

# Problem Based Learning and Traditional Method of Learning as Perceived by Secondary Technical Nursing Students

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**Abstract:** The problem based learning (PBL) can help students as a teacher create a high-performing classroom in. It allows students to focus on central ideas and issues in the curriculum, create engaging and challenging activities in the classroom and support self-directed learning). Aim of the study was to assess the perception of the secondary technical nursing students regarding problem-based learning and traditional methods of learning. Research design: A descriptive study was used. Settings: This study was carried out in El-Nile and Benha secondary technical nursing schools, affiliated to the Health Insurance Organization, in Qalyoubiah Branch. Subjects: A convenient sample included (60) students in third grades at the previously mentioned settings. Tools of data collection: 1) A pre designed questionnaire consisted of two parts: First part to assess socio- demographic characteristics of the student such as; age, father educational level...etc. Second part Likert-type rating scale concerned with students perception regarding using problem-based learning and traditional methods of learning. Results: The main results showed that, the mean age of the studied students were  $17.61 \pm 1.41$  years, all students were females. As regarded of studied students total perception, approximately three quarters were agreeing regarding the problem based learning develops their abilities on scientific thinking more than traditional learning. Conclusion: As regarded of the perception of studied students, the current study concluded that the majority of students have high total perception regarding PBL than traditional method in learning. In addition, there are highly statistical significant differences was observed as regarding better use of problem based learning than the traditional learning method as school books & lectures. Recommendations: Further researches should be applied about PBL in different academic setting in large sample size to be generalized and integration PBL as a method of teaching to students receiving pediatric course.

**Keywords:** Problem-based learning, Traditional learning, Technical nursing students, Perception and Nursing education.

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## I. INTRODUCTION

Rapid changes on the field of informational technologies forces educational and others institutions to think about different ways of teaching and learning in both formal and informal environments (*Kokol et al., 2010*). .

Moreover, most teachers knowing the value of engaging, challenging projects for nursing students, have planned field trips, laboratory investigations and interdisciplinary activities that enrich and extend the curriculum (*Hmelo et al., 2011*).

The roots of (PBL) is the result of two important developments over the last 25years. First, there has been a revolution in learning theory. Now learning is partly a social activity; it takes place within the context of culture, community and past

experiences. This the apparent in research on problem based learning in the medical field, an important forerunner of problem based learning. Second, the world has changed. all teachers understand how the industrial culture has shaped the organization and methods of schools in 19<sup>th</sup> and 20<sup>th</sup> centuries and nursing schools must now adapt to a new century (Sweller, 2010).

Problem based learning can be defined as a learning method based on using problem as a starting point for acquisition and integration of new knowledge. Problem based learning is a student-centered instructional strategy in which students collaboratively solve problems and reflect on their experiences (Barrett, 2012).

More important, evidence shows that problem based learning enhances the quality of learning and leads to higher-level cognitive development through student's engagement with complex, novel problems. It is also clear that problem based learning teaches students complex processes and procedures such as planning and communicating (Sweller and Clark, 2011).

Problem based learning is a new trend approached to learning, (PBL), one of the enduring approached to educations that supports the use of web quests, is focused on the learner constructing meaning and knowledge from an assigned activity (Merrill, 2009).

There is a consensus that the new models of education are required for nurses to develop the knowledge and abilities to be critical thinker, independent decision makers, lifelong learners and competent users of new information technologies (Amose and White 2012).

Nursing students must be able to accurately observe close at hand and at a distance to learn skills and to gather data (e.g. observe an instructor's movements, a patient gait or verbal response, a chemical reaction, ect) students must possess functional use of the senses that permit such observation (Jones, 2010).

In recent decades, nursing students learn through making cognitive, social and experiential connection. New powerful pedagogies emphasizing learning such as problem based learning (PBL). Problem based learning is an educational approach in which complex problems serve as the context and the stimulus for learning. In PBL classes, students work in teams to solve one or more complex and compelling "real world" problems. Students develop their skills through collecting, evaluating and synthesizing resources as they first define and then propose a solution to a multi-faced problem (Cockrell et al., 2013).

Problem based learning is a new method of learning which help nursing students in the field of pediatric medical problems to provide the complex care that the child with a potential or actual diagnosis of these diseases and their family require an in-depth knowledge base is necessary (Meltzer and Mindell, 2011).

According to Munro and Rice-Munro, (2010) traditional classroom instruction is usually delivered by instructors through lectures, discussion, handout, manual, transparencies or overheads. Problem based learning designed for educational purposes has fundamentally altered modern education, especially in schools. The educational system urgently need the application of problem based learning in order to enhance the quality of teaching and learning. (Liaw, 2011 and Bastable, 2014).

#### **Significance of the study:**

Entering the 21st century, it is clear that the rapid developing educational technologies, the internet and problem based learning have become a powerful tools to provide learners with an alternative learning environment worldwide. One of the many advantages of problem based learning is that it offers instructors and students a flexible learning in terms of time and location. Many of the recent researches have clearly indicated that problem based learning has become important in modern learning environment, effective training strategy recommended using e-learning as a vision for nursing education.

**Aim of the study:** The present study aims to assess the perception of the secondary technical nursing students regarding problem based learning and traditional methods of learning .

**Research questions:** What are the perceptions of secondary technical nursing students regarding problem-based learning and traditional methods of learning?

## II. SUBJECTS AND METHODS

The methodology followed for achieving the aim was elaborated under the following four main designs namely:

- I. Technical design
- II. Operational design
- III. Administrative design
- IV. Statistical design

### I- Technical Design

The technical design for the study includes research design, setting of the study, subjects, and tools for data collection.

#### **Research Design:**

A descriptive designs was used to conduct this study.

#### **Research Settings:**

This study was carried out at El-Nil and Benha Technical Nursing Schools affiliated to Health Insurance Hospitals in Qalyoubiah Branch **Subjects:**

#### **Sample:**

Convenient sample (60) students in third grades at the previously mentioned settings, (30) from El-Nile Nursing School and (30) from Benha Nursing School, all students were females.

#### **Tools of data collection:**

Data were collected through using the following two tools :

**I A pre designed questionnaire:** It was designed by the researcher after reviewing the related literature. It was written in simple Arabic language. It consists of two parts to assess the following data:

**Part I:** It was concerned with socio-demographic characteristics of the studied students, such as; age, fathers' educational level, mothers' educational level and residence.

**Part II: Likert-type rating scale:** It was adapted form **Kaseem and Hassan, (2010)** it was translated in Arabic language to suit all student categories. It consists of (12) questions concerning students 'perception regarding problem based learning and traditional learning such as better use of problem based learning than the traditional learning method as school books & lectures, the problem based learning develops my abilities on scientific thinking and problem solving skills more than attending class, the intellectual and cultural maturity of the student and are not through problem based learning, etc.

#### **Scoring system :-**

According to the studied subjects responses were checked against a three-points liker scale that range from agree to disagree. On each question the student rates her perception regarding problem based learning and traditional learning from 1 to 3, with 1 representing disagree, 2 representing neutral and 3 representing agree.

### II. Operational Design:

#### **Preparatory phase**

Preparation of the study tools was based on reviewing of the past and current, local and international available literature using books, articles, periodicals magazines and internet. This was necessary for the researcher to be acquainted with, and oriented toward all aspects of the research problems and to develop the study tools for data collection.

#### **Content validity & Reliability:**

The developed tools were assessed by five Professors, three Professors from Faculty of Nursing and two Professors from Faculty of Medicine, who have experience in the field of pediatric to ascertain relevance and completeness of the study.

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### **Ethical consideration:**

All the students rights were secured. Oral consent was obtained from each student. The researcher explained the aim and objectives of the study to the students. The researcher maintained anonymity and confidentiality of data. Students were informed that they have the right to withdraw from the study at any time without giving any reason.

### **Pilot study:**

A pilot study was carried out before starting the data collection in January 2018 for two weeks, to test the applicability and the clarity of the study tools. It was applied on 10% of students from both schools, involving 6 students and were included in the main sample to evaluate the content validity of the study tools and estimate the time needed to fill in the tools. No modifications were done for the study tools according to the obtained results from the pilot study.

### **Field work:**

The actual field work of the study started from the beginning of Marsh 2018 up to end of April 2018 for data collection. The researcher was available in the study sitting 4 days/week from 9 am to 2 pm (Sundays and Monday) weekly in El-Nile Nursing School; and (Wednesdays and Thursday) weekly in Benha Nursing School.

The purpose of the study was explained by the researcher to each student before starting the interview. The students' were interview individually. The researcher introduced herself to students and gave them a brief idea about the aim of the study to gain their cooperation. Oral consent was obtained from each student, they were assured about the anonymity of their answers and that the information given will be used for scientific research only and be treated with strict confidentiality.

The researcher collected the data during break time by using the following tools, A pre designed questionnaire: It was took 20 minutes to fill out the questionnaire. Likert-type rating scale: It was took 10 minutes to fill out the scale. The students discussed their expectation about the study . Any clarification needed for students was given by the researcher.

### **III. Administrative design:**

The necessary approvals were obtained from managers of both secondary technical nursing schools, El-Nile and Benha affiliated to the Health Insurance Organization in Qalyoubiah Branch, explaining the aim of the study and requesting permission for data collection.

### **IV. Statistical design:**

The collected data were organized, revised, scored, tabulated and statistically analyzed (using the number, percentage distribution, mean and standard deviation, T test, Consistency coeff and Split-half and alpha-cronbakh). Statistical analyses were done by computer using the Statistical Package for Social Sciences (SPSS), to determine whether there were significant differences or not between total students 'knowledge and their socio-demographic characteristics.

Internal consistency coefficient used to study relation between variables of the study.

### **The following statistical analyses were used:**

- Number (N)
- Percentage (%)
- Mean score ( $\bar{X}$ )
- Chi square ( $X^2$ )
- Proportion probability of error (P- value)

### **Significance of the Results:**

Significance of the results was classified according to p-value; the following levels were used:

- Insignificant at  $p > 0.05$
- Significant at  $p < 0.05$
- Highly significant at  $p < 0.001$

III. STATISTICAL RESULTS

**TABLE 1:** Shows that the mean age of the studied students was 17.61±1.41years & 10.0% of them were in age group of 19+ years. The table also shows that 58.3% & 56.7% of fathers and mothers respectively have moderate level of education and 51.7% of studied students were from rural.

**TABLE 2:** Shows that 76.7 of the studied students was agreeing regarding the problem based learning develops their abilities on scientific thinking and problem solving skills more than attending class. The table also shows that highly statistical significant differences was observed regarding better use of problem based learning than the traditional learning method as school books & lectures

**TABLE 3:** Shows that there is a statistically significant relation between total perception of the studied students and their age with p-value (<0.05).

**TABLE 4:** indicates that, there is a statistically highly significant relation between total perception of the studied students and their mother educational level p-value (<0.001).and there is no statistically significant relation between total perception of the studied students and their residence

**Figure I:** This figure indicates that, highly statistical significant differences was observed as a regards to their total perception regarding problem based learning.

Table (1): Socio demographic characteristics of the studied students.

Students characteristics	Total No (60)	%
<b>Age (years)</b>		
17- <18	20	33.3
18- <19	34	56.7
19+	6	10.0
Mean±SD	17.61±1.41	
<b>Father educational level</b>		
Illiterate	0	00.0
Read and write	17	28.3
Average education	29	48.3
High Education	14	23.3
<b>Mother educational level</b>		
Illiterate	7	11.7
Read and write	16	26.7
Average education	35	58.3
High Education	2	3.3
<b>Residence</b>		
Rural	31	51.7
Urban	29	48.3

Table (2): Percentage distribution of the studied students according to their perception regarding problem based learning and traditional method of learning.

Students' perception regarding problem-based learning and traditional method of learning.	Total No 60 = 100%			Chi-square test	
	Student's perception			x2	p-value
	Low	Moderate	High		
Better use of problem based learning than the traditional learning method as school books & lectures.	0.0	26.7	73.3	22.217	<0.001**
the problem based learning increases understanding to a subject better than the traditional method	0.0	36.7	63.3	22.206	<0.001**
Its easy to understand the nursing subjects using problem based learning better than the traditional method of teaching	3.3	26.7	70.0	10.148	0.006*

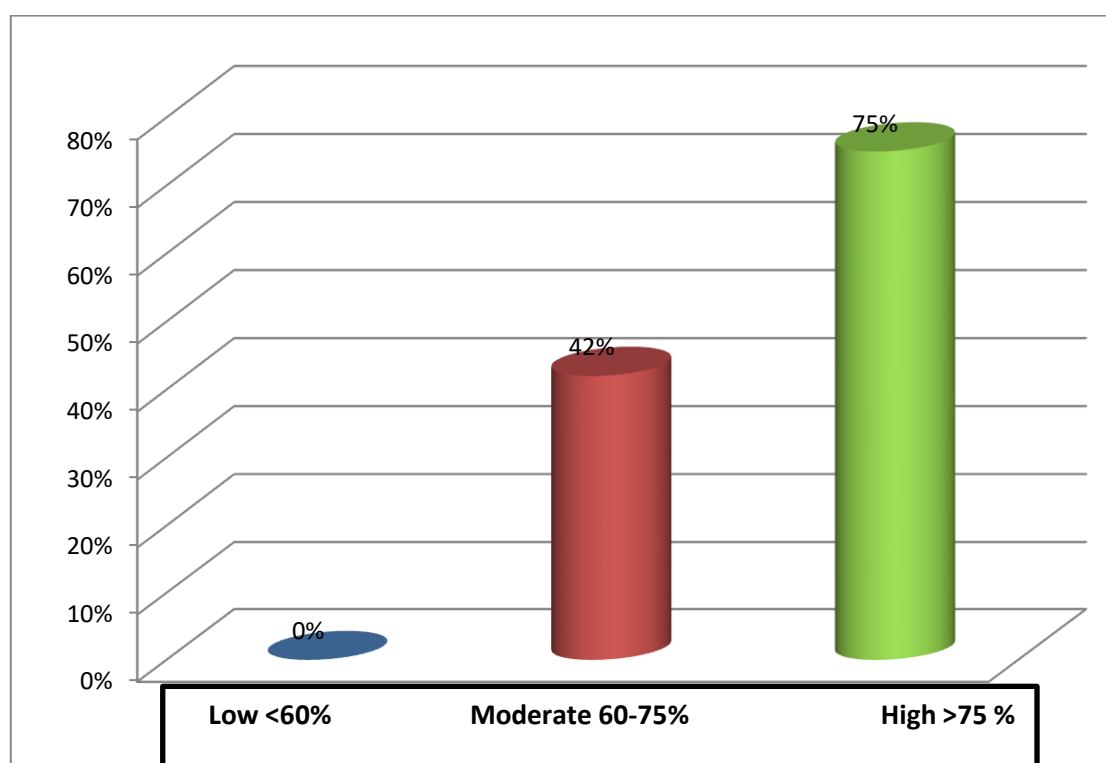
Students' perception regarding problem-based learning and traditional method of learning.	Total No 60 = 100%			Chi-square test	
	Student's perception			x2	p-value
	Low	Moderate	High		
The problem based learning provides the learner with self-confidence in interpreting data more than the traditional method	3.3	23.3	73.3	13.083	<0.001**
Using problem based learning method is better in searching for information than the traditional method.	3.3	26.7	70.0	11.304	0.004*
The problem based learning develops my abilities on scientific thinking and problem solving skills more than attending class.	3.3	20.0	76.7	5.723	0.057
The problem based learning in creates co-operative learning atmosphere more than competition among students in traditional method	0.0	40.0	60.0	8.781	0.012*
The intellectual and cultural maturity of the student and are not through problem based learning	0.0	26.7	73.3	4.389	0.036*
Problem based learning develops communication skills among students more than traditional method.	0.0	46.7	53.3	19.289	<0.001**
The problem based learning reduces the role of the teacher in the educational process.	43.3	16.7	40.0	5.882	0.049*
The problem based learning motivates me to continue to learn nursing materials more than attending lectures.	16.7	46.7	36.7	10.444	0.005*
The problem based learning facilities constantly update my information helps me to keep up with the progress of knowledge in the field of my experimental than books than traditional methods in learning.	26.7	16.7	56.7	6.791	0.034*

Table (3): Relation between students total perception regarding problem based learning and traditional method of learning and their characteristics.

Students characteristics	Total Perception			Chi-square test	
	Low <60%	Moderate 60-75 %	High >75 %	x2	p-value
17- <18	50.0	52.9	0.0	11.769	0.019*
18- <19	50.0	47.1	72.7		
19+	0.0	0.0	27.3		
<b>Father educational level</b>					
Read and write	100.0	41.2	0.0		
Average education	0.0	47.1	54.5		
High Education	0.0	11.8	45.5		
<b>Mother educational level</b>					
Illiterate	100.0	5.9	9.1	13.993	0.007*
Read and write	0.0	29.4	27.3		
Average education	0.0	64.7	63.6		
<b>Residence</b>					
Rural	100.0	35.3	72.7	5.635	0.048*
Urban	0.0	64.7	27.3		

**Table (4): Relation between students total perception regarding problem based learning and traditional method of learning and their characteristics.**

Students characteristics	Total perception		Chi-square Test	
	Moderate 60-75%	High >75%	Chi-square Test	
			x2	p-value
<b>Age (years)</b>				
17- <18	55.6	23.8	3.529	0.172
18- <19	44.4	61.9		
19+	0.0	14.3		
<b>Father educational level</b>				
Read and write	77.8	9.5	0	0.0
Average education	22.2	57.1		
High Education	0.0	33.3		
<b>Mother educational level</b>				
Illiterate	44.4	0.0	21.710	<0.001**
Read and write	55.6	14.3		
Average education	0.0	85.7		
<b>Residence</b>				
Rural	88.9	38.1	1.539	0.214
Urban	33.3	52.4		



**Figure (1): Percentage distribution of the studied students according to their total perception regarding problem based learning and traditional method of learning.**



#### IV. DISCUSSION

Problem-based learning is concerned with the development of knowledge, attitudes and psychomotor skills of the student and must be congruent with the student's chosen field of study (Degallow, 2010).

Traditionally, students learn by listening to lectures and reading are assessed on their ability to recall and communicate what they have learned. While in PBL, students are assessed on their ability to go through a problem solving process (Severiens & Schmidt, 2009).

The finding of the current study (table, 1) revealed that, the mean age of the studied students were  $17.61 \pm 1.41$  years, more than half of all students are living in rural areas, and more than half of their parents had moderate level of education. This finding was supported by Nasser, (2010), who studied assessment of nursing student's attitude toward the use of problem based learning in clinical nursing practice; Nasser found that, most of the studied students are living in rural and nearly two thirds of their fathers had moderate level of education.

The finding of the current study (table, 2) indicated that, approximately three quarters of the studied students group have high perception regarding the problem based learning develops their abilities on scientific thinking and problem solving skills more than attending class. In addition to table also shows that, highly statistical significant differences was observed as regarding better use of problem based learning than the traditional learning method as school books & lectures. This could be due to that the self-directed learning was helpful for students to take more an active role in their education.

This results was in accordance with Heckmann *et al.* (2003), who studied the gain in theoretical and practical skills in a group of nursing students during their elective neurology and stated that students who participated in PBL performed significantly better in the end of the course. He explained this by the fact that PBL encourages active learner participation, stimulates actual patient experience, and provides clinically relevant material so the students become much more familiar with the clinical problems and the required practices.

This finding were agreeing with Araz & Sungur, (2007) in a similar study entitled effectiveness of problem based learning on academic performance in genetics, who found that, the PBL students had higher performance skills and critical thinking skills scores when compered

The pervious finding was in contrast with Newman, (2013), finding as studied the effectiveness of problem based learning in a continuing nursing education program and reported that PBL had no significant impact on their practice.

Moreover, this finding was disagrees with Pugsley & Clayton, (2014), who mentioned that students in PBL were less likely to be satisfied with their learning experiences as they experience PBL as stressful and times frustrating for students with limited group experience or little desire to work in groups.

This result was in contrast with the study carried out by Furber *et al.* (2014), who found that 54% of the students accept PBL technique than traditional method, and explained that by exposure to PBL make students overwhelmed by required reading, and make them unable to learn large amount of new information effectively in limited period of time.

The finding of the current study indicated that, there is a statistical significant differences between the total perception of studied students and their age and academic year. This may due to when increasing age increases the desire to look at and update the information and self-reliance in education. This results agreed with Malak, (2015) who stated in the study to know the effect of using e-learning in education in the learning achievement of secondary school students compared to conventional education, the results showed that, there is a positive relationship between the frequency of use of computers and the internet and age of students. This result disagrees with study aimed to determine attitudes of teachers and students towards the use of e-learning in secondary schools Jordanian, the results showed that, there is no statistical relationship between students' attitudes and their age and grade (Soyibo & Hudson, 2017).

The result of present study (table, 3-4) showed that, there is a statistically significant relation between total perception of the studied students and their age. This finding agreed with Malak, (2015) who studied the effect of using problem based-learning in education in the learning achievement of secondary school students compared to conventional education. The results showed that, there is a positive relation between the frequency of use of computers and the internet in searching and age of students. This result disagreeing with the study carried out by Soyibo & Hudson, (2017) which aimed to



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determine attitudes of teachers and students towards the use of problem based learning, in secondary schools, in Jordan. The results showed that, there are no statistically significant relations between students' knowledge and their age and grade.

In addition, tables also shows that, there is a statistically significant relation between the students' total perception and their parent's educational level. This may be due to that when parents are educated, they influence their children's lives and positively motivate, and encourage them to use modern technology in education. These finding agreed with that of a study done by *Ahmed, (2005)* regarding the application of problem based learning in some public schools in Cairo. Results had shown that there is a statistically significant relation between the level of education of parents and their children's application to use problem based learning in education, where about two thirds of the parents were highly educated.

Otherwise, this finding disagreed with that of a study done by *Hassan, (2008)* regarding Comparison between baccalaureate nurses own expectation, actual role and prescribed role at Cairo University Hospitals, who stated that, students can complete their education by the use of modern technology in education regardless of their parents level of education. This may be attributed to the internal motivations of the students that motivated them to use problem based learning.

The results of the current study (**table, 4**) showed that, there is no statistically significant relation between total perception of studied students and their residence. These finding agreed with a study conducted by *Abd- EL Fattah, (2011)* regarding the use of computer-assisted instructions and internet in cities compared to its use in the villages, the results showed that, more than half of the studied sample were from city and there is a negative relationship between the use of computers and internet in education and place of residence of students.

Finally, problem based learning is an instructional method characterized by the use of patient problems as a context for student to learn problem solving skills and acquire knowledge about basic and clinical sciences *Geri, (2015)* The problem based learning approach will help nurse educators better prepare their students to provide high quality professional nursing care in a dynamic health care system *Heidi et al., (2015)*.

### V. CONCLUSION

As regarded of the perception of studied students, the current study concluded that the majority of students have high total perception regarding PBL than traditional method in learning. In addition, there are highly statistical significant differences was observed as regarding better use of problem based learning than the traditional learning method as school books & lectures.

### VI. RECOMMENDATIONS

Based on the results of the current study , the following recommendation are suggested:

- Integration PBL as a method of teaching to students receiving pediatric course.
- Further researches should be applied about PBL in different academic setting in large sample size to be generalized .

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