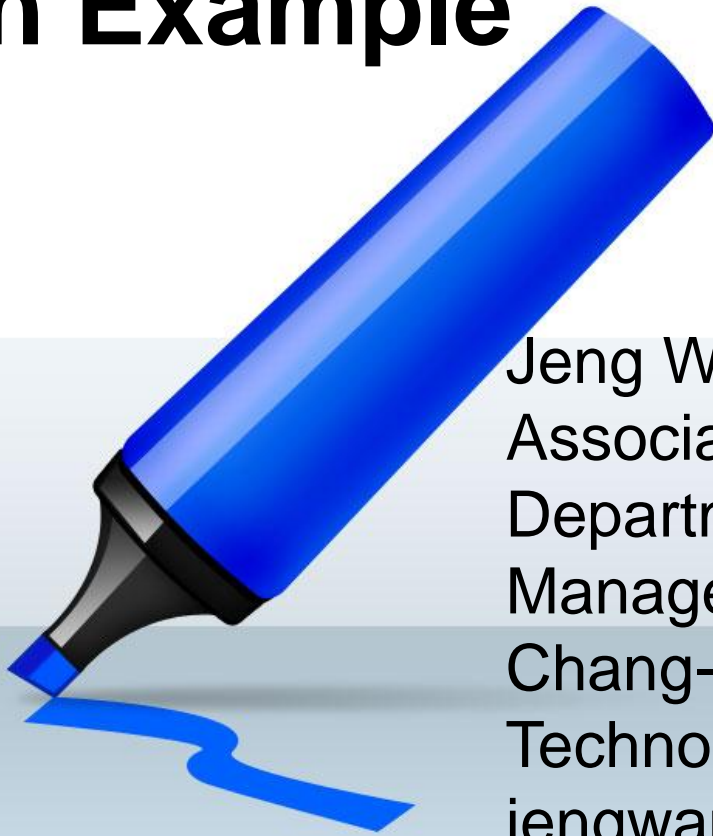


# The Effect of “a Situation-Based Simulation e- Learning Program for Nursing Students—Using Delirium as an Example



Jeng Wang RN. PhD,  
Associate Professor,  
Department of Gerontological Care and  
Management  
Chang-Gung University of Science and  
Technology  
[jengwang@mail.cgust.edu.tw](mailto:jengwang@mail.cgust.edu.tw)

# Background

- Lave & Wenger first published in *Situated Learning*
  - illustrate their theory by observations of different apprenticeships
- Jean Lave was (and is) a social anthropologist with a strong interest in social theory, based at the University of California, Berkeley
- Etienne Wenger was a teacher who joined the Institute for Research on Learning.



# Lave & Wenger Suggest

- Learning is not seen as the acquisition of knowledge by individuals so much as a process of ***social*** participation.
- The nature of the ***situation*** impacts significantly on the process.
- Approaching learning is something more than simply 'learning by doing' or experiential learning.



# Situated Learning Theory (SLT)

- is “the notion of learning knowledge and skills in contexts that reflect the way they will be used in real life”.

(Collins, 1989)



# 3 Core Elements in Course Design

- Apprenticeships/ learning activity
- “Virtual” or “real” environment
- Place their students in an environment
  - as similar as possible to the context in which their learning will actually be used.



# E-Learning in SLT

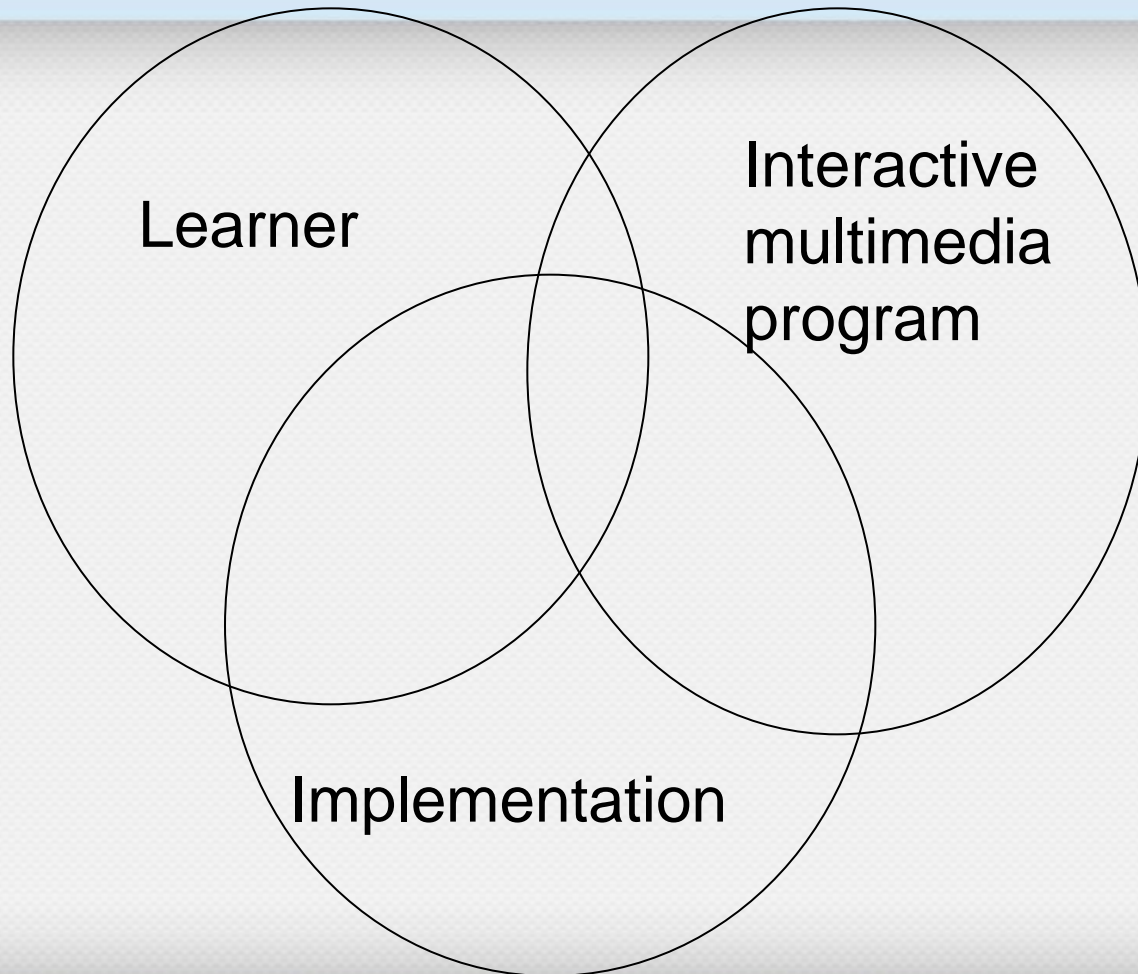
- Actual work setting
- Highly realistic or virtual surrogate of the actual work environment
- Anchoring context such as a video or multimedia program

(McLellan, 1994)





# Constructive Elements of Situated Learning in Interactive Multimedia



# Motivation

- 14-24% prevalence rate, at admission
- 6 to 56% during hospitalization occurs one type of delirium
  - 15-53% geriatric patients
  - 70-80% older patients in ICU
- 60%, at nursing homes
- 83% of geriatric patients prior to death





# Motivation

- 22-76% Mortality rate in hospitalized patients
  - One year mortality rate is 35-40%
- Health outcomes
  - Prolongs the length of stay
  - Increased cost of care in hospital
  - Increases likelihood of needs for nursing home placement
  - functional decline and loss of independence



# Under Recognition

- Under recognition is a major concern,
  - 19-87.5% of nurses have problem in accurate recognition or documenting (Inouye, 2001; Milsen,& et al, 2002, Sounder, 2000 )
  - Only 20%physicians recognize and document delirium during hospitalization
  - only *DSM-IV* criteria precise but difficult to apply



# Delirium in Nursing Education

- Delirium has been overlooked in nursing education
- Delirium is an abstract concept
- Traditional teaching strategy may not be able to fulfill the needs of Nursing students (NS)



# Example

## Implementation Situated Learning Theory into Geriatric Education



# Purpose of the Study

- Establish an e learning program for NS
- NS would be able to identify the elderly patients developing delirium, as the e program implemented.



# Design

- A quasi -experimental design
- 2 class was randomly assigned into the experimental group( $n=49$ ) & comparison group( $n=48$ )





# Design

Pre-test   intervene   Post-test

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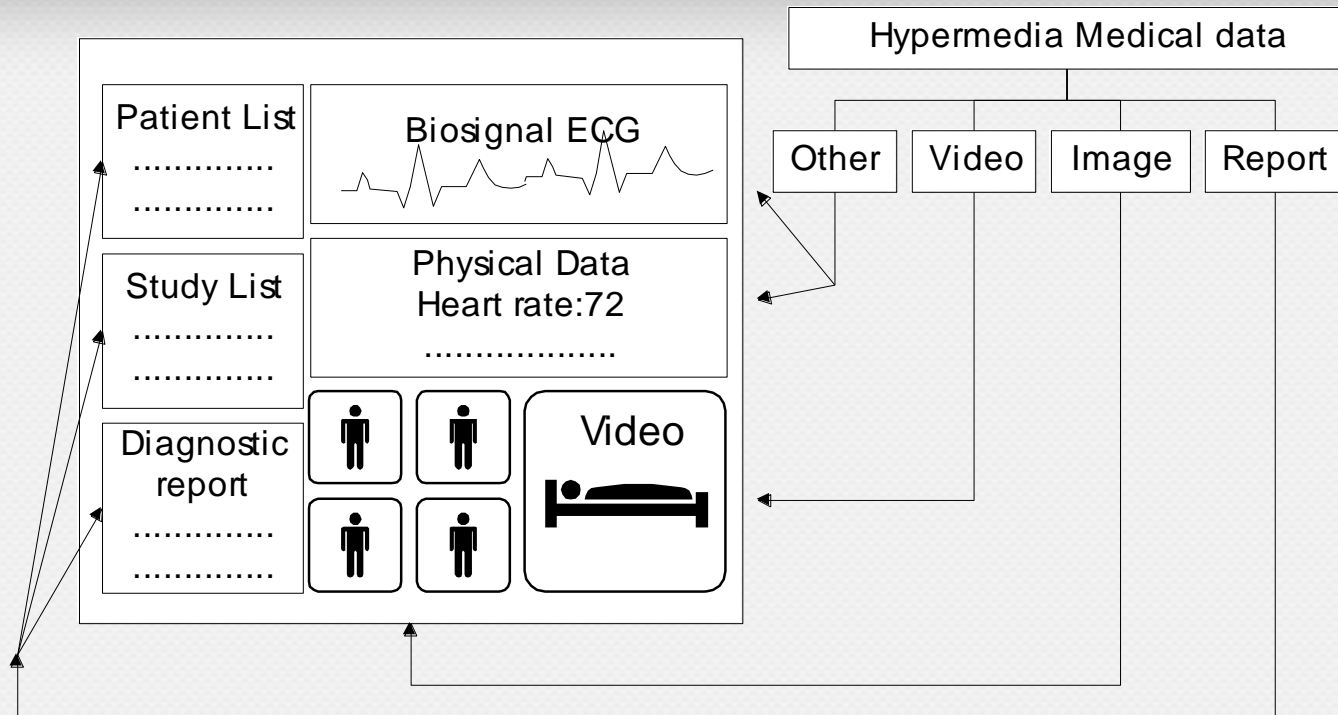
Comparison group (CG)	O1	X	O2
experimental group (EG)	O"1	X"	O"2

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- O1 & O"1: pretest score before the program
- O2 & O"2: posttest after the program
- X: traditional program
- X": e program



# E-program

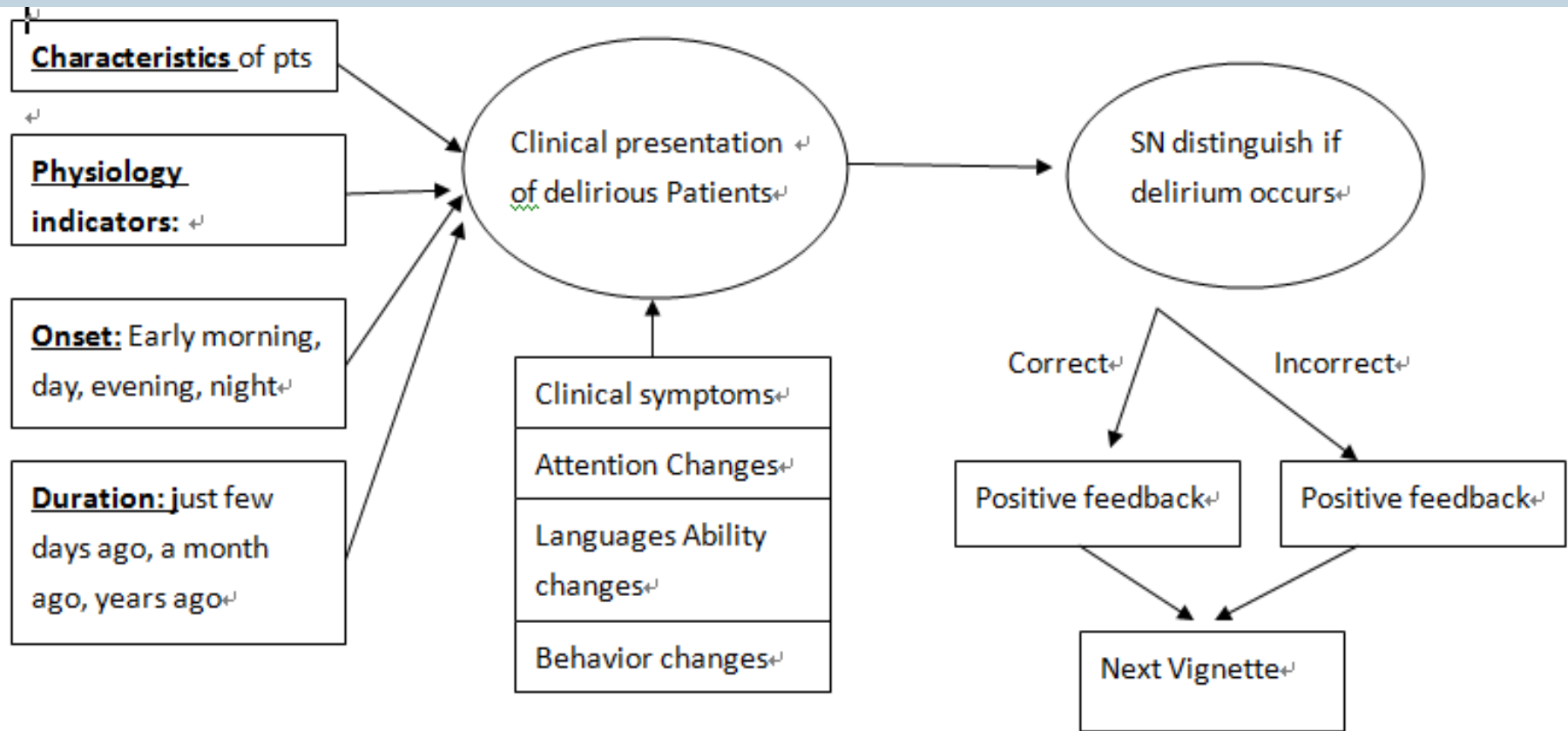


# Vignettes

- 3 subtypes of delirium were established
  - Hyperactive subtype
  - Hypoactive subtype
  - Mixed
- Normal aging
- Dementia



# Flow Chart of Delirium Vignettes



Flowchart for generating a Delirium Vignette

# Applicability of the e Program

- A expert panel : 2 geriatric faculty & 3 senior clinic nurses reviewed each case in the program
- 10 students were administered prior to the study
- A focus group was conducted
- The e program was revised based on the suggestion of the expert & result of the focus group.



# Statistical Analysis

- Data were coded
- SPSS 18.0 software was used
- Descriptive analysis: mean, SD, percentage
- General Estimate Equation (GEE) was used to examine the effect of the e-program (intervention)





# Results

- 97 NS were recruited in the study and divided into 2 groups
- 48 in the EG; 47 in the CG
- No statistical difference between 2 groups

**Table 1. Characteristics of subjects between two groups**

	Gender		Age	Working experience
			mean $\pm$ SD	mean $\pm$ SD
EG	Male	0	28.3 $\pm$ 3.2	7.8 $\pm$ 2.1
	Female	49		
CG	Male	0	25.2 $\pm$ 4.2	6.9 $\pm$ 1.8
	Female	48		

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

# Results: Accuracy of Delirium

*Table 2 Mean accuracy rate stratified by period and group (N = 97)*

Domain	Comparison group (n = 48)			Experimental group (n = 49)	
	Pretest	Posttest		Pretest	Posttest
Total	54.2 (10.6)	56.3 (21.4)		66.7 (14.8)	80.9 (17.3)
Hyper	76.0 (25.2)	69.8 (24.7)		85.7 (22.8)	94.9 (15.3)
Hypo	25.0 (29.2)	35.4 (34.1)		29.6 (32.1)	61.2 (34.3)
Dementia	93.8 (16.7)	88.5 (21.2)		91.8 (27.7)	80.6 (28.5)
NL	72.9 (44.9)	56.3 (48.0)		81.6 (39.1)	86.7 (28.5)

The values in cell are mean accuracy rate (standard deviation)



# Results

*Table 3 The estimated parameters of GEE analysis for evaluating intervention effect.*

Domain / Parameter	B	S.E.	Wald $\chi^2$	P value
Total scores				
Intercept	54.17	1.51	1280.84	< 0.001***
Group (Experimental) <sup>§</sup>	12.50	2.59	23.37	< 0.001***
Time (Posttest) <sup>†</sup>	2.08	2.93	0.51	0.477
Group (Exp.) × Time (Posttest) <sup>‡</sup>	12.12	4.38	7.67	0.006**
Hyper delirium				
Intercept	76.04	3.61	444.86	< 0.001***
Group (Experimental) <sup>§</sup>	9.67	4.84	4.00	0.046*
Time (Posttest) <sup>†</sup>	-6.25	3.79	2.72	0.099
Group (Exp.) × Time (Posttest) <sup>‡</sup>	15.43	5.51	7.85	0.005**
Hypo delirium				
Intercept	25.0	4.17	36.0	<0.001***
Group (Experimental) <sup>§</sup>	4.59	6.17	0.56	0.456
Time (Posttest) <sup>†</sup>	10.42	4.16	6.28	0.012&
Group (Exp.) × Time (Posttest) <sup>‡</sup>	22.42	8.16	6.76	0.009**
Dementia				
Intercept	93.75	2.39	154.86	<0.001***
Group (Experimental) <sup>§</sup>	-1.91	4.58	0.17	0.676
Time (Posttest) <sup>†</sup>	-5.21	3.03	2.95	0.086
Group (Exp.) × Time (Posttest) <sup>‡</sup>	-6.01	4.72	1.63	0.202
Normal aging				
Intercept	72.92	6.41	129.23	< 0.001***
Group (Experimental) <sup>§</sup>	8.72	8.47	1.06	0.303
Time (Posttest) <sup>†</sup>	-16.67	9.24	3.25	0.071
Group (Exp.) × Time (Posttest) <sup>‡</sup>	21.77	11.92	3.33	0.068

§ Reference group: Comparison group.

† Reference group: Pretest.

‡ Reference group: Comparison group × Pretest.

B = estimated parameter; S.E. = standard error.



# Results

*Table 4 Response time for experimental group before and after intervention (n = 49)*

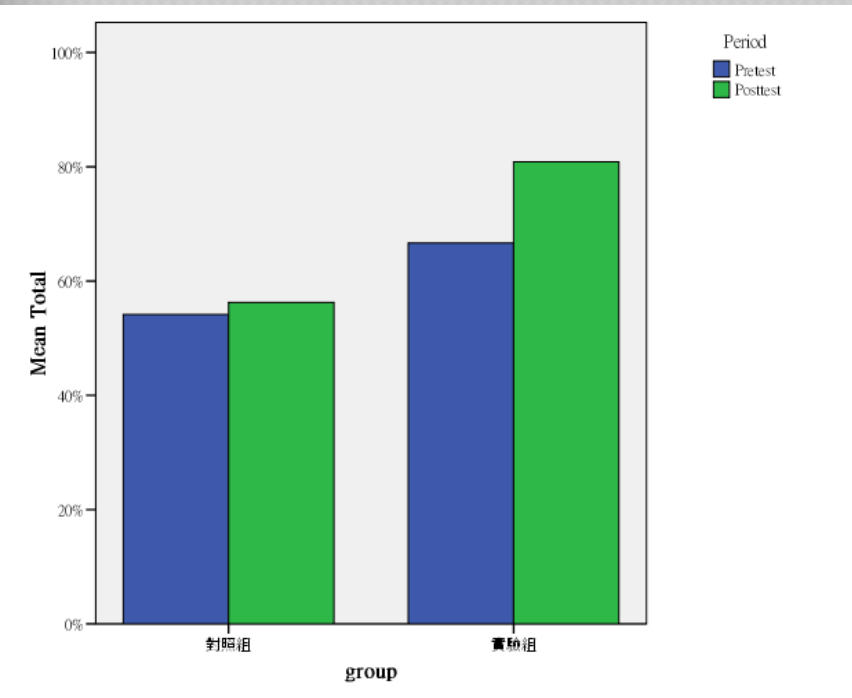
Item	Period		t	P
	Pretest	Posttest		
Time_hyper	16.23 (10.35)	15.23 (16.87)	0.37	0.716
Time_hypo	26.26 (15.83)	16.62 (10.17)	3.92	0.0003
Time_dementia	10.26 (12.05)	18.74 (15.07)	-3.12	0.003
Time_normal	13.77 (12.25)	12.10 (12.68)	0.67	0.508

The values in cell are mean response time (standard deviation)

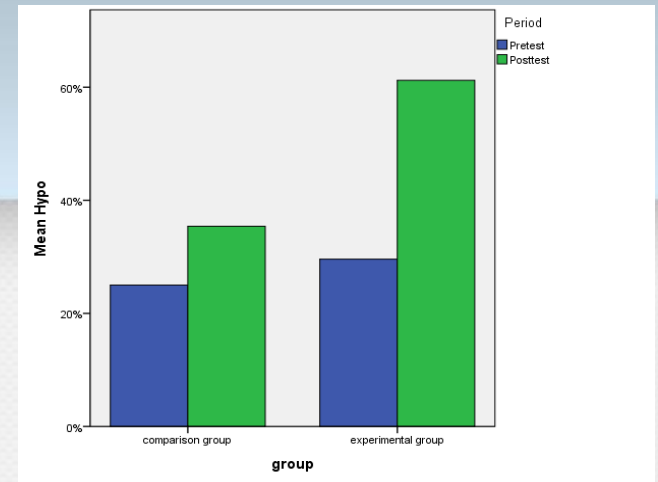
t = test statistics of paired-sample t-test



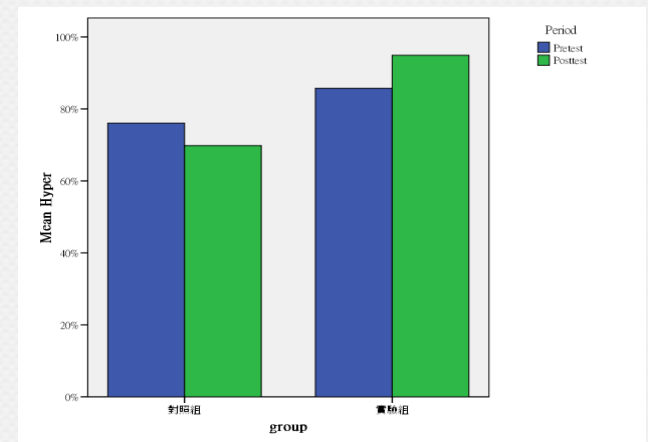
# Graphs



Bar Chart of Total Scores of 2 groups

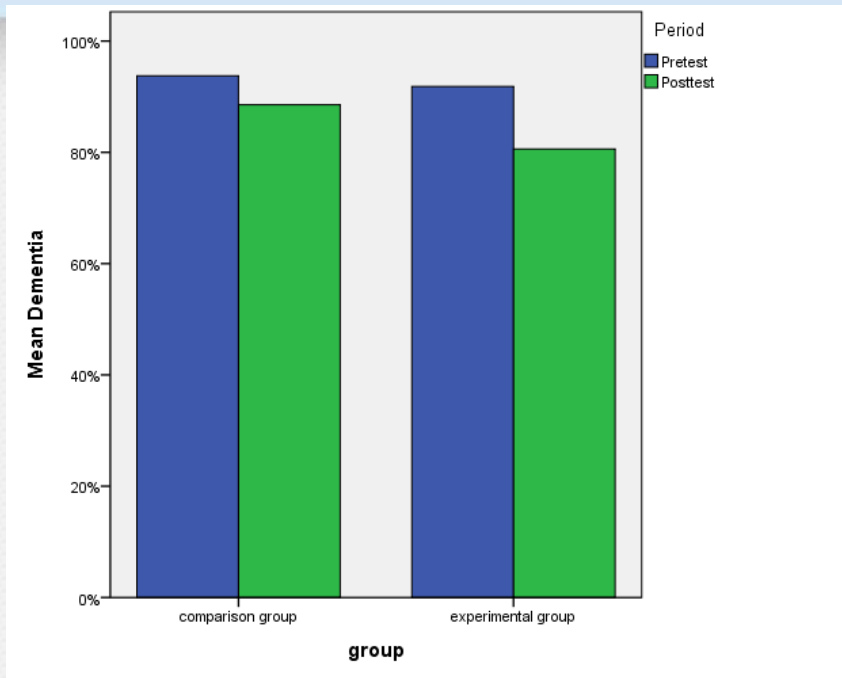


Bar chart of scores of hyperactive-subtype delirium of 2 groups

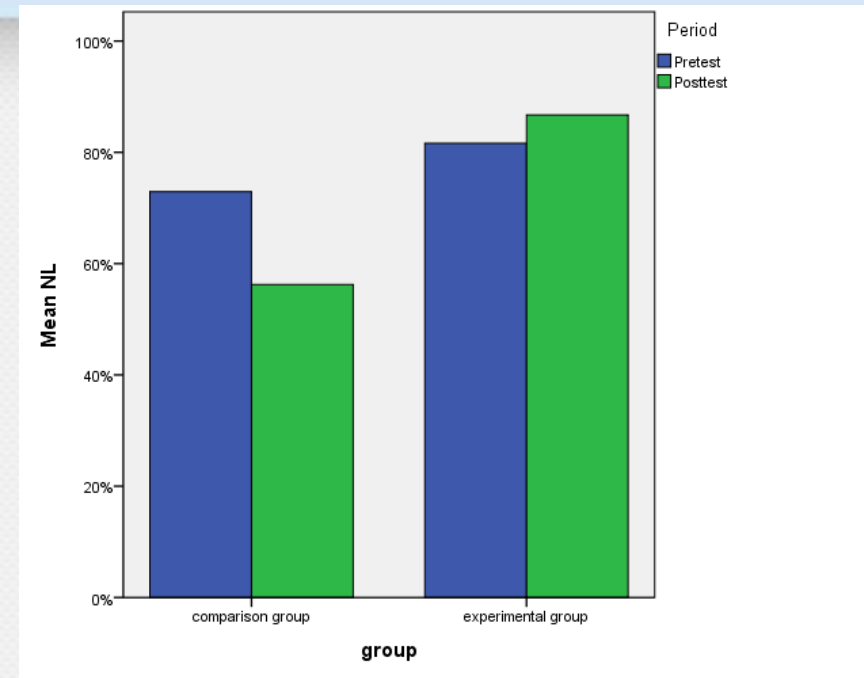


Bar chart of scores of hypoactive-subtype delirium of 2 groups

# Graphs



Bar chart of scores of Dementia of 2 groups



Bar chart of scores of normal aging of 2 groups





# Discussion

- There no statistical difference between 2 groups (baseline)
- Participants are all female, typical characteristics of nursing students & manpower
- Working experience of students in the study are high.
  - Similar to other schools with the same program
  - Those subjects mostly are clinical nurses, but this result are even more worrisome, regarding the judgmental ability to delirium among clinic nurses



# Discussion

- The experiment group does better on total scores, hyper & hypo subtypes of delirium of tests, ( $p < 0.01$ )
- Therefore, the e program seemed to be more effective than the traditional teaching.
- But both groups did poor on the hypoactive delirium, initially, which is similar to other study.
- Both groups did fair well on patients with dementia & normal
  - Nurses are prone to ignore the “good patients”, and pay more attention on patients with aggressive behavior (O’keeffe, & Lavan, 1999; Petersom, et al, 2006) ◦
  - Fundamental knowledge about dementia and normal aging is included in current curriculum.



# Discussion

- As the e program giving, the EG did much better than the CG, especially for the hyperactive & hypoactive delirium
- Worthwhile mentioned, both normal & dementia both cases are not well identified in this study.
  - It is possible that NS cannot distinguish the difference between normal aging , dementia, & hypoactive cases, since during hospitalization, they are mostly quiet, inactive and not involving in treatment too much.
  - The other possibility has been discussed in my previous study (Wang, & Menten, 2006) : Chinese culture, “respect”, may jeopardize the judgmental ability of nurses to cognitive function of the elderly patients.



# Discussion

- Students were able to spend less time in decision making, as the program was implemented.
  - Therefore, the e program seemed to be a quite effective tool for NS, regarding making accurate judgment about delirium.



# Conclusion

- The situated e learning program seemed to work well for NS.
- NS' decision making ability regarding delirium gets better in the study.
- Each story of cases was generated within 3 minutes to reflect the reality.
- Abstract concepts may not be suitable for the traditional teaching
- Researchers may utilize similar methodology to assist students learning abstract concepts
- The context of nursing education regarding cognition of the elderly may need to be reexamined.





# Entrance to the website

- <http://163.25.101.124/elearner/Login.aspx>





個案選擇



### 基本資料

姓名： 廖先生

年齡： 76

性別： 男

婚姻： 已婚

子女： 2男 - 1女

語言： 台語

職業： 退休



廖先生



李太太



廖先生



李太太

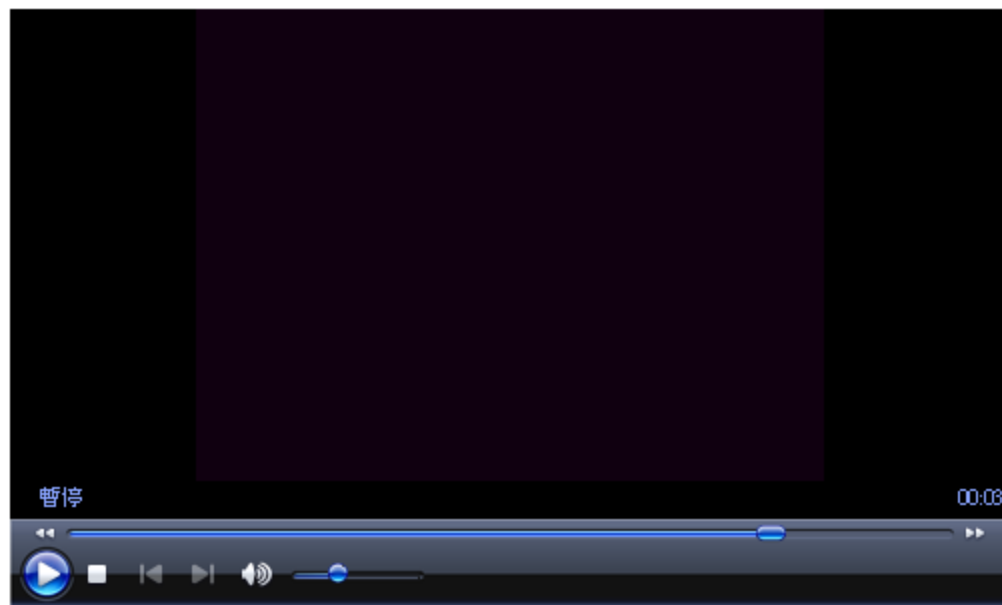






解說個案

廖先生75歲，獨居。這一次是因為發燒不退兩天了，一直有咳嗽和打寒顫情形，到門診看病，經醫師診視，診斷為肺炎，並要求其入院治療。



上一步

下一步



解說個案

睡了一晚後，隔天白班(窗外亮的)護士手拿鑷子和紗布進入病房中，要幫病人換藥，在換藥的時候，病人表情生氣並且大聲的說”妳換藥為什麼那麼大力？昨天那個男醫師換的時候都不會痛！”



上一步

下一步





## 問題解析

### 問題1

李太太一直沒反應，請問您會如何處理？

- 趕快叫醫生
- 也許李太太心情不好，安慰一下她就好了
- 評估病史，記錄並持續觀察病患





問題解析

## 問題2

當您評估病患的時候，您會收集哪些資料？



過去病史



生命測量徵象



現在病史



實驗室檢查



家庭與婚姻狀況



身體評估

重看解說個案

下一張



# Thank You

