

Learning in Critical Care using Avatar and CEP software

CRRT 2011, San Diego Hilton Bayfront

Ian Baldwin

R.N. PhD

Melbourne Australia



Hospital – the classroom



Worse again...the University



Edgar D, Cone of Learning

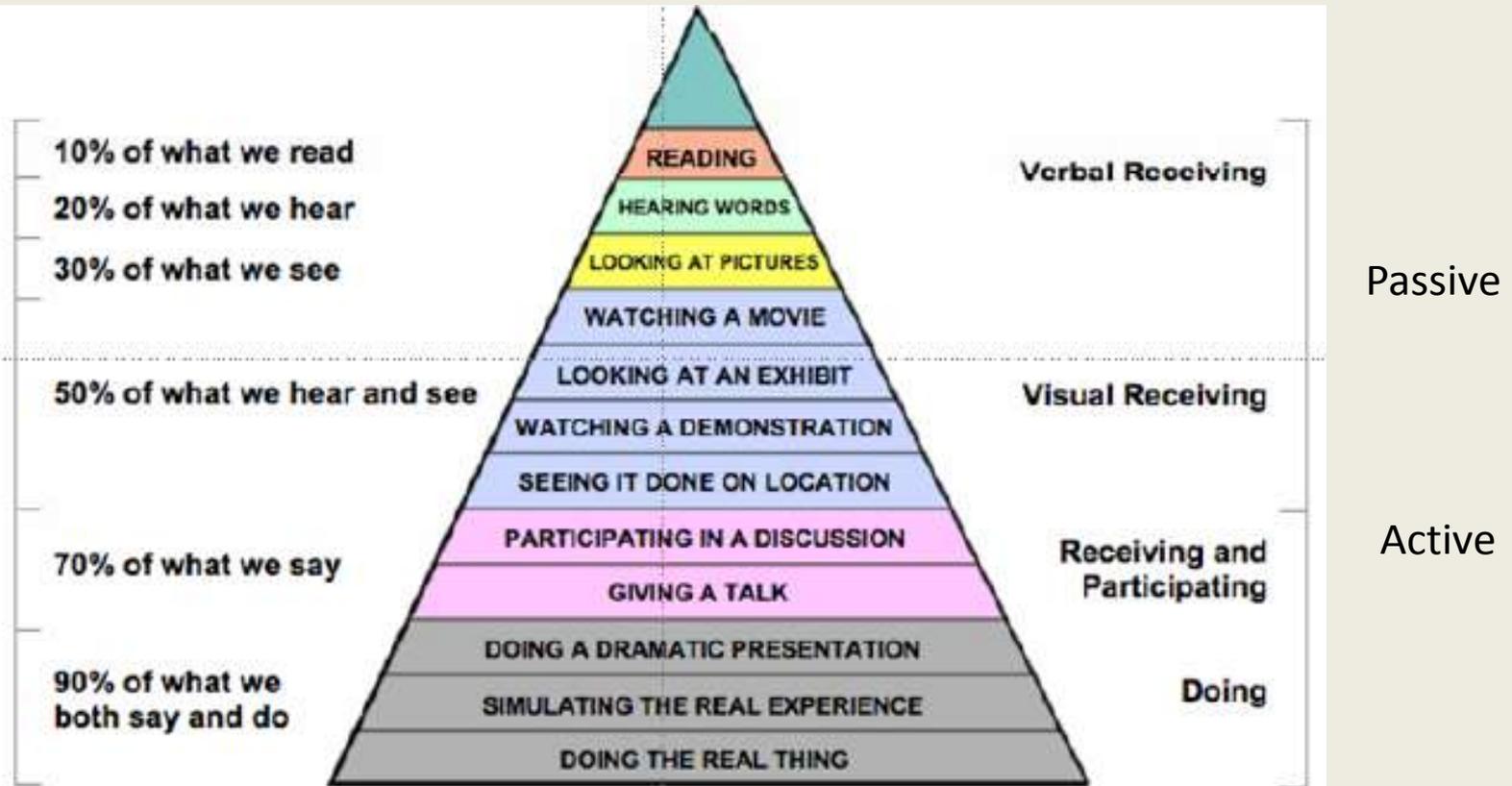


Figure 4. Cone of Learning

The virtual world



Acronyms - terms

- MMVW – Massively Multiplayer Virtual World
- Web 2.0 - WWW apps such as face book, blogs, wiki's Pod Casting, YouTube, Twitter.
- SL – Second Life social interactive venues used by multiple animated characters, lectures. conference, groups.
- MMOG – Massively Multiplayer Online Games
- Avatar – unique fictitious self or human figure where the user may sit stand, talk, swim, walk.
- Wii – Nintendo software to replicate movement.

Virtual world

- The immersive environment the Avatar moves and interacts within.....an MMOG
- Is usually 3D, enables socialization, building, conduct of business, education etc
- Has an educational and research potential
- Safe, simulated, fun, interactive, collaborative

Design yourself as an Avatar

Become Your Avatar.

FREE AVATAR >>

Name: Amy E.
Residence: California, USA
Occupation: Musician

Avatar Name: Keiko Takamura
Residence: Flotsam Beach
Occupation: Musician

Virtual conference



The Ann Myers Medical Center (AMMC) founded by Dr Ann Buchanan.



iVAS 1st International Virtual Association of Surgeons Conference
22nd April 2008. Second Life.

Search 68

MENU OPTIONS

- Introduction
- Announcement
- Abstract Submission
- Programme
- Organisation
- Links

IVAS-International Virtual Association of Surgeons

Introduction

The internet has drastically changed the mode of scientific communication in the last two decades. However, another wave of change has recently become evident with the development of online virtual worlds, such as *Second Life*. This medium enables users to interact with each other in a freely available online 'metaverse'. Second Life is currently experiencing exponential growth, and has over 10 million users worldwide. The health industry has been instrumental in its evolution and Second Life is increasingly being used by governmental bodies e.g. NASA, educational institutions e.g. Imperial College London, and scientific communities e.g. Nature.

The 3D virtual world presents unique capabilities: through the use of an avatar, which represents each member, it is possible to see and communicate with other users as in the real world. Residents can communicate either by voice (VOIP) or by typing via instant messaging, body gestures, and slide or movie **presentation**. This gives a 'virtual sense' of spatial proximity which facilitates a more organic method of interaction. Furthermore, experimental surgical products or models can be created in 3D detail so that they can be used and manipulated by other users.

IVAS is a group of surgeons and scientists who want to change the way scientific communications are currently conducted, we will organise conferences entirely within the virtual world. This lowers the cost of attending, negates the need to travel and creates novel surgical research networks across the world.

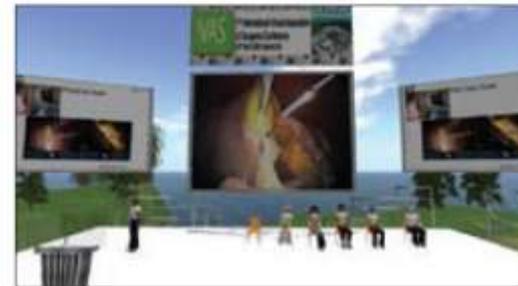
Surgery in the Virtual World

International Virtual Assoc. of Surgeons 1st meeting in 2nd Life 2008

INTERNATIONAL CONFERENCES

Surgeons have held conferences in Second Life

Robust alternatives to international conferences are currently readily attainable.^{1 2} On 22 April 2008, the first international Virtual Association of Surgeons (iVAS) meeting was held in the virtual world of Second Life. Forty seven delegates from five countries attended, ranging from professors to students of medicine and engineering. Within this "metaverse," each person is represented by an avatar (a digital representation of the self), and is able to communicate with other users by voice over internet protocol (VOIP), instant messaging, body language, and multimedia slide presentations. The conference lasted for two



The virtual hospital



3D simulation of the Royal Sussex County Hospital in Brighton



Second Health London Hospital

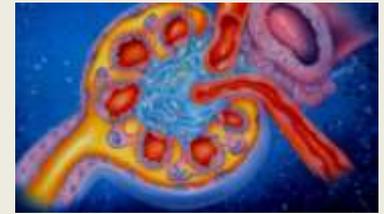
Virtual autopsy



The Virtual ICU



Virtual Nephrology



THE VIRTUAL NEPHROLOGIST
your link to healthcare excellence

OUR SERVICES	TVM e-Library	Health Links	Normal Kidneys	Hypertension
Metabolic Syndrome	Diabetes	Kidney Diseases	Transplantation	Dialysis

The Normal Kidneys

A normal kidney function is a gift and a blessing we just have and should be appreciative for.

Yet, there are many diseases that lead to kidney damage and failure.

The world celebrates a kidney day, because they are so precious as well as touch every corner of the earth.

Please, visit the kidney school to learn about the normal kidney function, the meaning of all blood tests you take, how to preserve your kidneys and some common diseases that affect the kidneys.

[ENROLL IN THE KIDNEY SCHOOL-CLICK HERE](#)

[OUR LIVE Broadcast](#) | [Live Video Tele-Consults](#) | [Subscribe on our site](#) | [Patient First Dialysis](#)

[OUR SERVICES](#) | [TVM e-Library](#) | [Health Links](#) | [Normal Kidneys](#) | [Hypertension](#) | [Metabolic Syndrome](#) | [Diabetes](#) | [Kidney Diseases](#) | [Transplantation](#) | [Dialysis](#) | [Site Map](#)

Virtual Phone or Skype Consultations
Emergent-Phone - 30 minutes \$200.00

Huge- everyone is developing this

- Engineers
- Medicine / health care
- IBM
- Universities

University of Southern Queensland, Australia and University of San Francisco, School of Nursing U.S.A.

- Avatar and 3 D design tutorials
- You tube this at “ALIVE Classmate”



Benefits for learning

- Immersion & Role playing
- Simulation
- Critical thinking and 'discovery' learning
- Programmable learning outcomes
- Collaborative, interaction, dynamic
- Transferable learning to the real world
- 24/7 access, distance education

Key requirements

- Design and construct, 'world set up '
- Educator interest and creativity to use the tool
- Funds - cost

ICU nursing 'handover'



ICU nursing handover template

Name, age and day no. in ICU

Original diagnosis for admission to ICU, relevant, past history

Current problem(s) – summary statement(s), relevant data/obs.

Current management plan for each

Review of drugs and IV's ordered

Review of patient - physical

Review of equipment, bay – IV's

Outstanding care needs

Family – social issues

Questions – answers, teaching etc

Rules for presenter.

Prepare, use logical flow, focus, don't repeat, show & tell.

Rules for audience.

Listen, engage, avoid interruption, take notes, ask Q's later, give feedback.

Health Process Simulation In Virtual Worlds

Ross Brown and Rune Rasmussen
Faculty of Science and Technology
QUT, Queensland, Australia

Ian Baldwin, Dept. of Intensive Care, Austin Health, Victoria,
Australia

Initial Meeting Process

- Meeting room for handover briefing meeting



ICU bed Simulation

- Bed physical simulation
- Perform physical and equipment checks
- Access care plan from desk



Patient Care Planning

- Present care plan is presented to students
- Students can modify as part of handover session
- Integrated with teaching system

Admission Case

Patient 11: Ula Hermansen, admission date: 04-AUG-2005

Admission Case: Patient 11: Ula Hermansen, admission date: 04-AUG-2005

Get Admission Form

Ongoing Problems and Event Procedures

Date	Problem No.	Problem or Event	Resolved Date
04-AUG-2005	1	Hypothermia	
04-AUG-2005	2	Semi-unconscious slow & irregular breathing patterns	
04-AUG-2005	3	Dehydration	

Add New Remove New

Student Note Taking

Austin Health

Notes by: Grey Nurse

Select Admission Case

ADMISSION CASES

Admission Notes

PREVIOUS NOTES

- Note taking can be integrated with teaching systems - Sharepoint
- Instructor can then review reports and grade/comment

Dr Ross Brown, QUT, Australia

- Email:
 - r.brown@qut.edu.au
 - r.rasmussen@qut.edu.au
- Blog:
 - www.bpmve.org
- Youtube:
 - www.youtube.com/BPMVE
- Twitter:
 - www.twitter.com/BPMVE



Evidence ?

2009 Conference in Games and Virtual Worlds for Serious Applications

Evaluation of an Immersive Learning Programme to Support Triage Training

In-game Feedback and its effect on Learning Transfer

Steve Jarvis

SELEX Systems Integration Limited
Welwyn Garden City
steve.jarvis@selex-si-uk.com

Sara de Freitas

The Serious Games Institute
Coventry University
s.defreitas@coventry.ac.uk

Triage: 'game' Vs 'Table top' (cards)

TABLE I. PERCENTAGE OF PARTICIPANTS CORRECTLY TAGGING AND FOLLOWING CORRECT STEP PROTOCOL WHEN TRIAGING THE EIGHT CASUALTIES

No. of casualties correctly triaged	Tagging Accuracy		Step Accuracy	
	<i>Table Top</i>	<i>Game</i>	<i>Table Top</i>	<i>Game</i>
0/8	0.0	0.0	4.5	4.3
1/8	0.0	0.0	4.5	6.4
2/8	2.3	0.0	11.4	0.0
3/8	0.0	0.0	6.8	4.3
4/8	0.0	4.3	18.2	14.9
5/8	6.8	4.3	18.2	19.1
6/8	11.4	0.0	13.6	12.8
7/8	25.0	19.1	15.9	10.6
8/8	54.5	72.3	6.8	27.7



Figure 1. Triage Trainer in Examination Mode (Respiratory Rate Check)

The real World



The real World

How do we ensure 'competency' ?



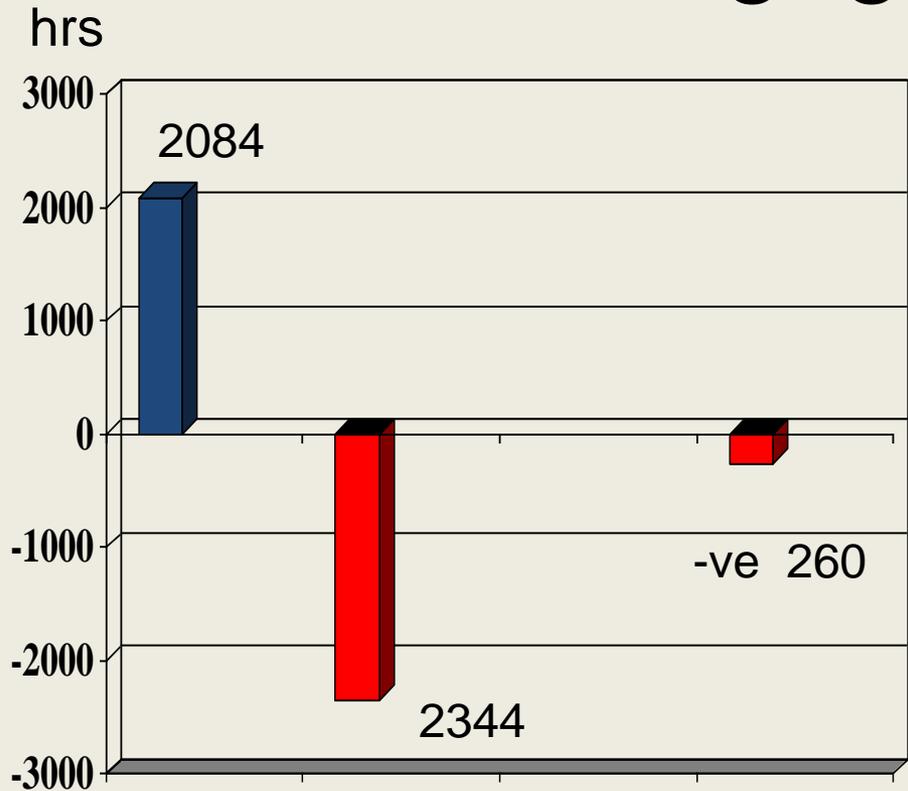
“Now, which one
did they say not
to turn off ?”

.....Post op cardiac surgery..



But need competent nurses.....

The staffing gap...Austin ICU

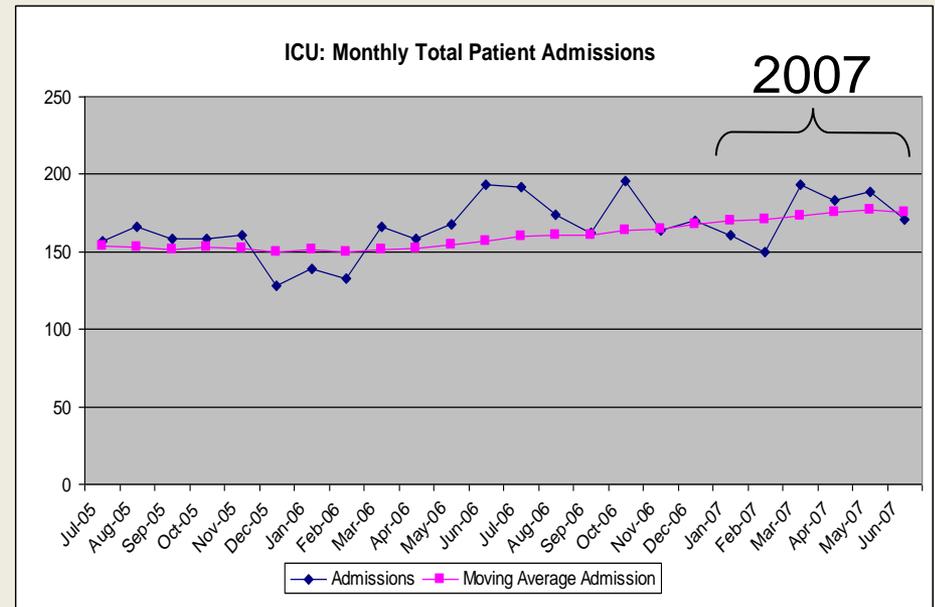


Staffing ICU – nursing over year 2007

Nursing 175 staff, 118 EFT

.....57 Full time

....156 ICU 'qualified' or in training



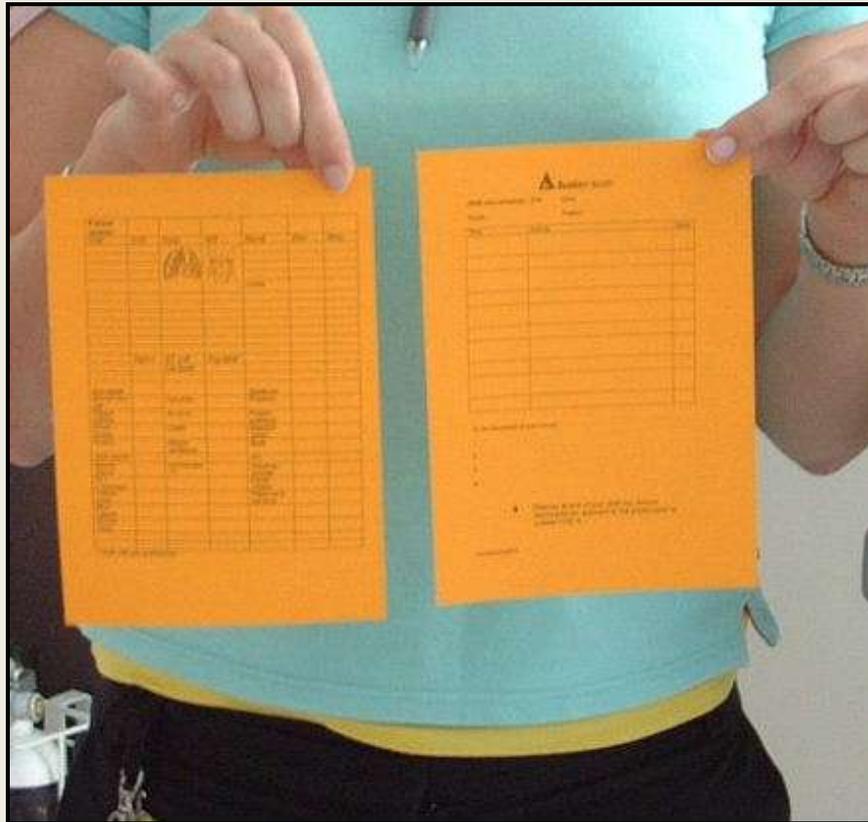
Monthly total admissions 2005 – 07'

World wide shortage of nurses

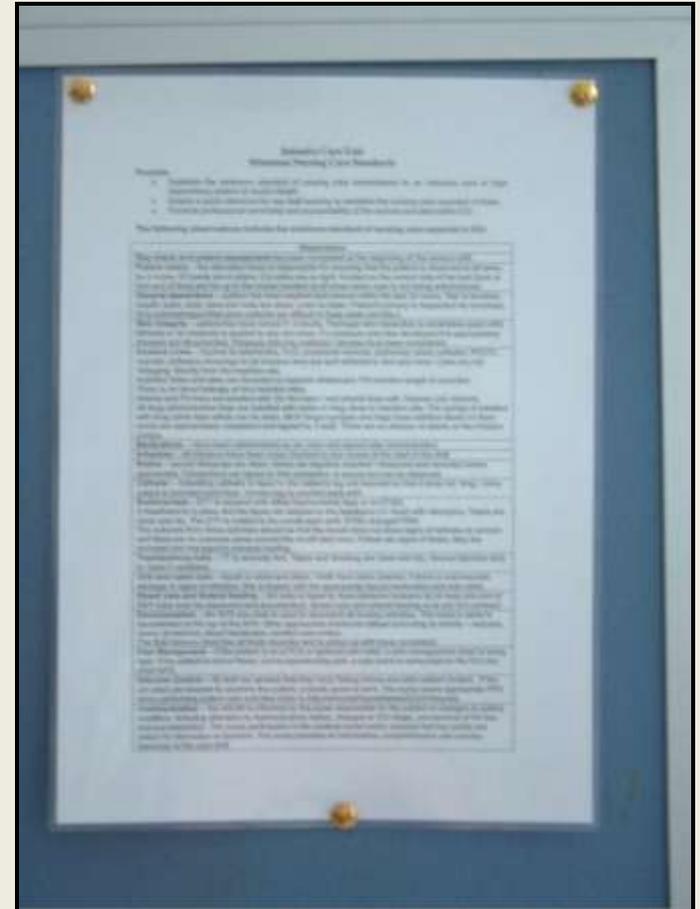
- Cross global recruitment for nurses with ICU skills
- Attractive offers in employment conditions
- Salary incentives
- Immediate immigration and long term visa or permanent residency



Check - lists....protocols

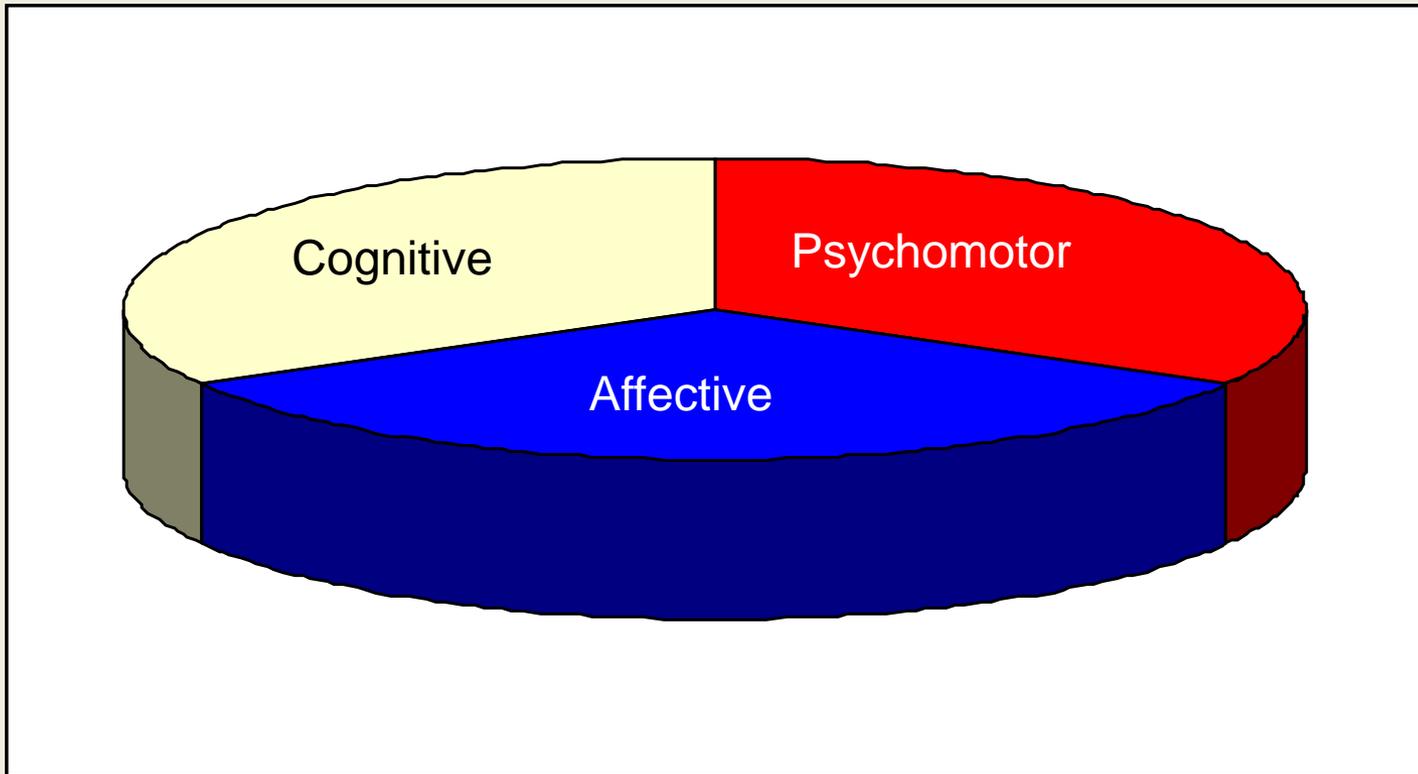


Shift checklist and planner



Nursing standards - summary

Domain of educational objectives



Traditional curriculum : Time and experience(s)

Set experiences anticipating effective learning

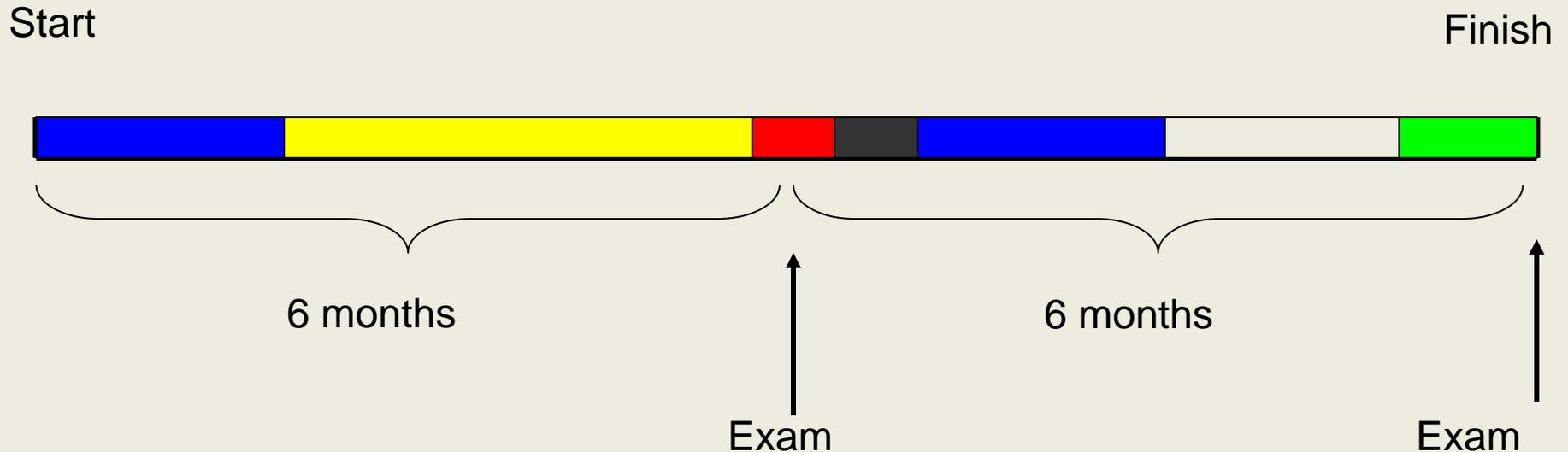
Limited control over specifics

Hurdles – assessments / appraisals

No guarantees

Designed to fit the calendar year, work needs

Achievement determined by summative process - exams





Problems with current education models for clinical learning

Based on fixed time

Variable clinical environments to provide development

Potential for individuals to influence learning

Difficulty standardizing clinical learning, ,

New learning styles of the digital world

Need to respond to the 'Y' and 'Z' generations



Safety Quality Audit & Outcomes
Research in Intensive Care



The Y & Z generations

(1982 – 2000) & (1990 – 2010)

Why ? gen.

NET gen.

Now gen.

24/7 gen.

'Me' gen.

Generation mobile





Need to track competency development

- Modulate learning experience(s)
- Allows for minimum skills sets
- Standardize within groups
- Give better feedback
- Improve certification standards and documentation for this



Potential for personal computer to track clinical learning ?

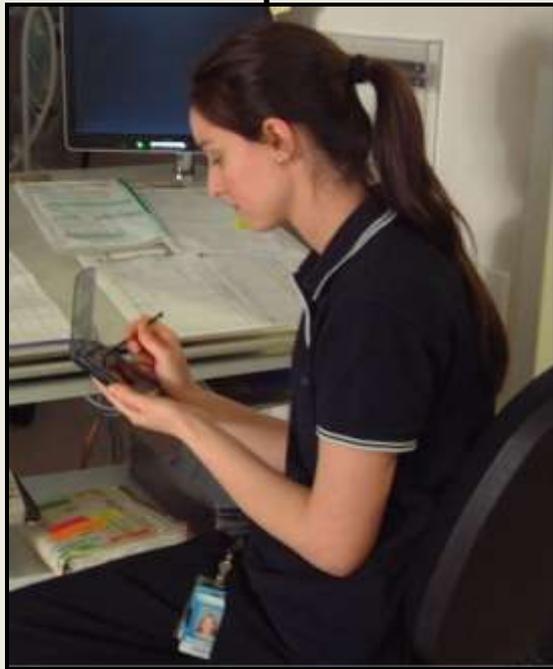
How to do it ?

Which software, program ?

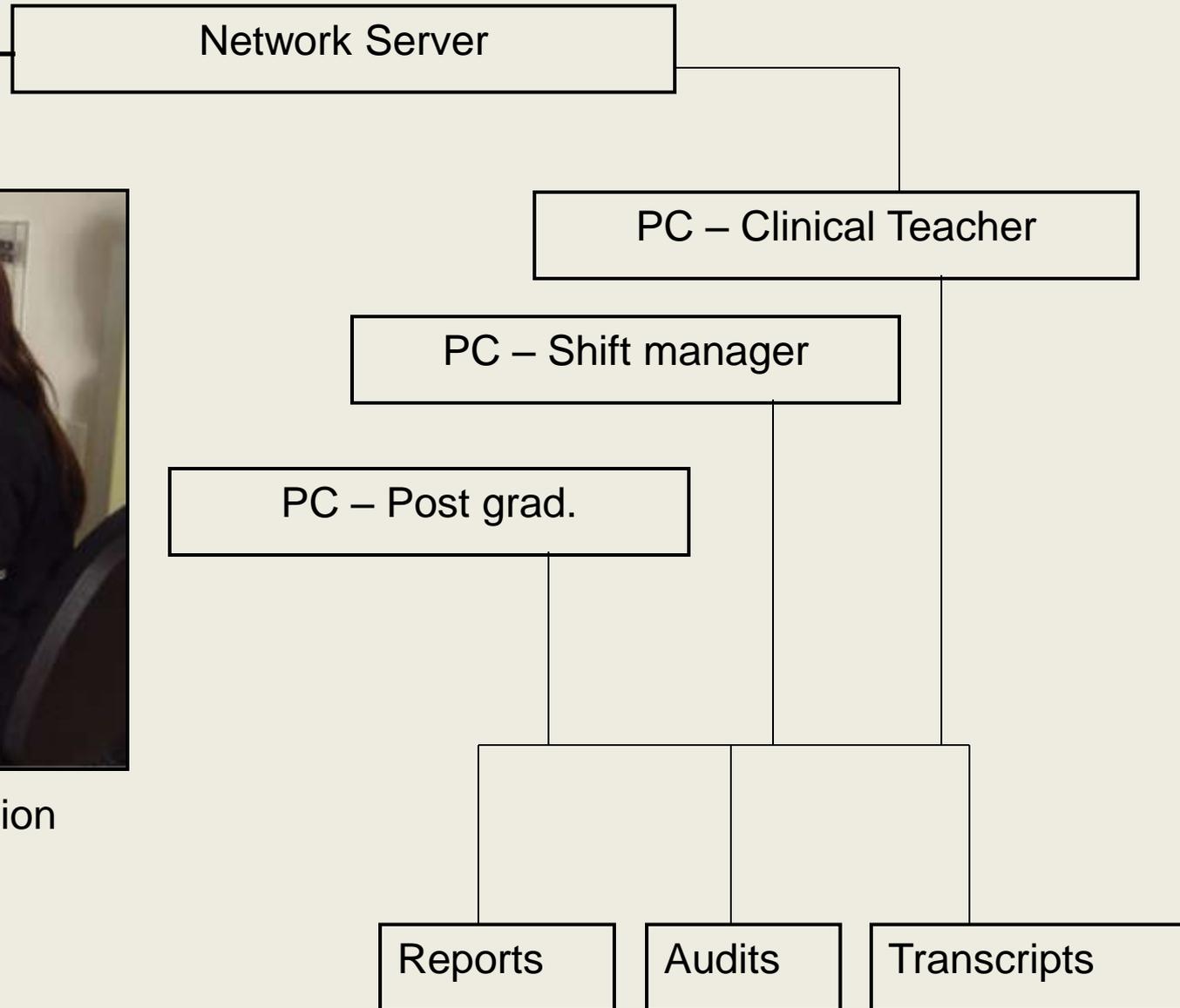
Need for speed, real time, simple entry

Individual work space, mobile...wireless ...

Concept of competency logging



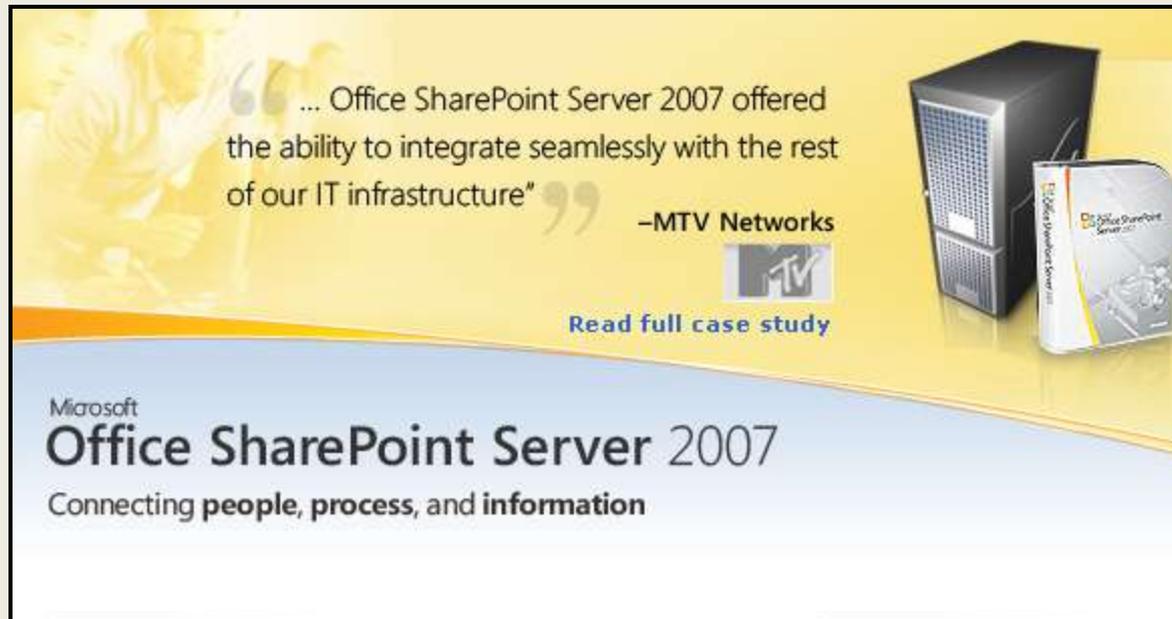
- PDA wireless connection
- Mobile
 - Personal, individual



Microsoft Sharepoint

Microsoft SharePoint browser-based collaboration and document-management platform.

It can be used to host web sites that access shared workspaces and documents, as well as specialized applications like wikis and blogs from a browser.



“ ... Office SharePoint Server 2007 offered the ability to integrate seamlessly with the rest of our IT infrastructure”

—MTV Networks

[Read full case study](#)

Microsoft
Office SharePoint Server 2007
Connecting **people, process, and information**



Austin Health

ICU Procedure Log



PHONE: +61 3 9326 0000
Address: nSynergy
Level 7, 365 Little Collins Street
Melbourne Vic 3000

Individual log on and password



CEP home page – site

http://midpoint.nsynergy.com/demo/cep/default.aspx

nSynergy DEMO > Clinical Experience Portal

cep
Clinical Experience Portal

Clinical Experience Portal Inservice Meeting Schedule Reports Documents Wiki Blog Feedback

View All Site Content
Pictures
X Rays
Group Pictures
Documents
Shared Documents
Lists
Calendar
Experience Log
Test
Inservice Meeting Schedule
Feedback List
Discussions
Team Discussion
Sites

Clinical Experience Portal

Experience Log - Un Approved

Edit	Created By	Nurse's Shift	Pod	Approved Status
	Yunling Chen	Evening	A	No
	Lauren Yunghanns	Day	A	No
	Rebecca Malone	Evening	A	No
	Kerene Jones	Evening	B	No
	Kerene Jones	Day	B	No
	Yunling Chen	Evening	A	No
	Rebecca Malone	Day	A	No
	Rebecca Malone	Evening	A	No

Teachers view of shift entries

Site content

Announcements, tutorials, blogs, wiki etc

Home - Clinical Experience Portal - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://midpoint.nsynergy.com/demo/cep/default.aspx>

Search	Pongmoms	Evening		No
Rachel Pedretti		Day	A	No
Ryan Fleming		Evening	B	No

Add new item

Experience Log

New Actions

Edit	Created	Nurse's Shift	Pod	Patient Group	Educator	Confidence score
------	---------	---------------	-----	---------------	----------	------------------

There are no items to show in this view of the "Experience Log" list. To create a new item, click "New" above.

Announcements

Next study day June 5th and Mid yr Exam 12/06/2009 4:51 PM
by Ian Baldwin
Good luck with the exam; I am sure you will all do well with the study and preparation done. Next study day we will sort out any futher issues with the CEP, but keep making your shift entries.

Down load lectures put onto the 'shared documents' to...

AH PDA Vs AH GUEST 3/06/2009 10:51 AM
by Ian Baldwin
Hi everyone, we are sorting out some technical and other issues to get things working correctly. You will see the previous message re the PDA's and the 'error 404'. This means the URL was incorrect and had an 's' on the end of the word 'expreience'....

Error 404 message 3/06/2009 9:53 AM
by Karl Redenbach
For those that are experiencing a 404 error message when you use your handheld device please retpe the url into your mobile device again as this is likely to be the issue. The address you will need to type into your pda is:

<http://midpoint.nsynergy.com/demo/cep/mobilepages/mobileexperience.aspx>

Add new announcement

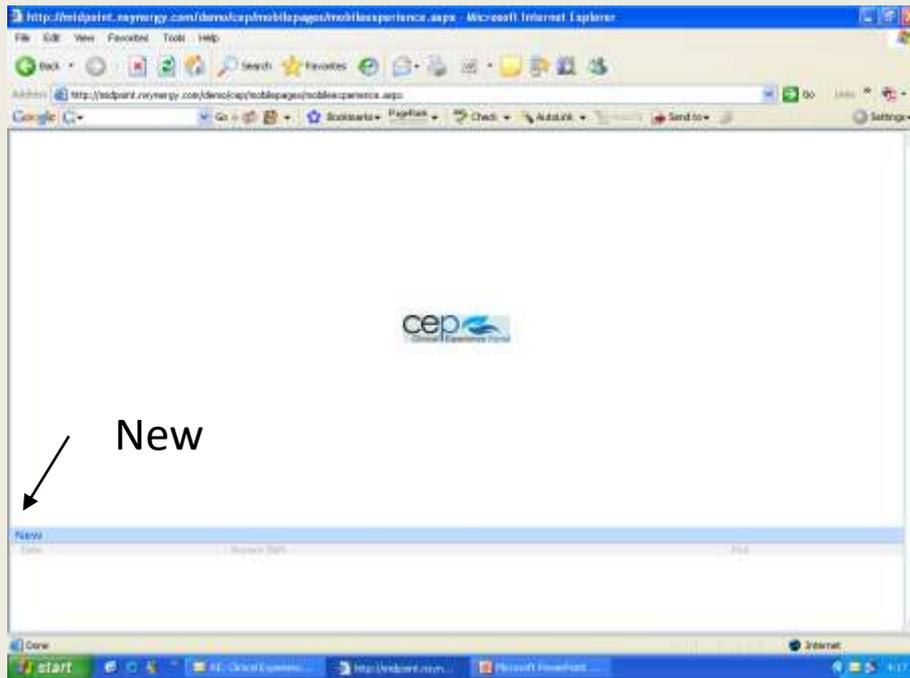
Inservice Meeting Schedule

<http://midpoint.nsynergy.com/demo/cep/X%20Rays/Forms/DispForm.aspx?ID=5>

Internet 4:27

For shift entry use :

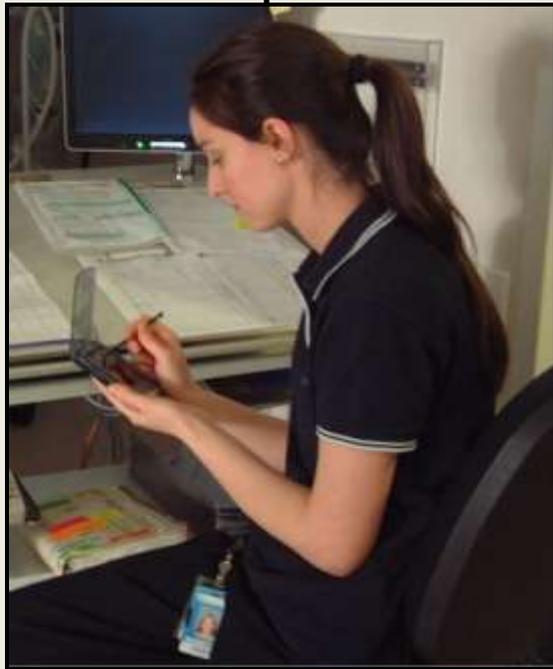
<http://midpoint.nsynergy.com/demo/cep/mobilepages/mobileexperience.aspx>



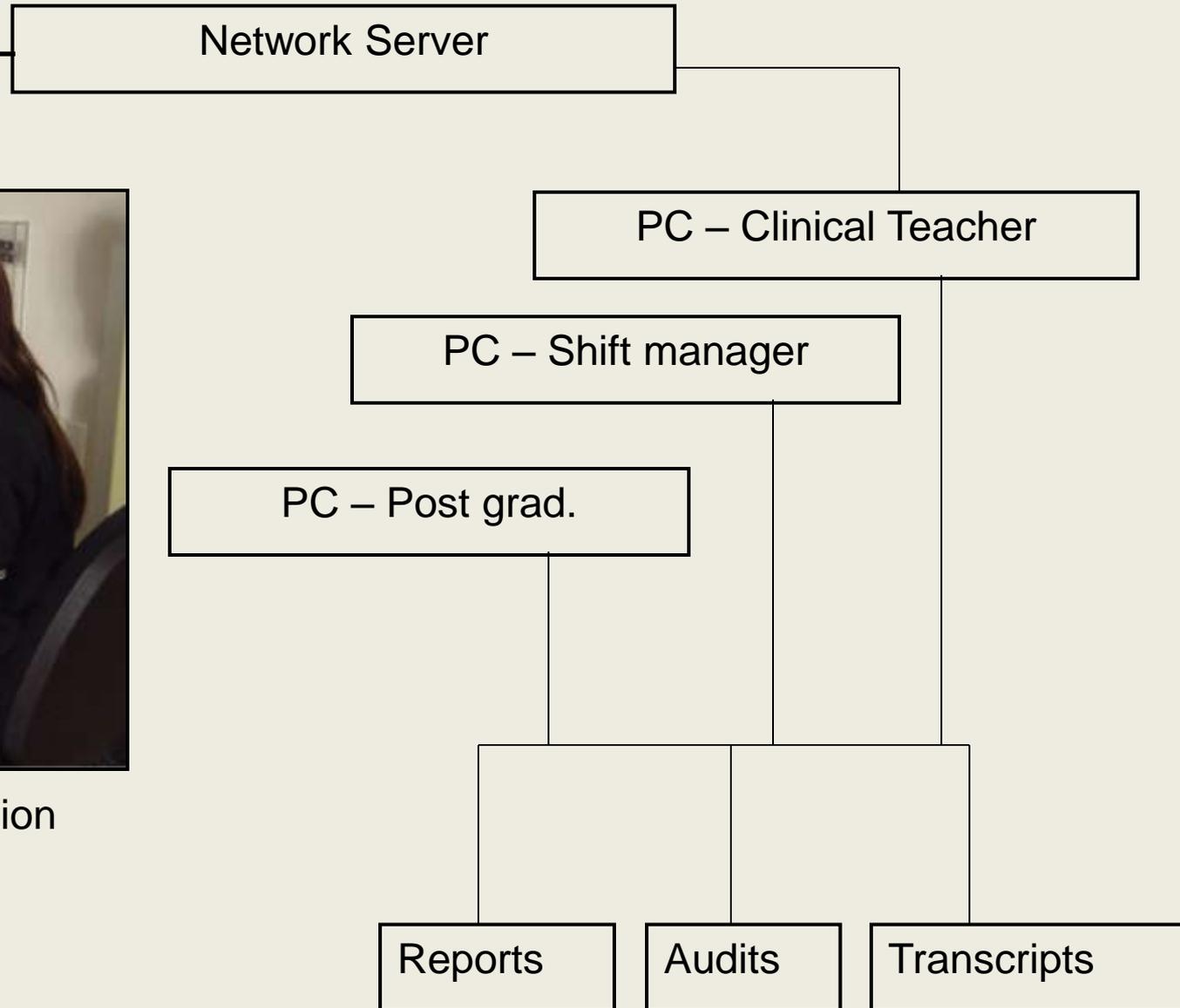
This view contains all fields



Concept of competency logging



- PDA wireless connection
- Mobile
 - Personal, individual



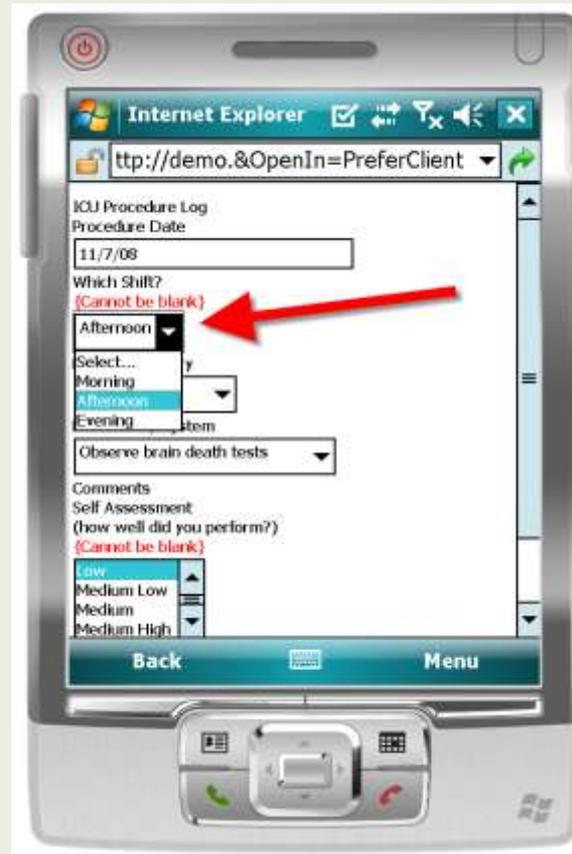
ICU Procedure Log



Using an Internet Connection (GPRS or Wireless connection) and a web browser, navigate to the ICU Procedure Log Form.

This address can be saved in the favourites.

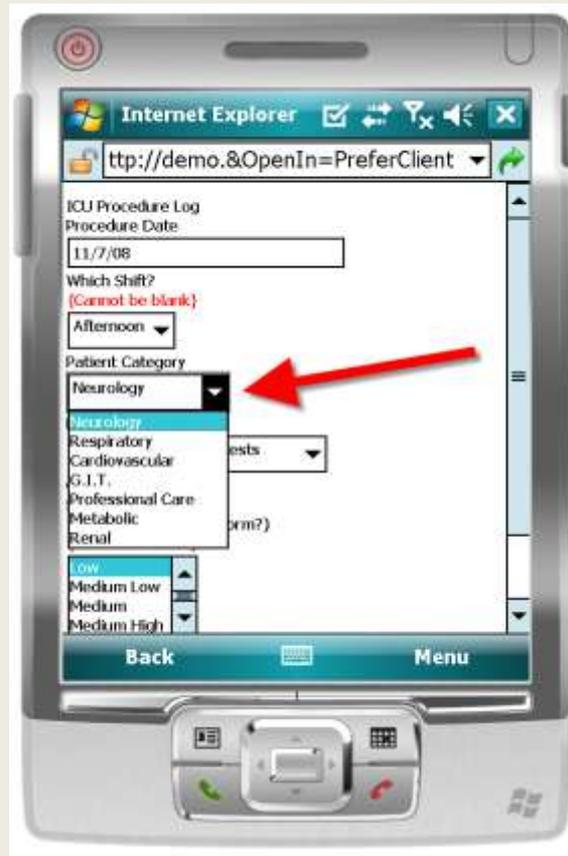
ICU Procedure Log



Data may be entered using the PDA's Stylus or Keyboard.

Dropdown boxes, radio buttons and selection lists are available for simplified data entry.

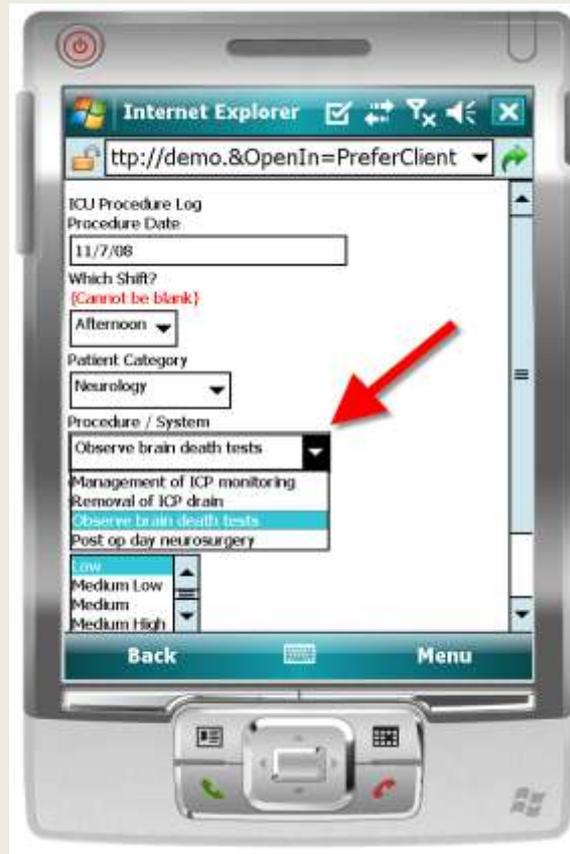
ICU Procedure Log



Data may be entered using the PDA's Stylus or Keyboard.

Dropdown boxes are available for simplified data entry.

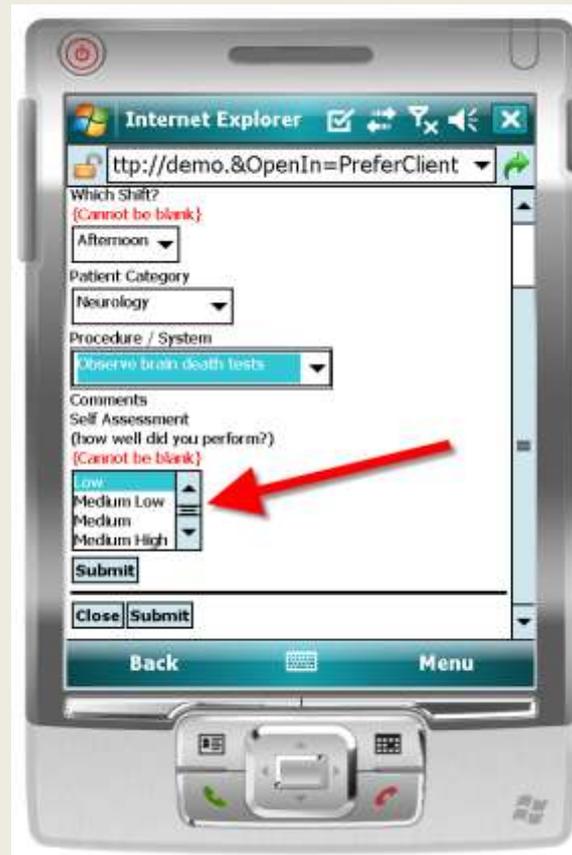
ICU Procedure Log



Data may be entered using the PDA's Stylus or Keyboard.

Dropdown boxes are available for simplified data entry.

ICU Procedure Log



Data may be entered using the PDA's Stylus or Keyboard.

Selection Lists are available for simplified data entry.

Submit options enable the data to be transferred immediately to the SharePoint Server for analysis.

ICU Procedure Log

Title: Please approve michael.berman2008-07-11T11_28_43 NEW

Assigned To: Michael Berman

Add new item

New Upload Actions Settings View: All Documents

Type	Name	Proc Date	Shift	Pat Cat	Proc System	Self Assessment	Comments	Status
	michael.berman2008-05-14T16_51_28	14/05/2008	Morning	Surgical	Post op day neurosurgery	High	Administer IV Blood transfusion - no veins	Approved
	michael.berman2008-05-27T12_18_04	27/05/2008	Afternoon	Respiratory	Observe brain death tests	Medium	reg	In Progress
	michael.berman2008-07-11T11_28_43 NEW	27/05/2008	Afternoon	Respiratory	Observe brain death tests	Medium	This needs to be approved	Approved
	Michael2008-05-27T12_04_52	14/05/2008	Afternoon	Cardiovascular	Observe brain death tests	High	administered medication as required	Approved
	Michael2008-07-11T11_21_27 NEW	14/05/2008	Afternoon	Surgical	Management of ICP monitoring	High	administered medication as required	Approved
	Michael2008-07-11T11_22_32 NEW	14/05/2008	Afternoon	Surgical	Removal of ICP drain	High	administered medication as required	Approved
	Michael2008-07-11T11_23_02 NEW	14/05/2008	Morning	Surgical	Post op day neurosurgery	High	Administer IV Blood transfusion - no veins	Approved

Details are available as a SharePoint List.
Each form needs to be approved by the supervisor.
Data may be filtered and sorted.

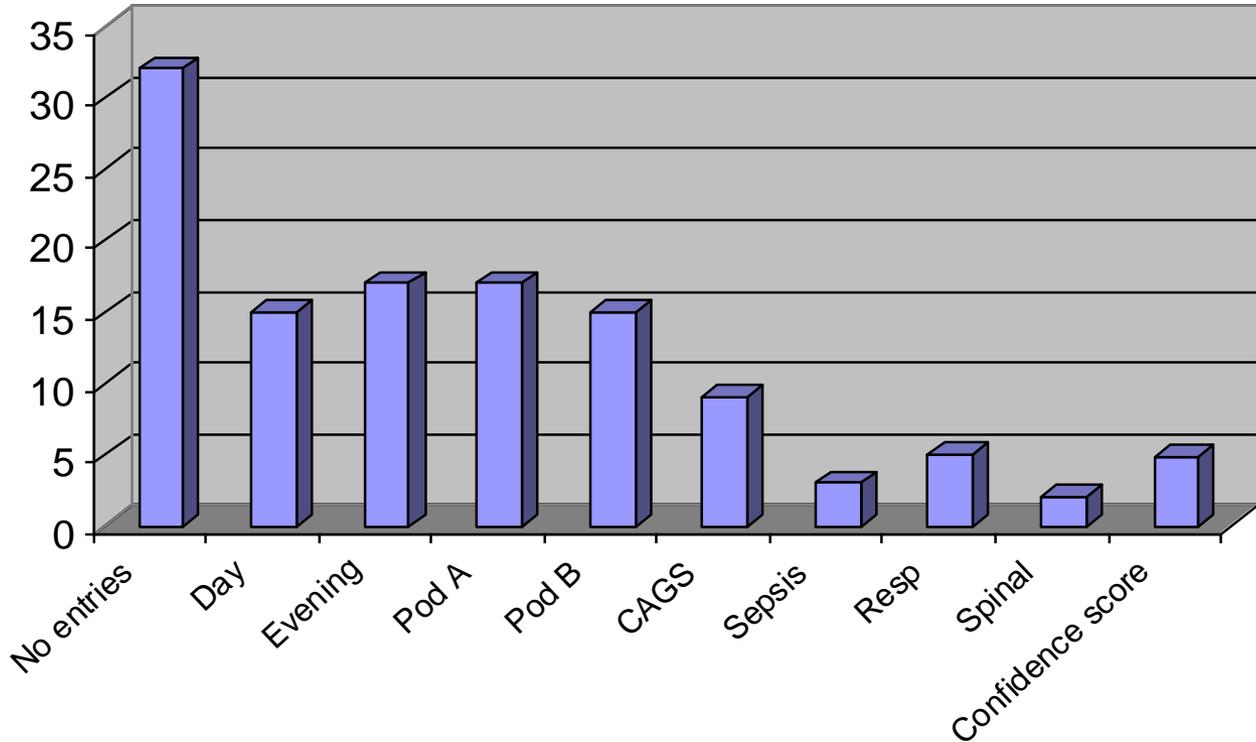
ICU Procedure Log

The screenshot displays a web application interface for an ICU Procedure Log. At the top, there is a header with the text "Please approve michael.berman2008-07-11T11_28_41 new" and a user profile for "Michael Berman". Below the header is a navigation bar with "New", "Upload", "Actions", and "Settings" menus. The main content area features a table with columns: Proc Date, Shift, Pat Cat, Proc System, Self Assessment, Comments, and a status column. A left-hand menu is visible, with the "Export to Spreadsheet" option highlighted and a red arrow pointing to it.

Type	Name	Proc Date	Shift	Pat Cat	Proc System	Self Assessment	Comments	Status
michael.berman2		14/05/2008	Morning	Surgical	Post op day neurosurgery	High	Administer IV Blood transfusion - no veins	Not
michael.berman2		27/05/2008	Afternoon	Respiratory	Observe brain death tests	Medium	reg	Approved
michael.berman2		27/05/2008	Afternoon	Respiratory	Observe brain death tests	Medium	This needs to be approved	In Progress
Michael2008-03-2		14/05/2008	Afternoon	Cardiovascular	Observe brain death tests	High	administered medication as required	Approved
Michael2008-07-1		14/05/2008	Afternoon	Surgical	Management of ICP monitoring	High	administered medication as required	Approved
Michael2008-07-1		14/05/2008	Afternoon	Surgical	Removal of ICP drain	High	administered medication as required	Approved
Michael2008-07-1		14/05/2008	Morning	Surgical	Post op day neurosurgery	High	Administer IV Blood transfusion - no veins	Approved

Data may be exported to MS Excel for analysis and reporting.

CEP data review Aug. 09'



Sammi Huang

	No entries	Day	Evening	Pod A	Pod B	CAGS	Sepsis	Resp	Spinal	Confidence score
Sammi Huang	32	15	17	17	15	9	3	5	2	4.8



NCBI PubMed www.pubmed.gov

All Databases PubMed Nucleotide Protein Genome Structure OMIM PMC

Search PubMed for [] Go

Limits Preview/Index History Clipboard Details

Display AbstractPlus Show 20 Sort By Send to

All: 1 Review: 0

1: [J Nurs Educ](#), 2008 Jan;47(1):13-9.

NCBI PubMed www.pubmed.gov

All Databases PubMed Nucleotide Protein G

Search PubMed for []

Limits Preview/Index History Clipboard Deta

Display AbstractPlus Show 20 S

All: 1 Review: 0

1: [J Nurs Educ](#), 2008 Feb;47(2):74-7.

Use of mobile handheld computers in clinical nursing education.

[Farrell MJ](#), [Rose L](#).

DDivision of Nursing and Midwifery, RMIT University, P.O. Box 71, Bundoora Vic 3083, Australia. maureen.farrell@rmit.edu.au

Personal digital assistants (PDAs) are increasingly in use in both clinical practice and nursing education as a method of providing timely access to resources at the point of care. This article describes the use of PDAs during the medical-surgical clinical component of a Bachelor of Nursing program in Australia. The aim of the study was to investigate whether PDAs would enhance students' pharmacological and clinical contextual knowledge and to identify issues associated with the use of PDAs in students' clinical experience. A mixed-method approach was used incorporating a quasi-experimental design with pretest and posttest of pharmacological knowledge and focus group discussions. Students using the PDAs demonstrated a moderate increase in their mean score, which was double the increase in the control group. Findings from the focus group discussions indicated that students found the PDAs easy to use and perceived their use as beneficial to their learning in the clinical area. This study provides support for the

Handheld computers in nursing education: PDA pilot project

[Koeniger-Donohue R](#).

Simmons College, School for Health Studies, 300 The Fenwa
Rebecca.koeniger-donohue@simmons.edu

Interest in the use and application of handheld technology in nursing education is growing. Personal digital assistants (PDAs) are often referred to as a "peripheral device" that can decrease errors, and simplify information retrieval. Research results support the notion that PDAs enhance an effective student learning resource. However, most research has focused on the use of PDAs in the classroom. This article describes a 9-month pilot project for the initial use of PDAs by novice faculty and students at Simmons College.

PMID: 18320958 [PubMed - indexed for MEDLINE]

(VAS) Project - Microsoft Internet Explorer
Address https://www.vas.org.au/

Back Search Favorites

Victorian Anaesthesia Safety (VAS) project

Home Hospitals User Guide Legal Devices Data Plans

Welcome to the Victorian Anaesthesia Safety (VAS) project

The Victorian Anaesthesia Safety Project is a project piloting anaesthesia incident and adverse event reporting. It involves four Victorian Departments of Anaesthesia.

The project's objectives involve:

- the development of a web based application for event reporting using PDAs or/and PCs.
- contributing to the education and training on event reporting for identified participants: Anaesthetic Registrars and Consultants.
- the testing of the Victorian Anaesthesia Safety Project incident and adverse event dataset that incorporated event categories used at international and national levels

? Questions relating to the project:

- Clinical - contact your hospital site coordinator
- VAS application - forgotten passwords/errors/bugs:

phone 1800 724645 or email [Click Here](#)

Sponsored By 

Auspice By 

Powered By 

Done Internet

start (VAS) Project - Micro... Lectures Microsoft PowerPoint... 3:03

VAS - Microsoft Internet Explorer
Address https://www.vas.org.au/VAS/event/index.dfn?caseId=9281

Back Search Favorites

Case Events Log

Adverse Events (numerator)

In order for this case to be included in the VAS audit, press the Complete buttons at the bottom of this screen and on the View Summary screen

Date Of Procedure	26/08/2008
Hospital	Austin Hospital [Heidelberg]
UR	666

Adverse Events (0): 1 2 3 4 5

Category

Type
- Abbreviation
- Full Description

Location

Outcome
- Abbreviation
- Full Description

AE Details (optional - Restrict comments to a description of the event only. Do not give an opinion)

logout home complete back to case

delete save

© 2007 Schmik Solutions Pty Ltd
Phone 1800 724645 or email support@schmik.com.au

Done Internet

start VAS - Microsoft Inter... Lectures Microsoft PowerPoint ... 2:59

Case Log
 (To capture information for your ANZCA Curriculum Modules)

In order for this case to be included in the VAS audit, press the Complete buttons at the bottom of this screen and on the View Summary screen

Date Of Procedure 24/08/2008
Hospital Austin Hospital [Heidelberg]
UR 665

Anaesthetic Procedure (use Ctrl key to select and deselect multiple procedures)

- Airway
 - Awake fiberoptic intubation
 - Other fiberoptic intubation technique
 - Double Lumen Tube or Endobronch Blocker
- Vascular/Monitoring
 - Arterial Line
 - CVC
 - PA Catheter
 - TOE
 - TTE
- Neuraxial
 - Spinal
 - Combined Spinal Epidural (CSE)
 - Lumbar Epidural Insertion (excl Labour)
 - Labour Epidural
 - Thoracic Epidural
 - Epidural blood patch
- Regional Block
 - Retrolbulbar / peribulbar eye block
 - Sub-Tenon's eye block
 - Blocks of the head and neck (other)
 - Cervical plexus block (superficial)
 - Cervical plexus block (deep)
 - Brachial plexus block (interscalene)
- ANZCA Module**
 - 1 - Introduction
 - 2 - Professional Attributes
 - 3 - Trauma/Major Case
 - 4 - Obstetrics (50 Sessions)
 - 5 - Cardiothoracic (60 Sessions) Vascular (20 Sessions)
 - 6 - Neuroanaesthesia (30 Sessions)

Experience (optional - Restrict comments to a description of the event only. Do not give an opinion)

Reflective Learning (optional - Restrict comments to a description of the event only. Do not give an opinion)

logout home complete
 delete save



Conclusions

The 'digital world' has high potential for education and training in health care

How the current and future generations learn will be different but within this

Efficiency gains are evident; cost, quality etc

Outcomes need to be investigated



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GÉNÉRATION

