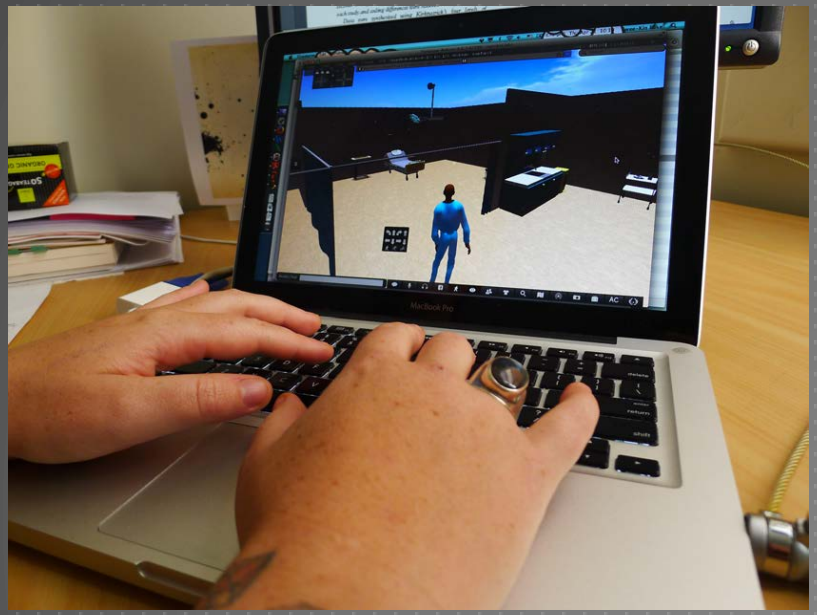


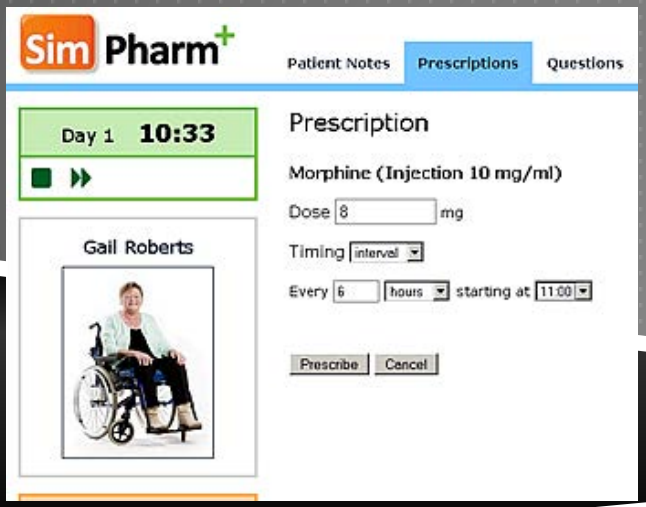
WHAT CAN MEDICAL STUDENTS LEARN IN A VIRTUAL HOSPITAL?

Swee-Kin Loke

Higher Education Development Centre

University of Otago

RESEARCHING VIRTUAL WORLDS



References: Blyth & Loke, 2014; Chee, Loke, & Tan, 2009; Loke et al., 2011

OUTLINE

1. Role playing as a learning strategy
2. Otago Virtual Hospital (demo)
3. What can medical students learn?
   - Supplement or Replace residentials?
4. Challenges encountered
5. Discussion & Questions

WHY ROLE PLAY TO LEARN?

Role plays feature realistic scenarios in make-believe contexts as basis of learning & assessment

1. From Passive observation to Active participation
   - Redress typical imbalance between propositional vs functional knowledge, between knowing vs doing
2. Make-believe > Safe

References: Biggs & Tang, 2003; Butler, 2012; Dewey, 1938; Naidu, 2007; Spencer, 2003

WHY IN A VIRTUAL WORLD? (VS PHYSICAL WORLD)

1. Clinical teaching (PW) opportunistic; VW role plays more systematic (e.g. control types of scenario)

1. Realistic enough for experiential learning of clinical practice
   - And other practices: teacher education, social work, foreign languages

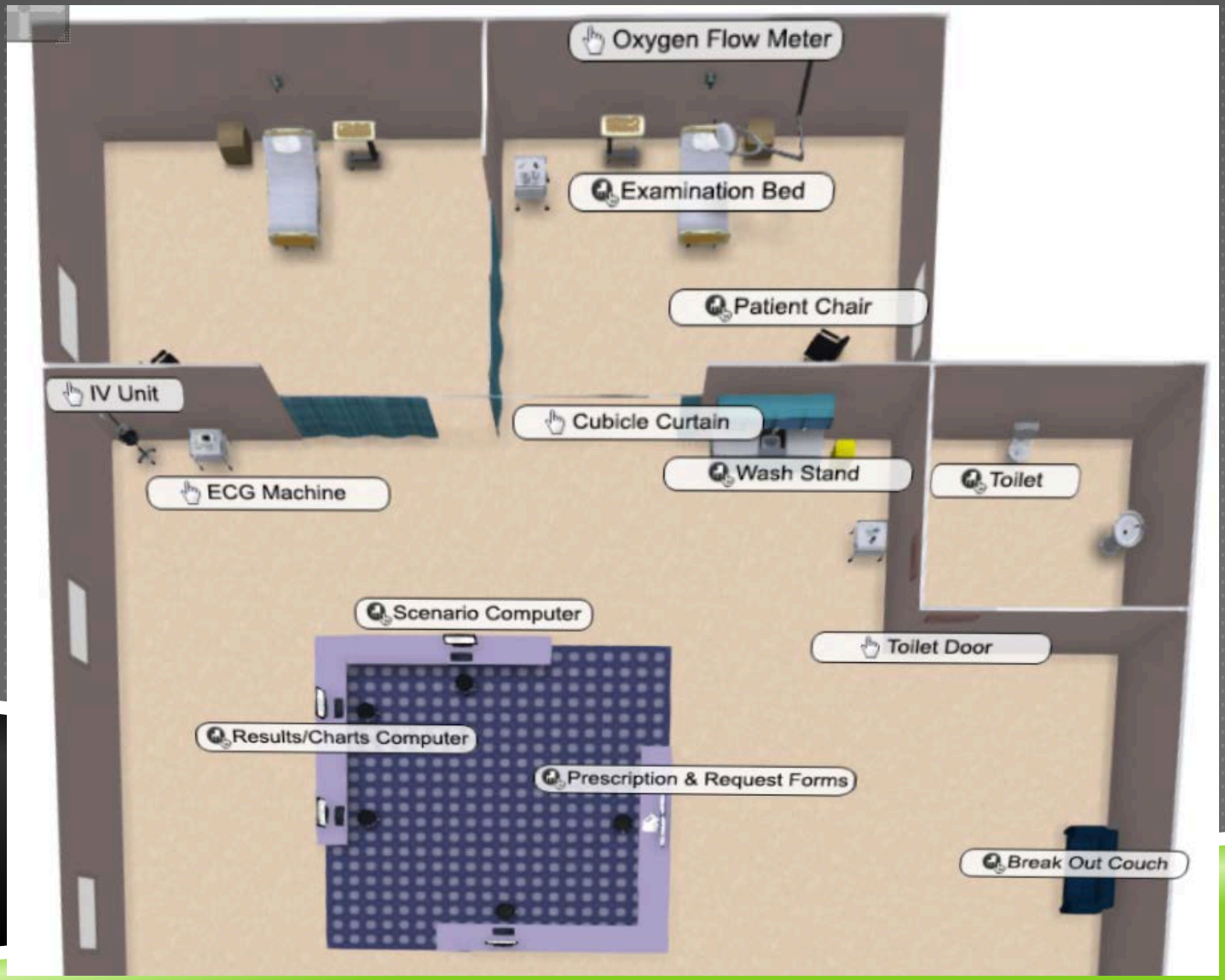
2. Logistical reasons (e.g. scalability)

References: Boulos et al., 2007; Hansen, 2008; Dalgarno & Lee, 2010; Spencer, 2003

OTAGO VIRTUAL HOSPITAL

- Medical students role play as junior doctors in Emergency Department
- Students can: communicate with patients & fellow doctors, perform 'physical' examinations, order tests, prescribe medicines, write handover notes

OTAGO VIRTUAL HOSPITAL (DEMO)



Emergency Department Triage Record

Hospital Sticker Here

or

Details below

Otago Virtual Hospital

Name: Gertrude Anne MacFarlane

Date:

Date of Birth: 16 July 1936

Time:

Age: 75 Health Number: RXYM802

GP: Andrews

Contact Person	
Name: Angela Donaldson	
Phone: ?	Relationship: Daug

Immunisation up to date	circle appropriate	Yes / (No)
MRSA precautions	circle appropriate	Yes / (No)

Presenting Complaint:

Feels unwell
Neighbour reports some confusion – new
Feels hot T°C up
No sputum, no falls

Vital Signs in Triage:

Pulse: 130 ir	Blood Pressure: 112/68
Temperature °C: 37.9	Respiratory rate: 28
S_pO_2: 92 RA	Weight:

Allergies:

Nil known

PHASES OF ROLE PLAY

1. History-taking
2. 'Physical' examination
3. Order tests
4. Prescribe medicines
5. Negotiate treatment plan
6. Write handover notes

ORDERING TESTS

Which type of Radiology examination would you like to request?

Note:
Selecting CANCEL will abandon a request, selecting RESET will restart a request.

X-RAY | CT | MRI

\- | \- | CANCEL

View Radiology Results

View Non-Blood Results

View Haematology Results

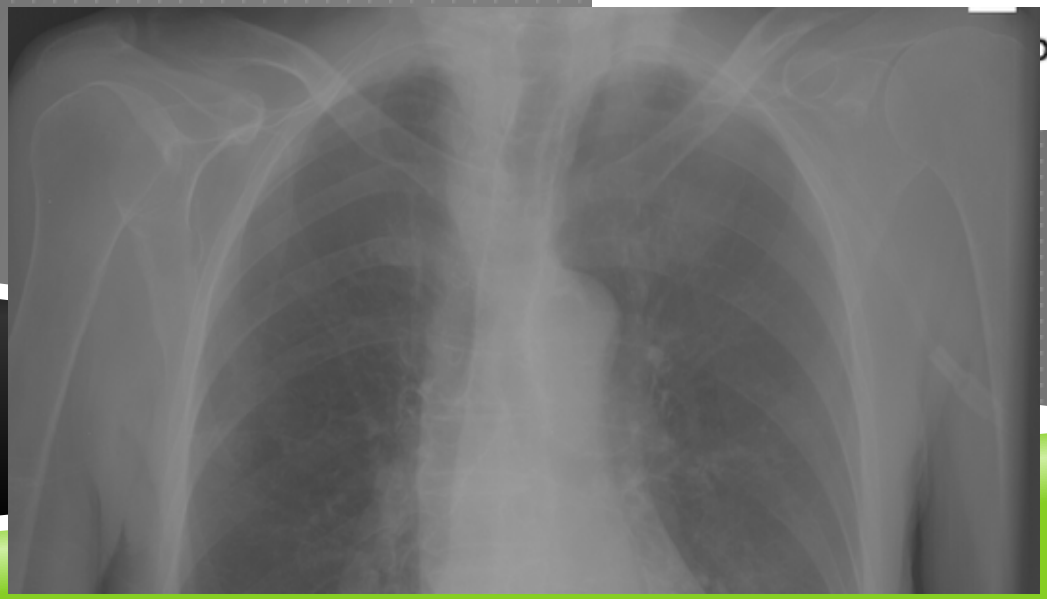
View Biochemistry Results

View Medications Chart

Stop Current Medication

View Fluids/Blood Order Chart

ons Chart



REFLECTION & PEER FEEDBACK

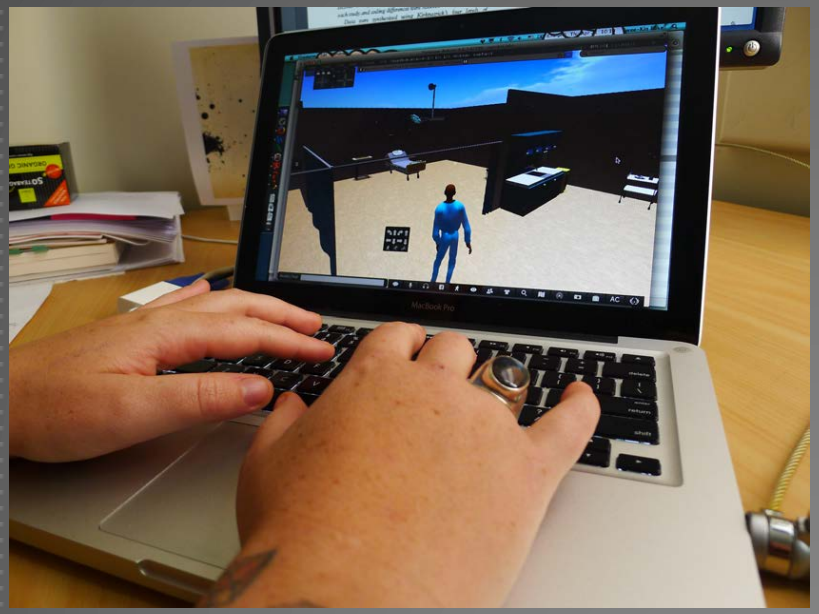
Notecard: Sc1 Log 21 Apr 12:19

Description: Script generated notecard

12:03: sweekin loke: Initiated scenario.
12:04: sweekin loke: Moved ECG machine to cubicle.
12:05: sweekin loke: Moved IV Unit to cubicle.
12:11: sweekin loke: Ordered X-RAY, CHEST
12:15: sweekin loke: Viewed radiology results.
12:19: sweekin loke: Ended scenario.

How well did your House Surgeon interact with you on the following items? *

	None	Some	OK	Good
Friendliness/Rapport	○	○	○	○
Introductions	○	○	○	○
Handwashing	○	○	○	○
Verbal consent for procedures	○	○	○	○
Providing information	○	○	○	○



WHAT *CAN* STUDENTS LEARN IN THE OVH?

How might OVH supplement or replace residentials?

STUDENTS EXERCISE PW CLINICAL REASONING

- Evaluate validity of OVH-based assessment of clinical reasoning
- 12 participants (different stages of medical training)
- More medical experience > significantly better performance in terms of clinical reasoning:
  - Transformed info into key clinical concepts more efficiently
  - Generated more accurate diagnoses in a timely manner
- Construct validity supported: students exercise PW clinical reasoning in VW

Reference: Roy, Walker, Blyth, & Wilkinson, 2014

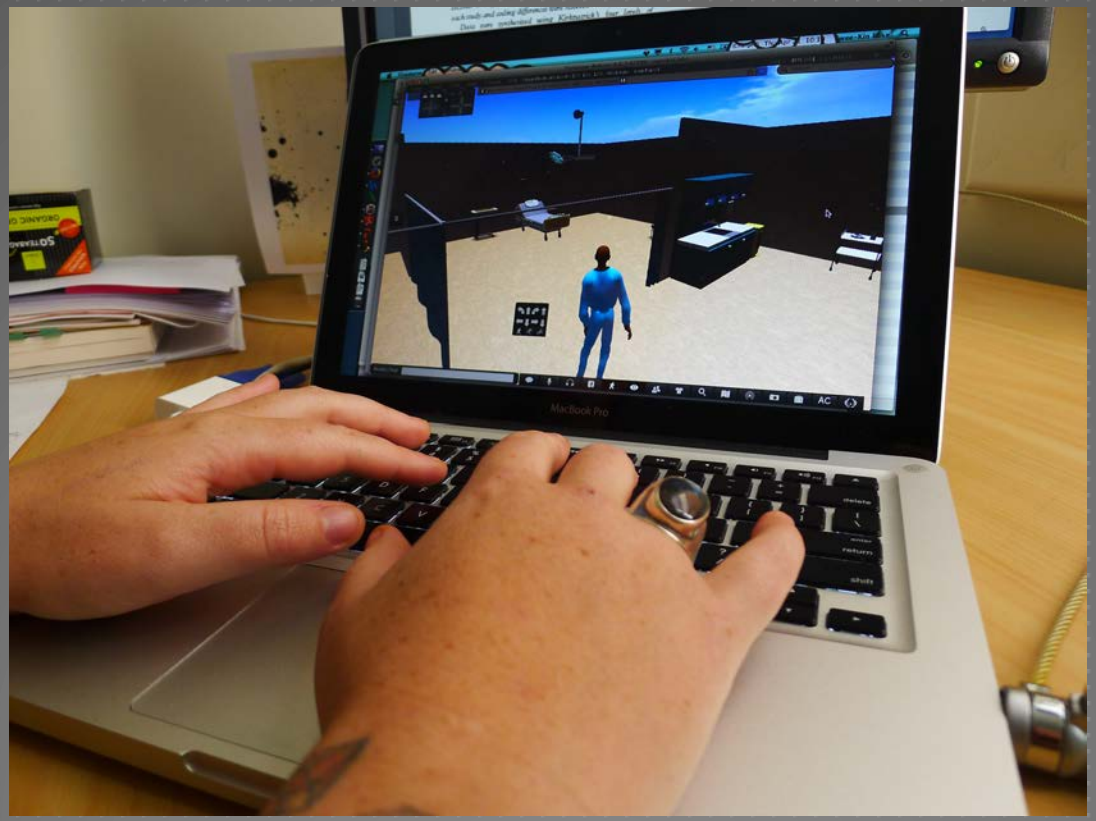
STUDENTS GET TO "DO THE THINGS"

- 11 medical students participated in Scenario 1
- "What role can this virtual hospital play in your medical education?"

- "Well, you actually do the things here. Whereas in the SECO clinic, you write down or think about what you're going to do, but you don't go and do them."
- (clinical placements) "I certainly wouldn't be the one making the call. I wouldn't want to be the one making the call."

Reference: Loke, Blyth, & Swan, 2012

WHAT STUDENTS CANNOT LEARN



WHAT STUDENTS CANNOT LEARN

- Learn X by doing X: Does doing X^{vw} correspond to X^{pw}?
- "you actually do the things": But not physical aspect of actions
  - X^{vw} = click on "Intubate" button
  - X^{pw} = inserting laryngoscope to displace tongue to one side

- Bonedoc closer to imitating physical movements

WHAT STUDENTS CAN LEARN

- Students can learn clinical reasoning:
  - Clinical reasoning (VW) corresponds to Clinical reasoning (PW)

- "you actually do the things here":
- Students cannot learn physical aspects of intubating patients
- Student can learn dispositional aspects:
  - When to intubate patient, when to "make the call" (to examine chest, to discharge patient, etc.)

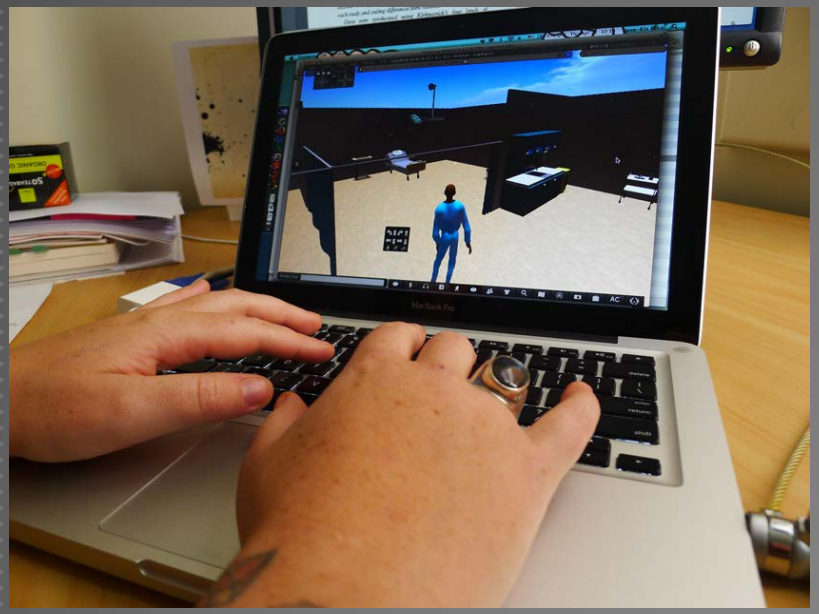
References: Loke, 2015; Loke & Golding, 2016; Perkins et al., 2000

SUPPLEMENT OR REPLACE RESIDENTIALS?

- Do learning objectives require students' physical bodily experience?

- Parallel: flight simulators most effective when used in conjunction with actual experience of flying

References: Dreyfus, 2001; Hays et al., 1992

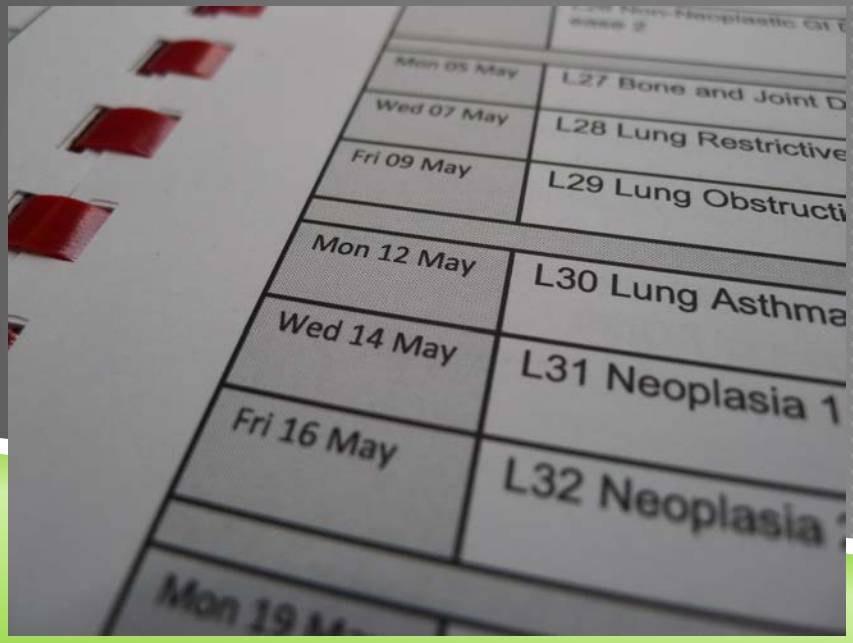


CHALLENGES ENCOUNTERED

1. Integration into curriculum
2. Scalability

CHALLENGE #1: INTEGRATION INTO CURRICULUM

- Find space in existing curriculum
  - Could not free up one hour for all students to role play
- Or create new space
  - new Critical Care module for Year 6 Trainee Interns in 2016



CHALLENGE #2: SCALABILITY

- Experiential learning involves iterative cycles of practice-reflection
- Previous models limited student participation: e.g. single hospital; dependence on instructor input

- Solution: Peer feedback; the Holodeck

References: Blyth & Loke, 2014; Honey et al., 2012

DISCUSSION & QUESTIONS

THANK YOU

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