the surface approach learning style .

Table 4: The association between the post graduate nursing students' learning styles and their characteristics

This table revealed that there was an association between learning style of post graduate nursing students and their characteristics. More than two third 69.8 % of second academic year post graduate nursing students & more than half 51.5% of first academic years post graduate nursing students were use deep approach of learning style and statistical significant association was found where $\chi^2 = 6.636$ at P value =0.039.

Also statistical significant association was found between years of experience and the approach of learning style used by post graduate nursing students where $Z = 2.647$ at P value = 0.678 while the age of students and their workplace were found to be insignificant with their learning style approach.

Table 5: Distribution of post graduate nursing students' according to the preferred teaching methods.

This table presents the preferred teaching methods of post graduate nursing students. There was found that two third 61.8% of them were preferring student presentation using PPT and discussion in addition with handouts given to them. Also minority of the students 18.4% were preferred the use of didactic class room teaching method (traditional lecture using blackboard) and so minority 1.3% of the student were preferred modified lecture method with feed back from the students.

Table 6: Association between the post graduate nursing students' learning styles and preferred teaching methods

This table prevails there was found that an association between post graduate nursing students learning style they were used and teaching methods they preferred where majority of them 83.3 % were use deep approach learning style and prefer the method of teaching of students using PPT and give them handouts . Also significant association was found between learning style and teaching methods where Monte Carlo test equal 0.026 at significant P=0.05%.

Figure 2: Post graduate nursing students' achievements score in final exam.

Near all 95 % of post graduate nursing students achieve high score while only 5% of them achieve low score in final exam.

Table 1: Characteristics of the post graduate nursing students

Characteristic	No. (n = 76)	%
Age (years) Minimum – Maximum Mean ± SD		24 – 40 26.8 ± 3.2
Post graduate academic year First Second	33 43	43.4 56.6
Years of nursing experience Minimum – Maximum Mean ± SD Median (25th – 75th percentiles)		0 – 34 4.3 ± 3.6 3.0 (1.5 – 4.6)
Work place Hospital Faculty of nursing School /Technical institute of nursing	37 8 31	48.7 10.5 40.8

Table 2: Distribution of the post graduate nursing students (n = 76) according to the learning styles based on Study Process Questionnaire the 3Ps model of teaching and learning on the revised two factor Study Process Questionnaire (R-SPQ-2F)

Learnin g style	Item	Never/ only rarely		Sometimes		Almost half of the time		Frequently		Always/ almost	
		No.	%	No.	%	No.	%	No.	%	No.	%
Deep Motive	I find that at times studying gives me a feeling of deep personal satisfaction.	6	7.9	9	11.8	15	19.7	24	31.6	22	28.9
	I feel that virtually any topic can be highly interesting once I get into it.	4	5.3	11	14.5	18	23.7	25	32.9	18	23.7
	I find that studying academic topics can at times be as exciting as a good novel or movie.	12	15.8	18	23.7	21	27.6	14	18.4	11	14.5
	I work hard at my studies because I find the material interesting.	8	10.5	11	14.5	13	17.1	20	26.3	24	31.6
Deep Strategy	I come to most classes with questions in mind that I want answering.	8	10.5	17	22.4	27	35.5	13	17.1	11	14.5
	I find that I have to do enough work on a topic so that I can form my own conclusions Before I am satisfied.	1	1.3	16	21.1	19	25.0	25	32.9	15	19.7
	I find most new topics interesting and often spend extra time trying to obtain more Information about them.	7	9.2	10	13.2	15	19.7	20	26.3	24	31.6
	I test myself on important topics until I understand them completely.	8	10.5	8	10.5	10	13.2	25	32.9	25	32.9
Surface Motive	I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.	7	9.2	23	30.3	12	15.8	17	22.4	17	22.4
	I make a point of looking at most of the suggested readings that go with the lectures.	3	3.9	23	30.3	18	23.7	21	27.6	11	14.5
	My aim is to pass the course while doing as little work as possible.	45	59.2	9	11.8	8	10.5	10	13.2	4	5.3
	I do not find my course very interesting so I keep my work to the minimum.	45	59.2	13	17.1	9	11.8	3	3.9	6	7.9
Surface Strategy	I find I can get by in most assessments by memorizing key sections rather than trying to understand them.	18	23.7	27	35.5	20	26.3	6	7.9	5	6.6
	I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.	44	57.9	15	19.7	7	9.2	8	10.5	2	2.6
	I see no point in learning material which is not likely to be in the examination.	30	39.5	31	40.8	5	6.6	4	5.3	6	7.9
	I only study seriously what's given out in class or in the course outlines.	9	11.8	26	34.2	19	25.0	14	18.4	8	10.5
Surface Strategy	I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.	17	22.4	26	34.2	19	25.0	6	7.9	8	10.5
	I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.	26	34.2	32	42.1	8	10.5	5	6.6	5	6.6
	I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.	40	52.6	21	27.6	11	14.5	3	3.9	1	1.3
Surface Strategy	I find the best way to pass examinations is to try to remember answers to likely questions.	12	15.8	16	21.1	13	17.1	12	15.8	23	30.3

Table 3: Scores of post graduate nursing students (n = 76) according to their learning style

Learning style	No. of statements	Maximum possible score	Minimum-Maximum (% score)	Mean score ± SD	Median % score	IQR
Deep Motive	5	25	24 - 96	66.6 ± 14.7	68	20
Deep Strategy	5	25	20 - 96	68.4 ± 14.5	72	16
Surface Motive	5	25	20 - 76	39.9 ± 12.3	38	16
Surface Strategy	5	25	20 - 88	49.5 ± 13.1	48	16
Deep approach	10	25	22 - 96	67.5 ± 12.9	67	16
Surface approach	10	25	20 - 68	44.7 ± 10.5	45	13.5

Deep Approach Score: Σ All Deep Motive scores + all Deep Strategy scores

Surface Approach Score: Σ All Surface Motive scores + all Surface Strategy scores

Mean/Median % score was estimated as a % of the maximum possible score.

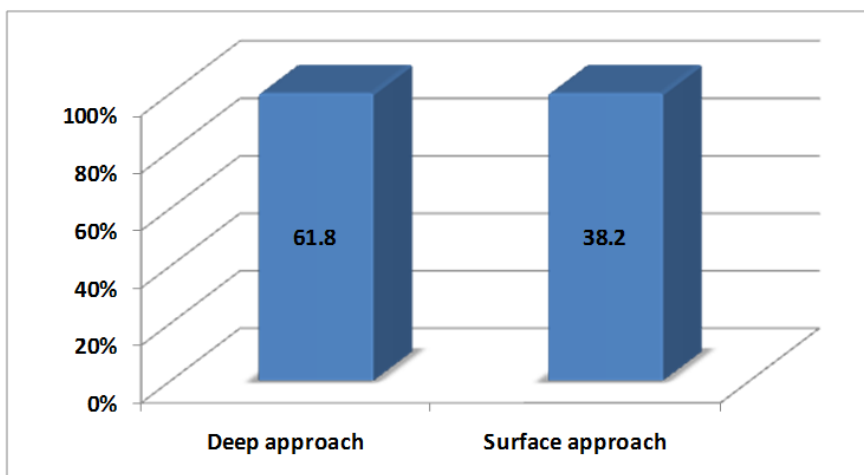


Fig 1: Percent distribution of post graduate nursing students (n = 76) by learning style based on their total percent scores on the revised two factor Study Process Questionnaire (R-SPQ-2F). % of students who had the highest % score on (R-SPQ-2F)

Table 4: The association between the post graduate students' learning styles and their characteristics.

Characteristic	Total No. (n = 76)	Deep approach (n = 47)		Surface approach (n = 29)		Statistical significance (p value)
		No.	%	No.	%	
Age (years) Mean ± SD	26.8 ± 3.2	27.1 ± 3.7		26.4 ± 2.3		# Z = 0.852 (p = 0.397)
Post graduate academic year First academic year 2011 Second academic year 2012	33 43	17 30	51.5 69.8	16 13	48.3 30.2	X ² = 6.636 (p = 0.039) *
Years of nursing experience Mean ± SD	4.3 ± 3.6	5.4 ± 4.1		3.6 ± 2.3		# Z = 2.647 (p = 0.004) *
Work place Hospital Faculty of nursing School /Technical institute of nursing	37 8 31	23 6 18	62.2 75.0 58.1	14 2 13	37.8 25.0 41.9	M ^C p = 0.678

MC: p value of Monte Carlo test. * Significant at 0.05% level

Z = of Mann Whitney U non-parametric test

Table 5: Distribution of postgraduate nursing students according to the preferred teaching methods

Preferred teaching method	No. (n = 76)	%
Visual	2	2.6
Student presentation plus ppt presentation plus teacher handouts	18	23.7
Ppt plus written notes from teacher	12	15.8
Ppt plus written notes from the students	20	26.3
Discussion method	9	11.8
Didactic classroom teaching method (traditional lecture using blackboard)	14	18.4
Modified lecture method (with feedback from the students)	1	1.3

Ppt: power point presentation

Table 6: The association between the post graduate students' learning styles and preferred teaching methods

Preferred teaching method	No. (n 76)	Deep approach (n = 47)		Surface approach (n = 29)		Statistical significance (p value)
		No.	%	No.	%	
Visual	2	1	50.0	1	50.0	MC p = 0.026*
Student presentation using ppt presentation plus handouts	18	15	83.3	3	16.7	
Ppt plus written notes from teacher	12	6	50.0	6	50.0	
Ppt plus written notes from the students	20	12	60.0	8	40.0	
Discussion method	9	7	77.8	2	22.2	
Didactic classroom teaching method (traditional lecture using blackboard)	14	6	42.9	8	57.1	
Modified lecture method (with feedback from the students)	1	0	0.0	1	100.0	

MC: p value of Monte Carlo test. * Significant at 0.05% level

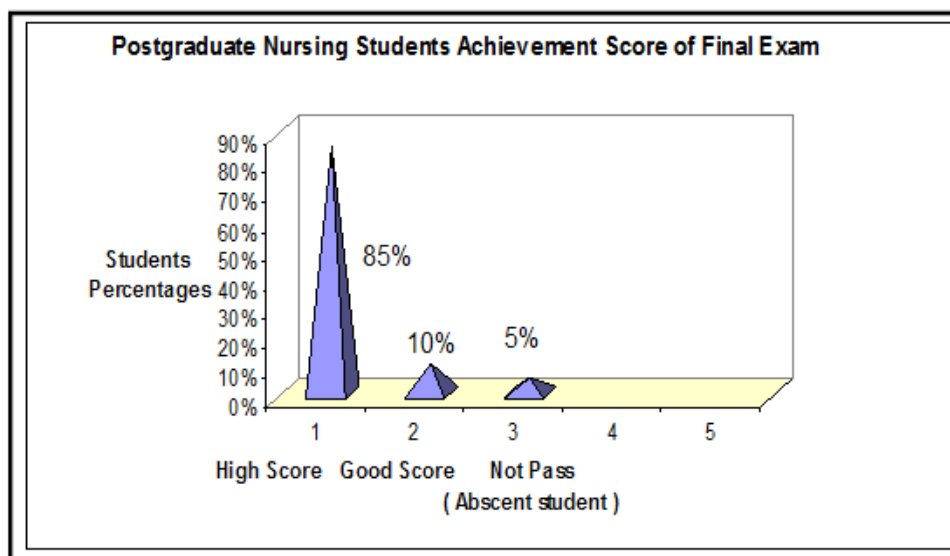


Figure 2: Postgraduate nursing Students' achievements score in final exam

IV. Discussion

A variety of preferred learning styles work out, and assessment of how someone learns best and likes to learn will help the educator to select teaching approaches accordingly **Bastable, (2008).Kia et.al; (2009)** mentioned that individuals acquire learning styles and techniques according to their individual differences like abilities through experiences. In the current study all respondents, the postgraduate nursing students were female and their age ranges from 24 to 40 years. Also the years of nursing experience mean range from minimum to maximum equal zero to 34 years with the mean years of experience 4.3 years and near half of students were hospital staff nurse while only minority were faculty member of clinical demonstrator nursing staff. This in the same vain with study was done by **Mura, (2006)** findings of demographic profile of the respondents indicated majority were female with an average age of 38 years and ranged from 24-59 years old as well as the total years of nursing experience ranged from 2- 34 years, with a mean age 13 years .Also there was no significant difference in deep and elaborative learning scores when respondent were grouped on bases of experience in professional practice. Also the current study results in contradiction with the results findings of study was done by **McCrow, et.al; (2013)** which indicated that gender, age and years of experience of undergraduate education were not related to the identified preferred learning styles.

Because learning styles can influence the efficiency of educational material, their models and methods, it is emphasized in most of the researches that individual preferences of the teachers and educational planners in presenting topics should be based on the learners ' styles **Goold & Rimmer, (2000)** . Also no learning style is either better or worth than another. Most learners can assimilate information with equal success, but how they go about mastering the content is determined by their style in the same content was given. The more flexible the educator is using teaching methodologies and tools related to individual learning styles, the greater the likelihood that learning will take place **Bastable (2008).**

The findings of the current study revealed that there was an association between learning style of postgraduate nursing students and their characteristics. In academic year 2011 & 2012 more than half & more

than two third of graduate nursing students were use deep approach learning style and statistical significant association was found between learning style & academic year. This is also in line with a study was done on three groups of students in two multidisciplinary curricula—students in the second and fourth years of a project-based environmental resource studies program and students in a problem-based program on the impact of new materials. All three groups showed relatively strong inclinations toward a deep approach. There was little difference in the profiles of the second- and fourth-year students, suggesting that the results might reflect the orientations of the students selecting into the programs more than the influence of the programs **Felder and Brent, (2005)**.

One of three ways students may be inclined to approach their courses. The first way a surface approach to learning, adopted by those tends to take relying on rote memorization and mechanical formula substitution and making little or no effort to understand the material being taught. The second way a deep approach to learning adopted by students who tend to, probing and questioning and exploring the limits of applicability of new material. The third way a strategic approach adopted by those tend to use, doing whatever is necessary to get the highest grade they can, taking a surface approach if that suffices and a deep approach when necessary **Felder and Brent, (2005)**. Also **Biggs, (1989)** mentioned that students can take different approaches to learning and studying: **deep learning** (understanding material); **surface learning** (memorizing details), strategic learning (motivated by assessments).

The current study revealed that in relation to postgraduate student who are used deep strategy learning style, it was found that one third of them frequently test themselves on important topics until they understand it completely and also more than quarter tend to have deep motive almost half time.

In the current study postgraduate nursing students were used deep approach style learning with median score more than two third while superficial approach were used with a median near half. In addition more than two third of students have deep motives and use deep strategy of learning style. Also in the current study the learning style adopted by the postgraduate nursing students was different and deep approach was used by near two third. This in line with **Josphine, (2013)** who found that the learning style adapted by learner would be different but contradicted in findings of learning styles adopted by the postgraduate nursing students of Karnataka when was assessed using a learning style inventory instrument which revealed that majority of the students adopted surface learning approaches. In Contrary more than one third of students adopted the surface approach compared to the deep approach learning. Students who were unsure of their approach or who use both styles were near quarter **Kumar and Sethuraman, (2013)**. In a study was done on 1,387 engineering students; the strongest inclination of the students was toward a strategic approach, followed in order by a surface approach and a deep approach. Also chemistry and psychology students went from a preference for strategic learning in their second year to a preference for deep learning in their fourth year, with both groups displaying consistently low inclinations toward a surface approach **Felder and Brent, (2005)**.

Similarly Skogsberg and Clump (2003) evaluated differences between learning styles of psychology and Biology majors and found that psychology majors significantly higher than biology on the deep approach subscale, whereas both groups achieved similar scores on the surface approach subscale.

In the current study more than one third of postgraduate nursing students were come to most classes with questions in their mind they want answer & this reflect that they use deep motive learning style & one third of them were always work hard at their studies because they find the material interesting while only rarely find that a time studying give them a feeling of personal satisfaction. The implementation of a deep approach was associated with higher overall satisfaction with a course. The overall satisfaction with a course did not reported by students with surface approach **Duff (2003)**.

A balanced teaching style that sometimes matches students' preferences, so their discomfort level is not too great for them to learn effectively, and sometimes goes against their preferences, forcing them to stretch and grow in directions they might be inclined to avoid if given the option is the optimal teaching style. 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. In any profession or endeavor people with every possible learning style can succeed. Assessment of a student as, a sensing learner, it says nothing about his or her intuitive skills (or sensing skills, for that matter); it does not mean that he or she is unsuitable to become an engineer or scientist or mathematician; and it does not excuse the low grade he or she made on the last exam. If learning styles used by instructors or advisers as a basis for recommending curriculum or career choices they misusing the concept and lead to serious disservices to their students and advisees **Felder and Brent, (2005)**. a deep approach to learning adopted by students who tend to be intrinsically motivated; while a surface approach to learning adopted by students who extrinsically show forms of motivation prompted by the fear of failure and the need to satisfy assessment requirements **Shelly (1999)**.

Tickle, (2001) concluded that students who adopt deep learning strategies are motivated by mastery - oriented goals. Surface level learning adopted by students who are motivated by pass only aspirations and

hence, develop minimum effort learning strategies, often dictated by rote learning, only what is necessary. Also **Chan and Lai (2002)** found that students who scored higher on learning goal orientation were more likely to cognitively engage in deep strategy. Moreover, students who scored higher on performance goal orientation were likely to engage in both surface and deep learning strategies.

Furthermore the study by Mura, (2006) pointed out that graduate students have a mixed approach to academic tasks as demonstrated by the higher scores on each style. They demonstrated versatile learning styles with clear evidence of deep level of understanding, reflecting a personal interpretation of topics covered, but also a preference toward the use of a surface approach to complete the academic tasks.

Good teaching was clearly, positively associated with students' reporting a deep approach to their study so that transforming teaching inspiring learning. However understanding how students learn is important in order to improve the teaching and learning experience **Romanelli & Ryan (2009)**. **Tali (2006) mentioned that during their academic studies**, students in traditional universities usually hear face-to-face lectures directed at large groups of students. A lecture is often the cornerstone of university teaching. It can be an effective method for communicating theories ideas and facts to students **Devi (2008)**.

In the current study the preferred teaching method was Ppt plus written notes from the students, Student presentation plus Ppt presentation plus teacher handouts and Didactic classroom teaching method (traditional lecture using blackboard) was preferred by of post graduate students followed by Discussion method .This in contradiction with a research study findings obtained which indicated that preferred teaching methods were lectures by more than half of dental and near half of medical students, **Kumar and Sethuraman, (2013)**.

Teaching methods are varying some instructors mainly used lecture, while others spend more time on demonstrations or activities, focus on principles, on applications, and emphasize memory and others on understanding. Student's native ability, prior preparation, the compatibility of the student's attributes as a learner and the instructor's teaching style govern how much a given student learns in a class **Felder and Brent, (2005)**. Also **Boore and Deeny, (2012)** pointed out that the approach for promoting successful learning is to consider lecture, power point presentations (Ppt) and handouts as integrated package with each element making a different contribution. **An interpretation of these observations** is that should attempt to improve the quality of their teaching, which in turn requires understanding the learning needs of today's nursing students and designing instruction to meet those needs in order to reduce enrollment attrition and to improve the thinking and problem-solving skills of nursing graduates,. The problem is that no two students are alike. They have different backgrounds, strengths and weaknesses, interests, ambitions, senses of responsibility, levels of motivation, approaches to studying, attitudes about teaching and learning, different levels of motivation, responses to specific classroom environments and instructional practices **Felder and Brent, (2005)**.

Improvement of student's attitudes and better academic achievement may occur when the learning style match teaching style Romanelli & Ryan, (2009). In the present study, it was found that most of the postgraduate nursing students in master degree program preferred deep learning style approach of the total study subjects, of these majority of student who preferred teaching methods of student presentation using ppt plus student's hand outs were used deep approach learning style as well as who preferred discussion method. Also significant relation was found between preferred teaching methods and students learning style.

There was no association between good teaching and surface approach to learning.

A deep approach to study will be reported by the students who perceived that teacher didn't assess only facts and it was not enough just the memorization of facts. Contrary, clear correlation was found between surface approach to study with facts and memory control. Also the students perceive that knowing the facts only is sufficient to get good grades, **Urban et.al; (2013)**.

The postgraduate nursing student achievement in the current study was higher since one third of them achieve excellent higher grade level and also near two third achieve very good level test score this means that the success of learning environment . This is in line with **Prabhakar and Swapna, (2009) & Kinshuk et.al; (2009)** who reported that the level of learning achieved by a learner is one of the most important factors which indicate the success of a learning environment. Learning styles can help students learning more easily and effectively when students understand their strengths and weaknesses, they can learn with greater motivation. Several studies have shown that academic performance of students is related to their learning styles **Rasimah et.al; (2008)**.

The findings of the current study revealed that none of postgraduate nursing student failed in the course exam. This is in respect with a study was done on engineering students which revealed that students who adopted a deep approach in a course were very likely to pass the course (in fact, none of their subjects in this category failed), while students who adopted a surface approach were very likely to fail. Greater satisfaction with their instruction generally expressed by the students who adopted a deep approach **Felder and Brent, (2005)**.

The deep approach learners have shown greater academic achievement than in the past which was very similar to those revealed in **Kumar and Sethuraman (2013)** study who interpreted that as the probable

mechanism of this could be the deep learner approach has interest subjects and focuses its study on long term benefits and not merely to pass the examination. Also significant positive correlation was found between high academic achievements and deep approach earners and a positive correlation between lower academic achievements and surface learners.

There was a significant difference between higher and lower achiever students in relation to learning strategies, deep strategies; deep motives surface strategies and surface motives. However the findings from the current study make a significant contribution to theory development.

All research works, which have used the SPQ or the R-SPQ-2, reflect the influence of learning approaches on academic achievement, which was positive for the deep approach and negative for the surface approach. As regards students groups, excellent students present a deep learning approach in motives and strategies, and average students are characterized by a surface learning approach, in motives and strategies. Thus, excellent students were found to be somewhere between the Good and Excellent grades when their average grade, when selected to study at university based on their mark, was clearly excellent. Average students' academic achievement lowered to an intermediate position, somewhere between just passing and failing subject matters, and their average mark came close to Good **Shelly (1999)**.

According to Vermunt (1996), instruction does not lead to learning automatically. The outcome of students' achievement in the course depends on the learning strategies they use. Various researches have investigated the relationship between these learning strategies and academic success. **Byrne et.al; (2001) study findings** revealed that the deep and strategic approaches are positively associated with high academic performance and the surface approach with poor academic performance. There was a significant positive relationship between the deep and strategic approach and the total assessment marks. **Diseth (2003)** reported that the deep learning approach was not a significant predictor of academic success. In contrary in a study about the role of cognitive learning styles in accounting education: developing learning competencies, there was no association between study approach and final grades students achieved, **Urban et.al; (2013)**.

The findings that hypothesis one accepted suggested that postgraduate nursing students enrolled in a master degree exhibit deep approach learning style. Learning is a natural lifelong process and this can be enhanced through the teacher of nursing when they construct a curriculum must consider the student's learning styles, learning approach as well as preferred teaching method. Also the Hypothesis two have been accepted because postgraduate nursing students achieve a higher achievement score in their sum score of final exam in new concepts in nursing and concepts in specialty subject post assessment of learning style preferences and teaching methods and implementation of preferred teaching method using the 3 Ps Model.

V. Conclusion & Recommendations

Nursing education should be evidence based. Majority of postgraduate nursing students enrolled in master degree course were use deep approach learning style and prefer the method of teaching of students using PPT and give them handouts. Also statistical significant association was found between years of experience and the approach of learning style used by post graduate nursing students while the age of students and their workplace were found to be insignificant with their learning style approach. Also significant association was found between learning style and teaching methods. Moreover near two third of student achieve higher score equal to very good & more than one third of them achieve higher score equal to excellent level in the year 2012. There was a relationship between learning style, teaching method and students' achievement. In addition, the time is demanding a paradigm shift in our approach to nursing education: from "**how we want to teach to how our students prefer to learn**". The teacher of nursing subjects must use of "3 Ps" model questionnaires for assessment and evaluation of nursing students learning styles for improvement of quality of education process outcomes as well as assessment & evaluation of teaching styles. The teachers need to change the learning strategy or the learning style of each student by minimizing the usage of surface strategy and surface motive and developing inclination and interest towards deep strategy and deep motive. The teachers need to find out ways to reduce performance avoidance inclination amongst the students and motivate them to inculcate the habit for deep strategy and deep motive learning strategies. Teaching strategies have been recommended to help staff of education meet the needs of the full spectrum of learning styles, induce students to adopt a deep approach to learning and promote students' intellectual development.

Future researches

1. How and to what extent can students be motivated to adopt a deep approach?
2. Cross cultural comparison of learning profiles between our students and other countries to help understand what cultural and environmental factors influence learning preference.
3. Comparing how do students achieving high-level thinking skills, such as critical thinking and creative thinking through the use of different models of learning style and teaching methods?
4. Might discussing approaches to learning with students promote their adoption of a deep approach?

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