



Next Generation Online Simulations, Serious Games and Immersive Learning

Nigel Wynne

Lead – OSIME RDG

Senior Academic – Learning and Teaching

National Teaching Fellow

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Nigel Wynne – Lead



Xi Guo – Software Engineer



Paul Hammond – Interface Programmer – Flash/HTML5



Mark Richards - 3D Artist

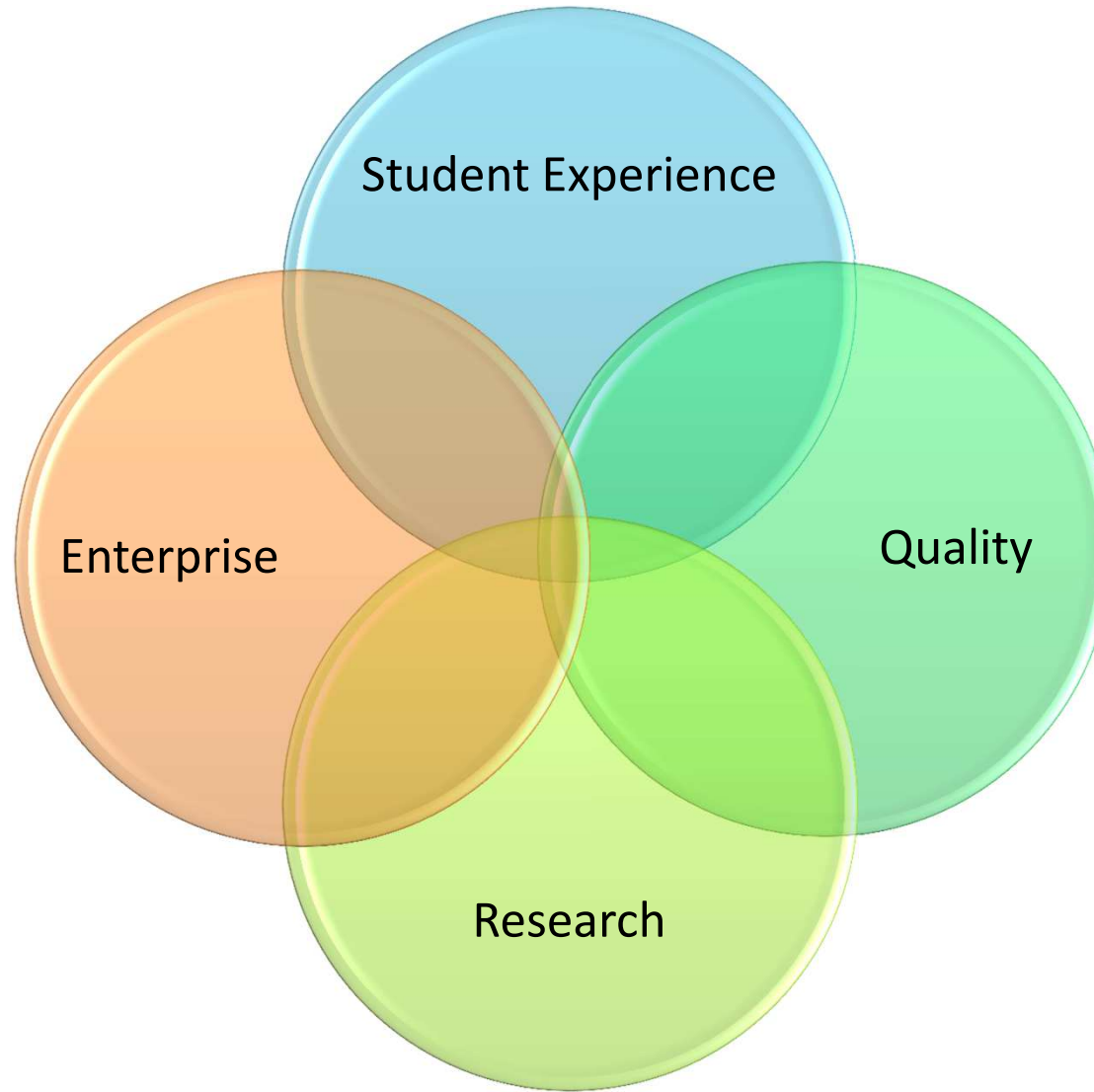


Janine Dantzie – Learning Technologist – Flash/HTML5



Timothy Marquis – Learning Technologist – 3D

OSIME Contributes to a Range of Faculty Agendas



Core Workstreams



VCC Sims



Discover



Session Capture



Software Engineering/
Games, Skills And
Research



Pedagogic Research



3D Sims



GUI HTML5



Virtual Reality

Partner Organisations



- 34 sims currently in use internally and externally
- 14 within Health at BCU
- Over 3000 students registered.
- 2013 - 14988 submissions
- 2014 – 16265 submissions

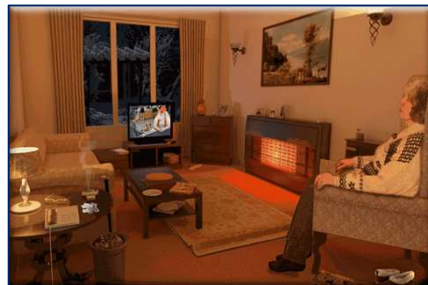


Pre – Registration Nursing - Examples

Adult Field: Year 1



Asthma



Falls and Stroke

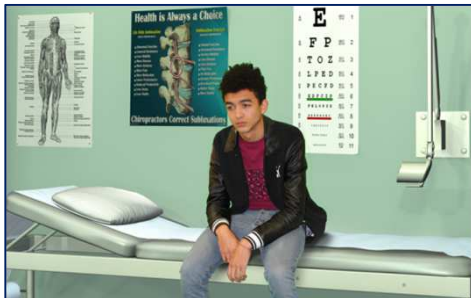


Stroke Care

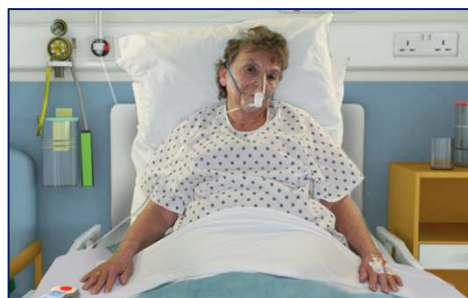


Renal Colic

Adult Field Year 2



DKA



Post Operative Risk



Ruptured Spleen

Main Scenes



Sim Selection

Welcome - BENCHMARKEMCS2014 [Accessibility](#) [Portal](#) [Help](#) [Logout](#)




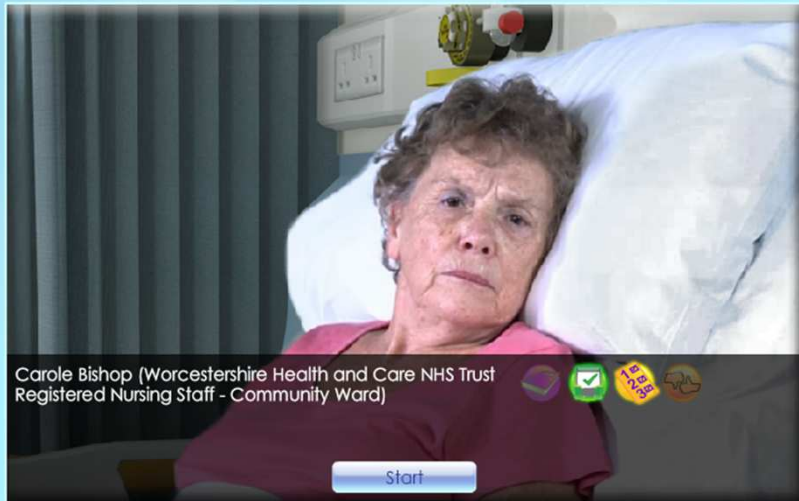
Welcome to VCC Simulations.
Click on the images below to find the simulation(s) relevant to your practice area and grade or module and course.



© Birmingham City University 2010

Check Performance Awards









Welcome - test 01 Accessibility Portal Help Logout

Carole Bishop (Worcestershire Health and Care NHS Trust
Registered Nursing Staff - Community Ward)

Start

>>

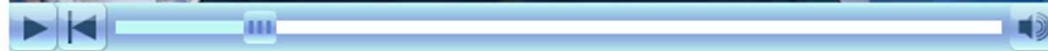


Performance Awards



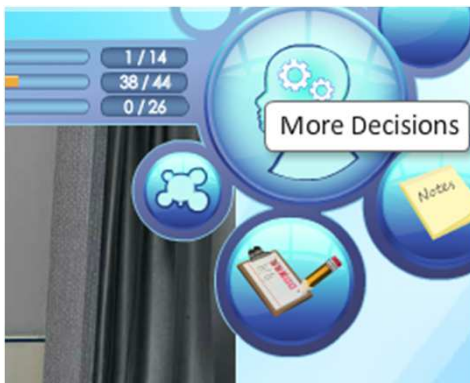
Video Introduction

Robert Powell Handover Video

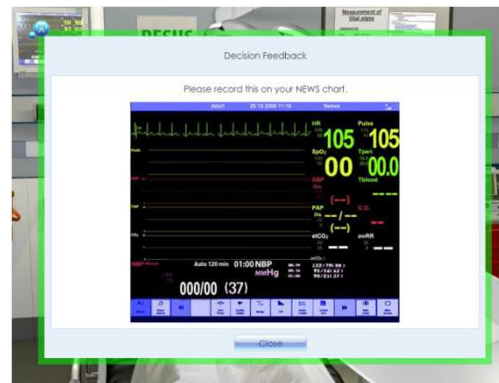


Continue

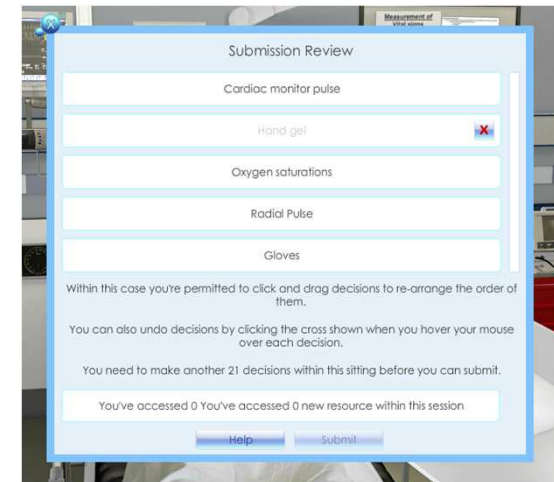
Making Decisions



Decision Selection



Decision Feedback

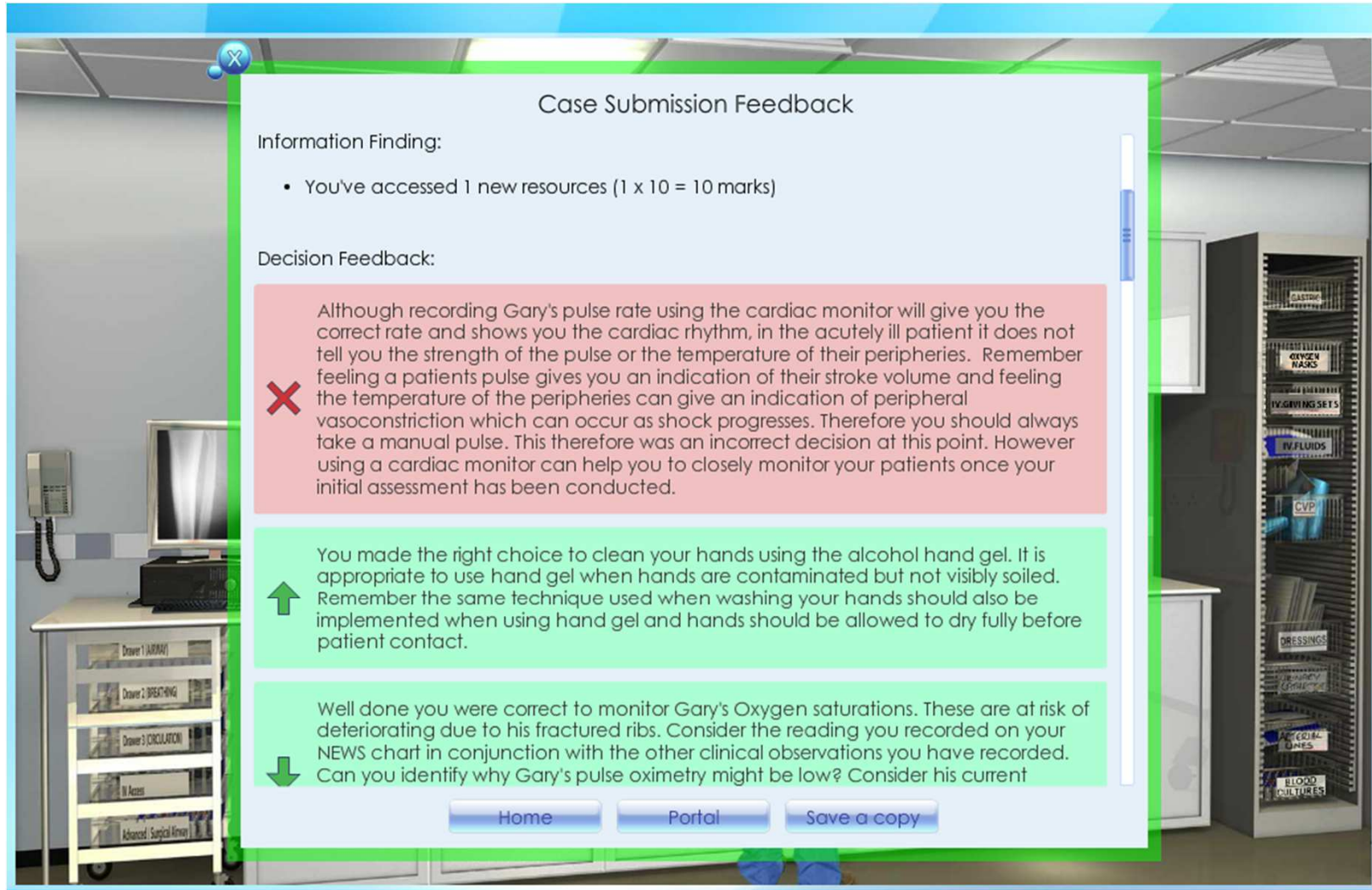


Decision Review

In Game Feedback – Performance Meters



Resources Accessed
Decisions Explored
Decisions Made



Case Submission Feedback

Information Finding:

- You've accessed 1 new resources (1 x 10 = 10 marks)

Decision Feedback:

✗ Although recording Gary's pulse rate using the cardiac monitor will give you the correct rate and shows you the cardiac rhythm, in the acutely ill patient it does not tell you the strength of the pulse or the temperature of their peripheries. Remember feeling a patients pulse gives you an indication of their stroke volume and feeling the temperature of the peripheries can give an indication of peripheral vasoconstriction which can occur as shock progresses. Therefore you should always take a manual pulse. This therefore was an incorrect decision at this point. However using a cardiac monitor can help you to closely monitor your patients once your initial assessment has been conducted.

↑ You made the right choice to clean your hands using the alcohol hand gel. It is appropriate to use hand gel when hands are contaminated but not visibly soiled. Remember the same technique used when washing your hands should also be implemented when using hand gel and hands should be allowed to dry fully before patient contact.

↓ Well done you were correct to monitor Gary's Oxygen saturations. These are at risk of deteriorating due to his fractured ribs. Consider the reading you recorded on your NEWS chart in conjunction with the other clinical observations you have recorded. Can you identify why Gary's pulse oximetry might be low? Consider his current

[Home](#) [Portal](#) [Save a copy](#)

Case Summary

Home Visit and Fast Stroke Assessment Adult 2013

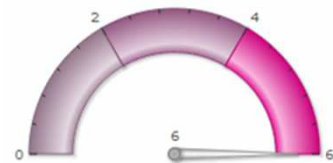
Student Name: Abigail Wrigley

Benchmark

The benchmark is not set for this case.

Awards Graphs

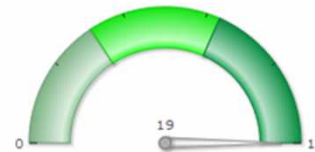
Resources Explored Chart



You have explored all 6 resources.

You have achieved the Resource Awards! Well done!

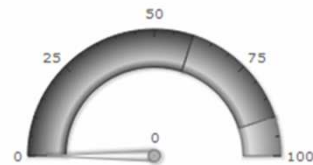
Correct Decisions Explored Chart



You have explored all 19 correct decisions.

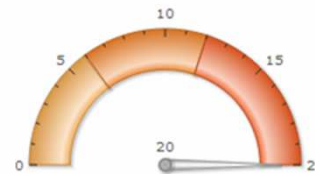
You have achieved the Correct Decisions Award! Well done!

Correct Decision Order Chart



This award is not available.

Decision Explored Chart



You have explored all 20 decisions.

You have achieved the All Decisions Award! Well done!

League table

- Student's view

Welcome **test 03** | [logout](#)



virtualcasecreator

Version 2.6.0.11

Home Join Group Groups Cases **League tables**

League Tables

General:

- all groups
- group cases

ACUTE TESTING > Home Visit and Fast Stroke Assesment Adult 2012

Name	Performance Award	Total Score
test user 1	  	4224
AcuteStu	 	8764
test user 3	 	4084

Submissions

Date/Time	Correct decisions	New resources	Order Correct	Score
28/10/2013 15:51:035	22/28	13/17	No	742
28/10/2013 16:16:001	26/28	16/17	No	872
28/10/2013 16:44:016	27/28	13/17	No	902
04/11/2013 15:24:025	25/28	0/17	No	672
04/11/2013 15:49:015	26/28	0/17	No	712
04/11/2013 17:34:021	28/28	0/17	No	1944
04/11/2013 18:01:009	28/28	0/17	No	1624
06/11/2013 14:27:057	28/28	0/17	No	1824
06/11/2013 14:45:010	28/28	0/17	Yes	4928
				14220

Acute Asthma 2013

Student Name: Aimee Mcconnell

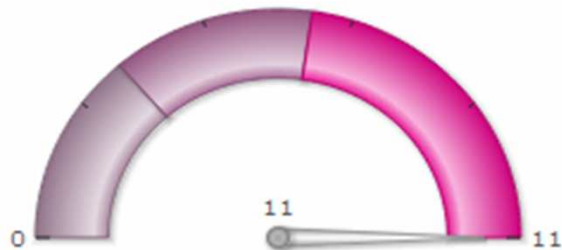
Benchmark   

Certificate

Aimee Mcconnell has achieved the benchmark. Please [click here](#) to download the Certificate

Awards Graphs

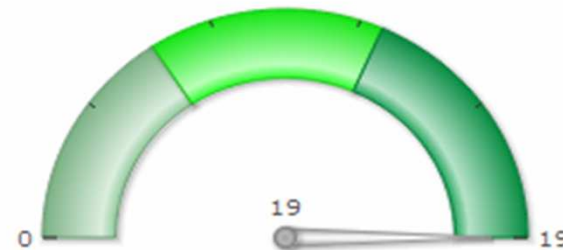
Resources Explored Chart



You have explored all 11 resources.

You have achieved the Resource Awards! Well done!

Correct Decisions Explored Chart



You have explored all 19 correct decisions.

You have achieved the Correct Decisions Award! Well done!

Automatic certificate generation & benchmark setting



Faculty of Health



VIRTUAL CASE CREATOR ONLINE SIMULATION

Certificate of Achievement

This is to certify that

BSc (Hons) Nursing Adult Branch Student

Achieved the expected benchmark level for the online simulation 'Care of a Patient with Asthma' during the Nursing Practice One module.

The Benchmark Achievement Level for this simulation is 3 Performance Awards.

In achieving this award the student has shown they:

-  can select the most appropriate and relevant assessment decisions in relation to an acutely ill asthmatic patient simulation;
-  can appropriately prioritise and apply a systematic assessment approach using the ABCDE method;
-  have accessed all the applicable evidence based resources allocated to the simulation to help inform their clinical practice, demonstrating a commitment to furthering their knowledge base.

These awards form part of the 'NMC Competency Framework: Domain 3 – Nursing Practice and Decision Making' and also demonstrate that this student has attained a range of digital literacy skills.

Signature 

Robert Mapp
Senior Lecturer in Acute Care Nursing



Faculty of Health



VIRTUAL CASE CREATOR ONLINE SIMULATION

Certificate of Achievement

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Signature 

Robert Mapp
Senior Lecturer in Acute Care Nursing



Certificates and Placement Portfolio.



Certificate
Template
Uploaded to
Software

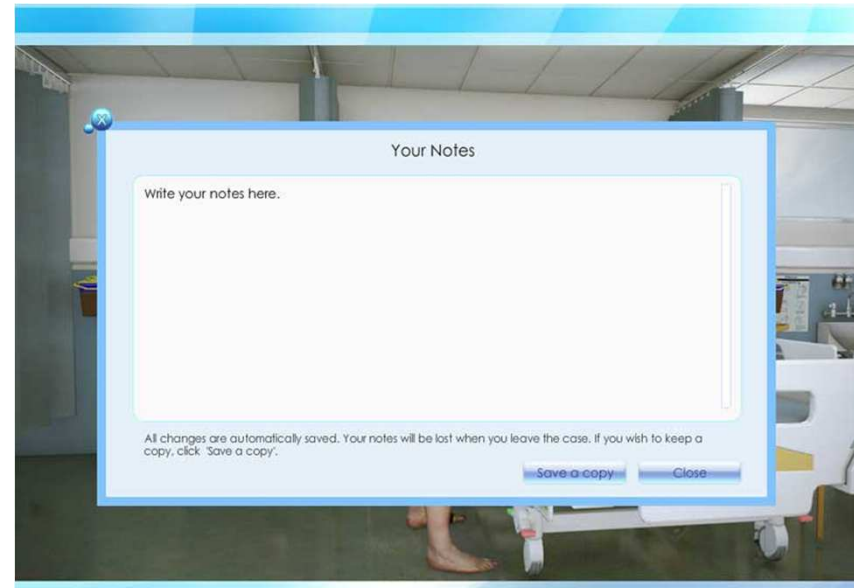
Certificate
automatically
produced for
learners that
Achieve
Performance
Benchmark

Learners add certificate to insert in
Ongoing Achievement Record and
show mentor in practice

Panorama hint

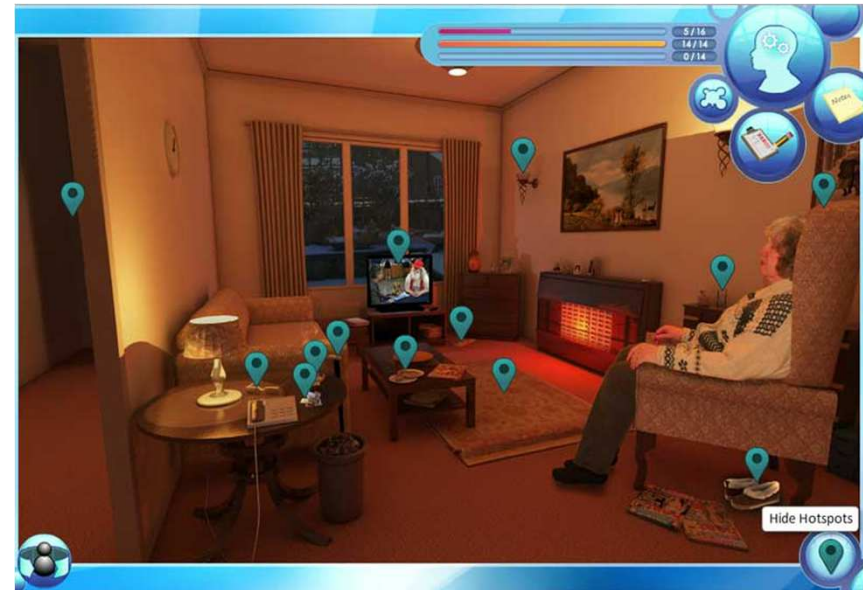
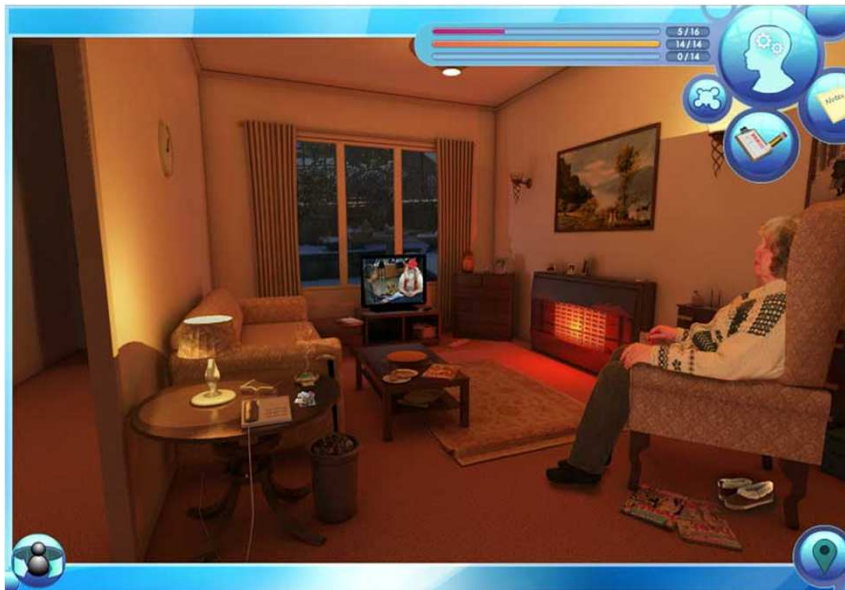


Notes





Reveal Hotspots Button





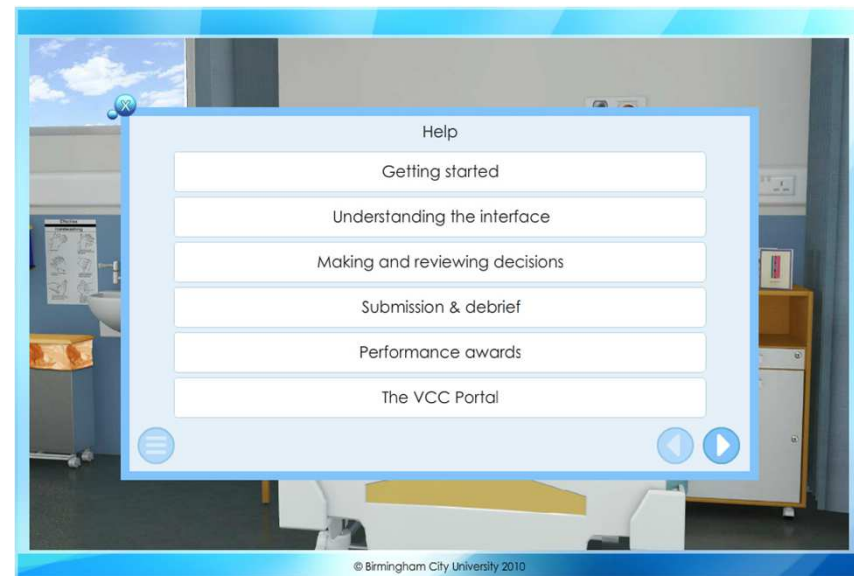
Decision Review button relocation



Drag and drop decision reorder



Help



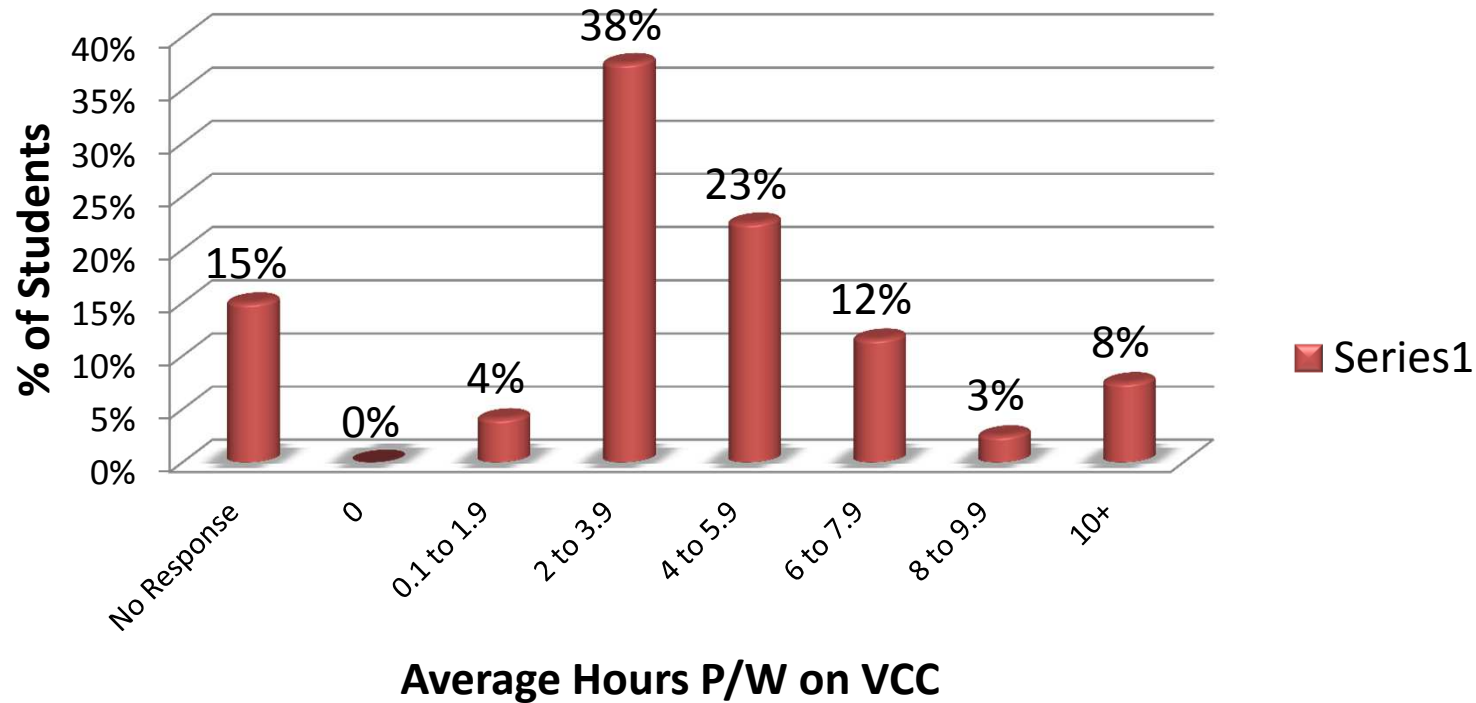
Headline Research Findings

Average Hourly Usage per week per student



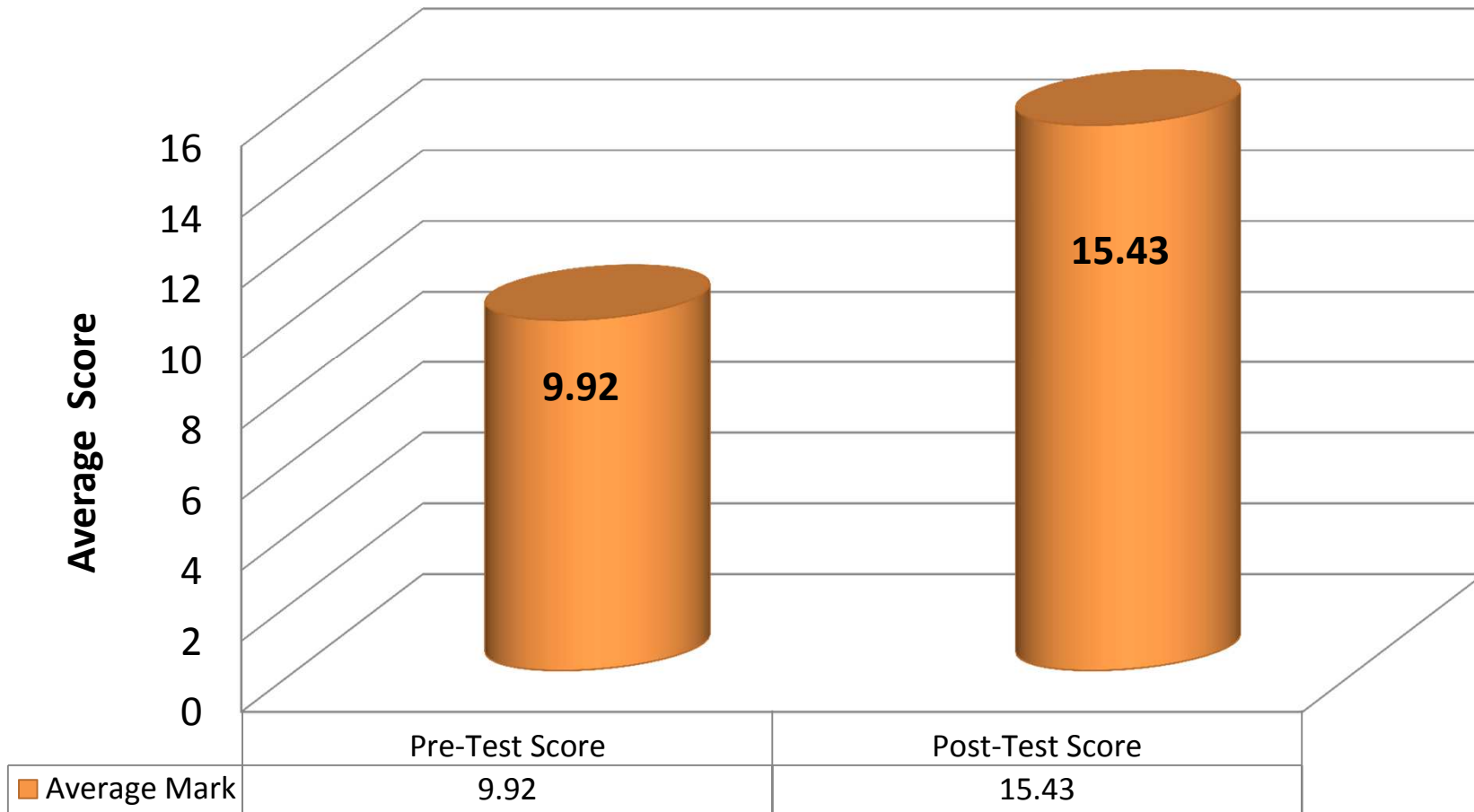
Mean weekly usage of VCC by student: 4.73 Hours

Hourly Time Expenditure Distribution Per Week (n=120)

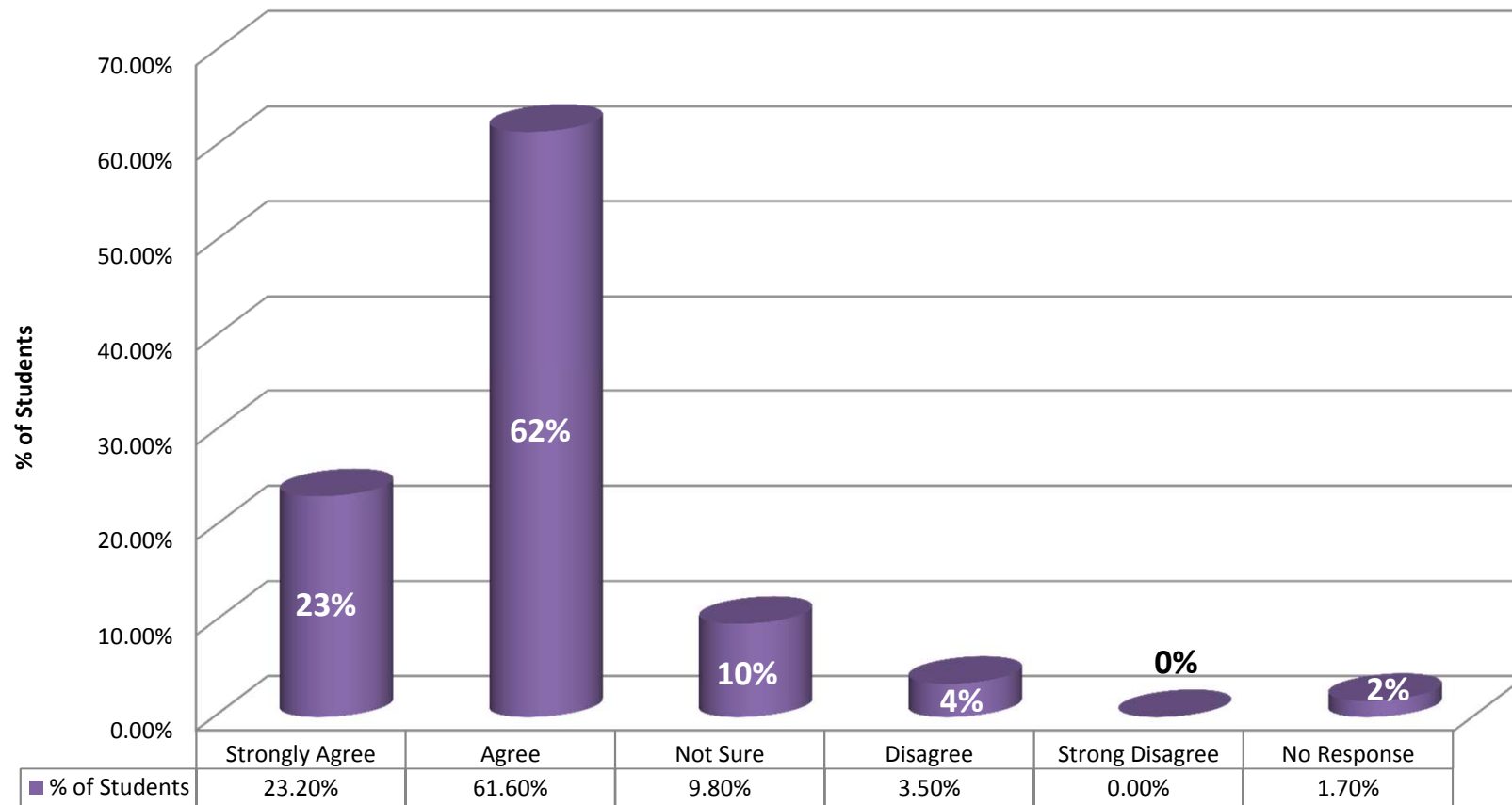


Pre and Post Test Comparison Scores

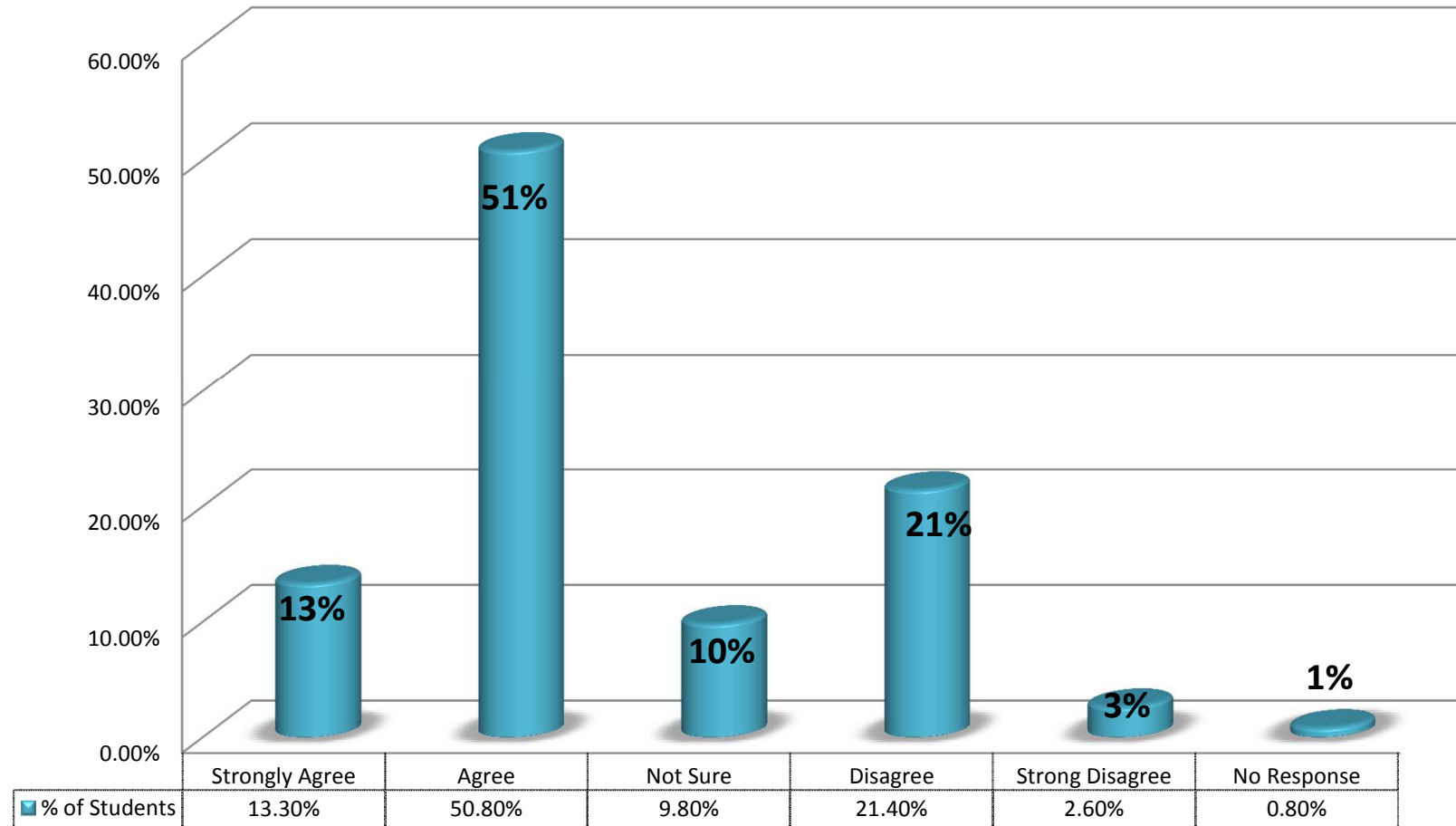
Average Pre/Post Test Score



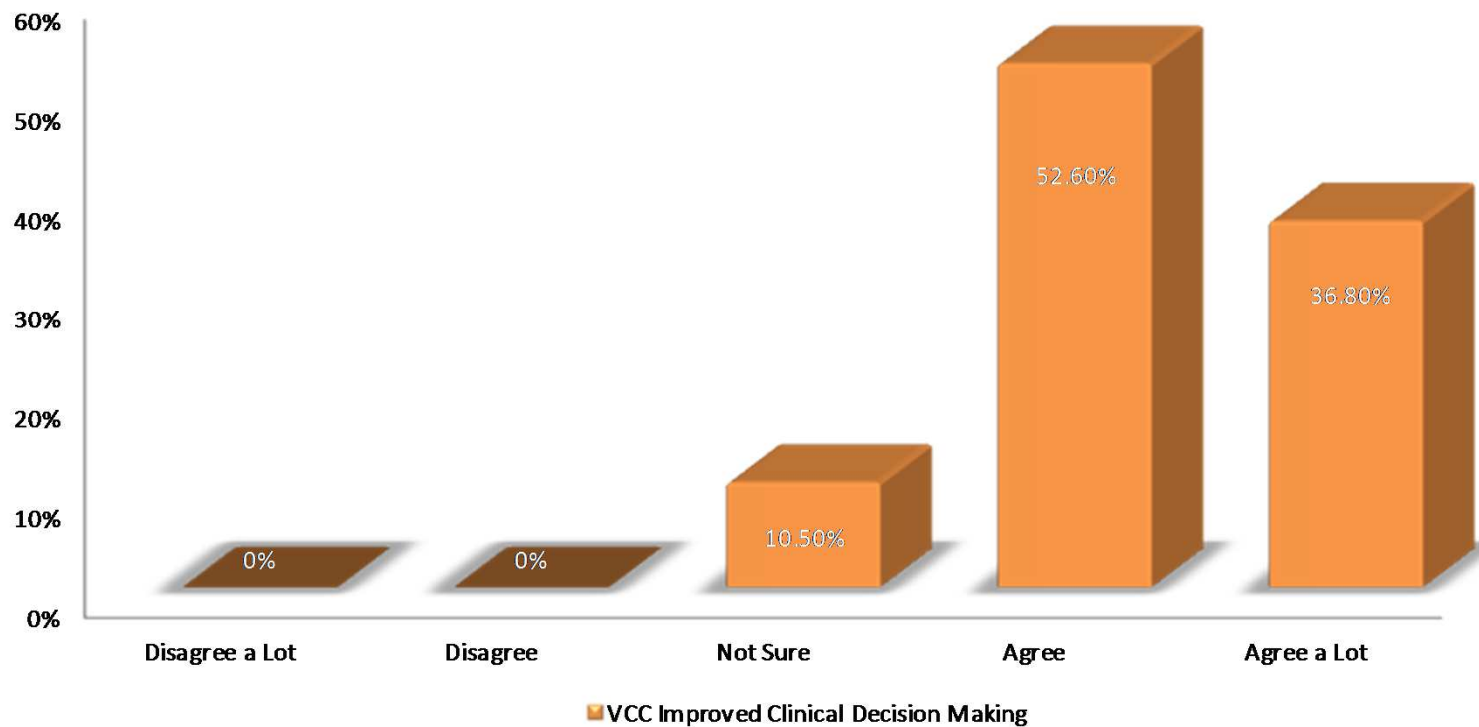
Q22 Using VCC Improved My Ability to Make Structured Patient Assessments (85%)



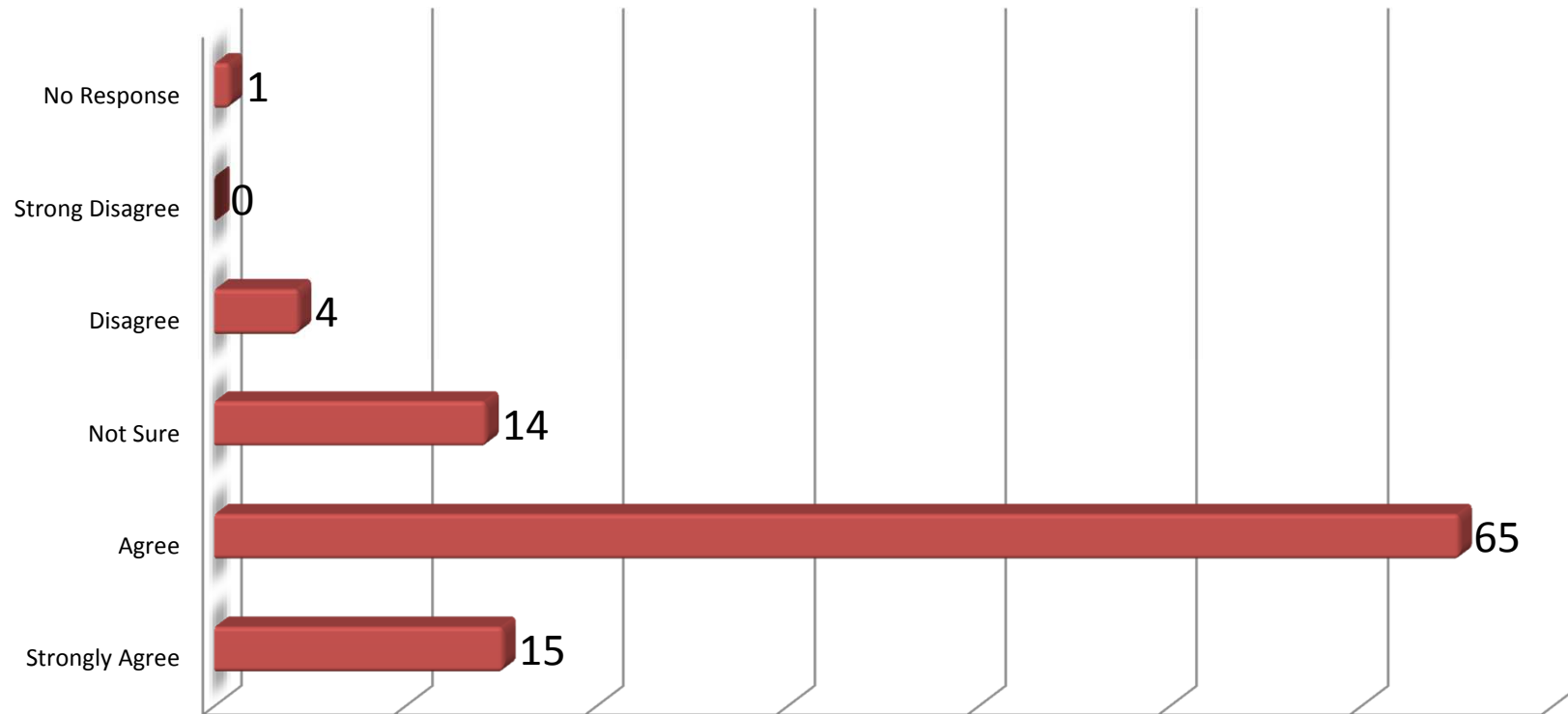
Q23 Using VCC has Helped me Conduct a MEWS Score (64%)



Using VCC Has Improved Clinical Decision Making: 89% ind. value

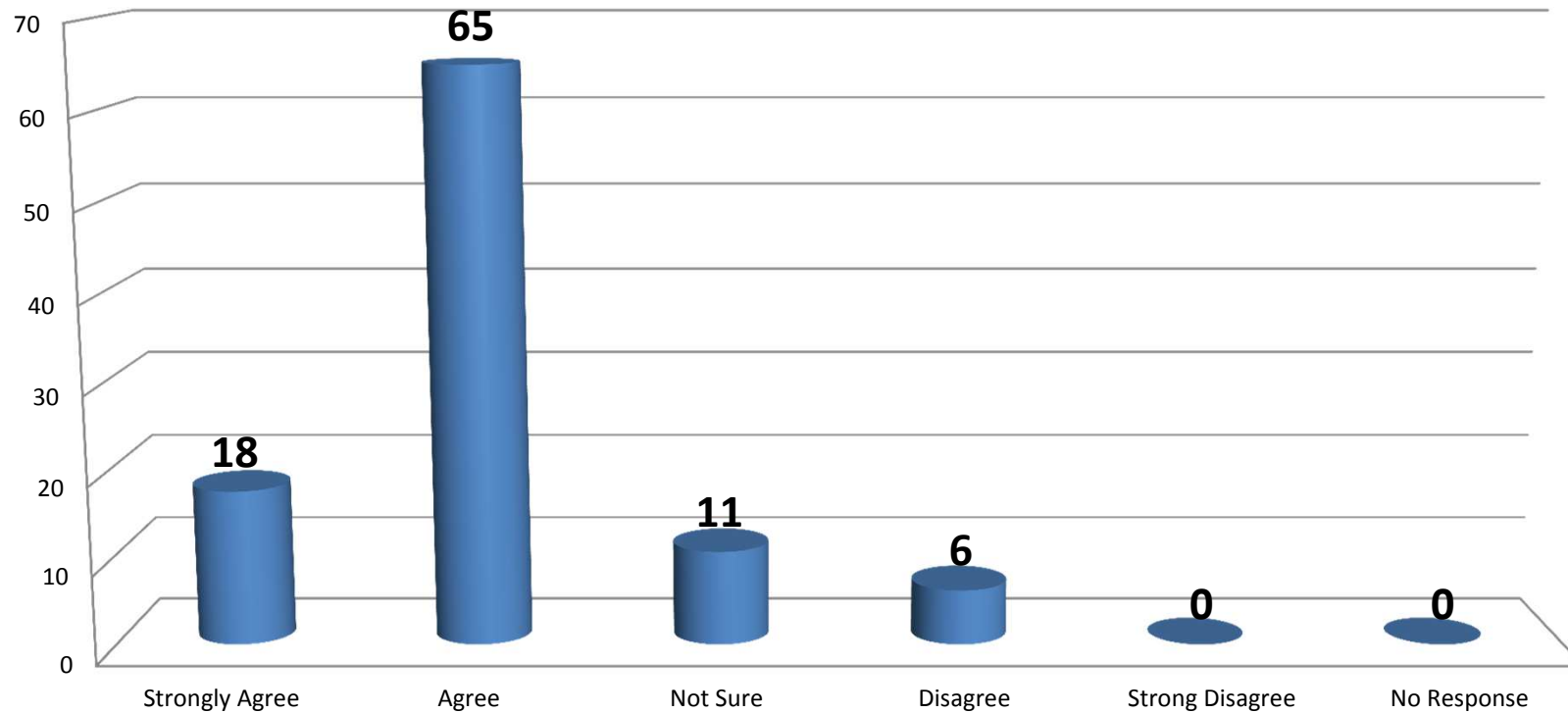


Q26: Using VCC has Enhanced my Problem Solving Ability (80%)



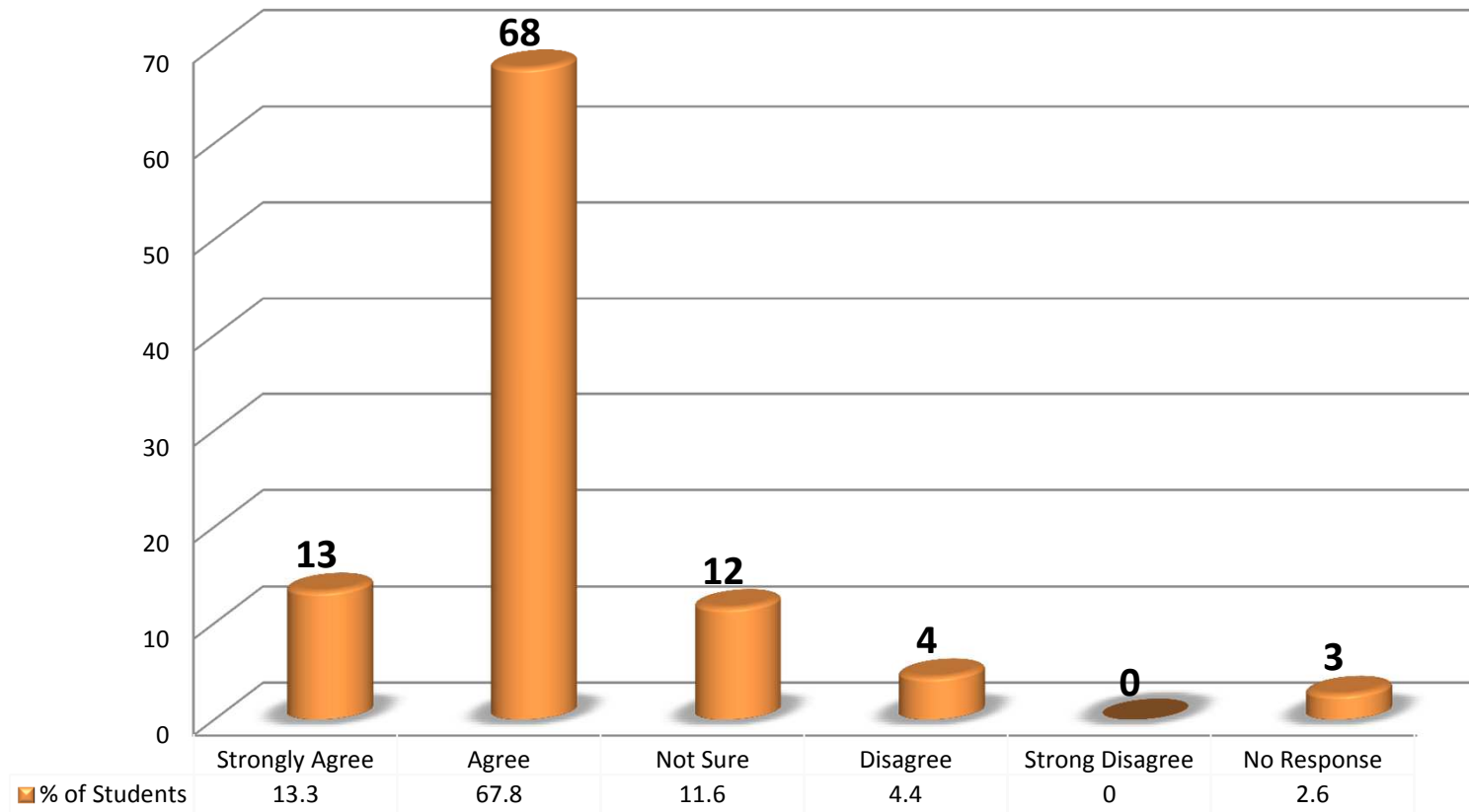
	Strongly Agree	Agree	Not Sure	Disagree	Strong Disagree	No Response
■ % of Students	15.1	65.1	14.2	4.4	0	0.8

**Q25: Using VCC will Have a Positive Impact on my Performance
During Next Clinical Placement (83%)**

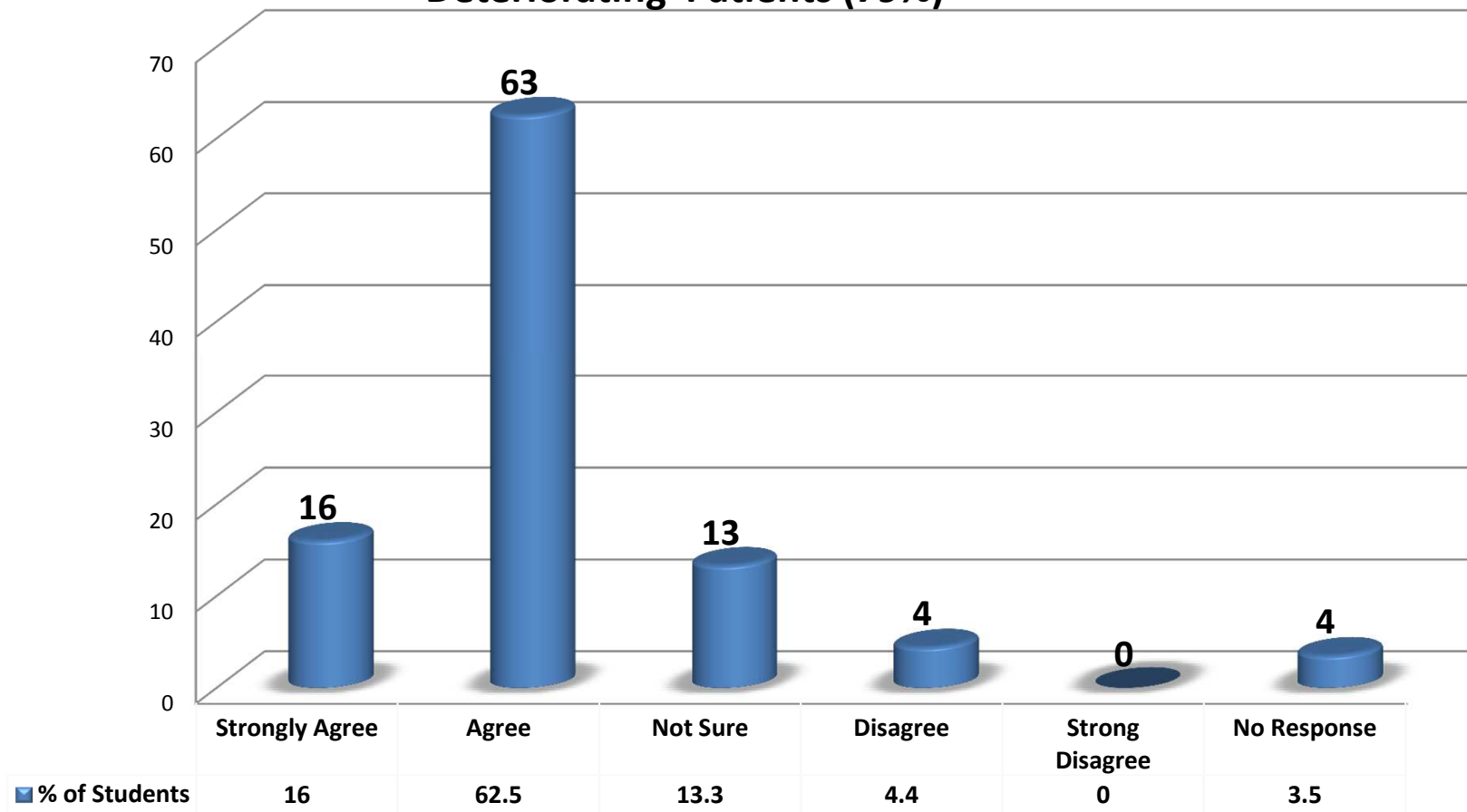


	Strongly Agree	Agree	Not Sure	Disagree	Strong Disagree	No Response
■ % of Students	17.6	65.1	10.7	6.25	0	0

Q27 Using VCC Has Helped me Quickly Identify Patients at Risk of Deterioration (81%)

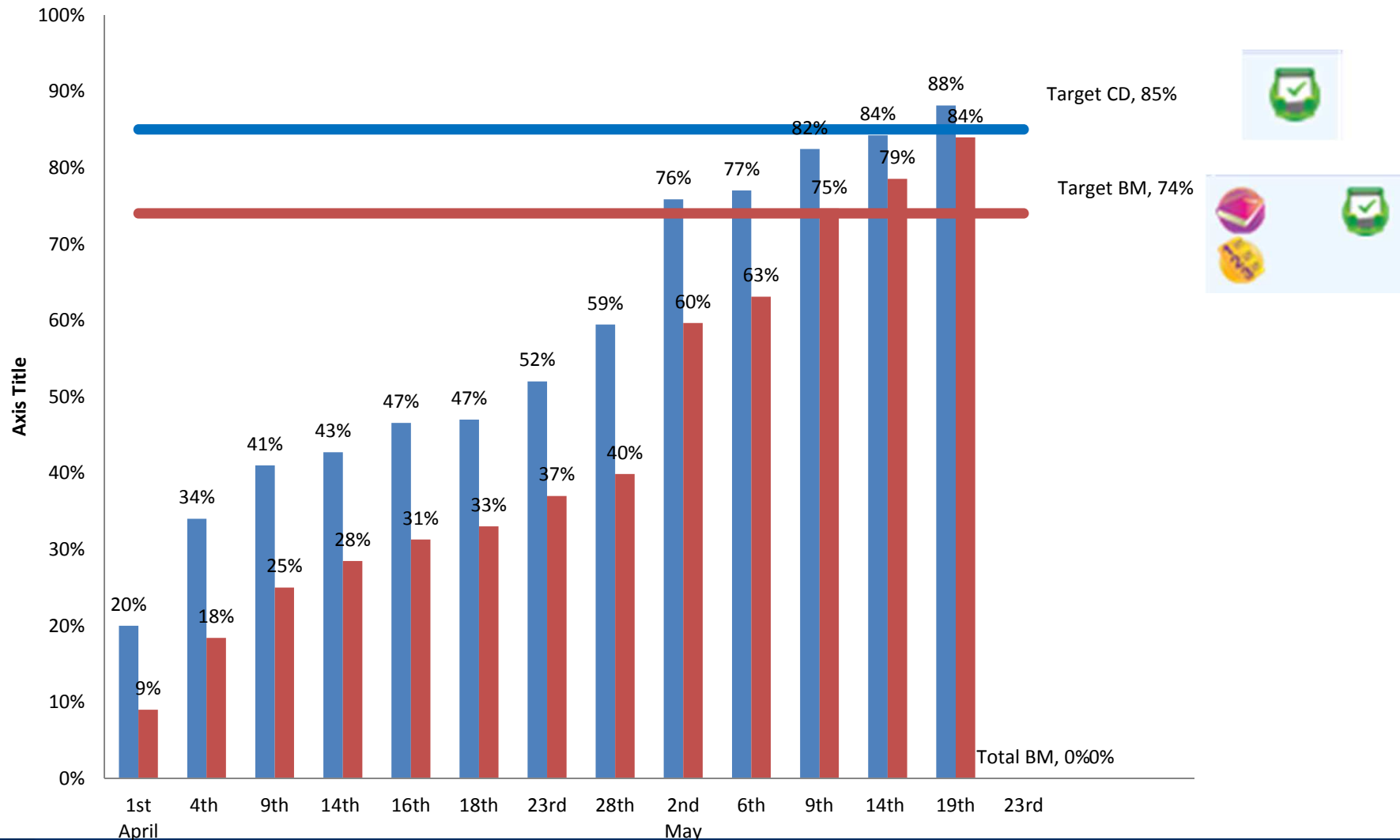


Q28: Using VCC has Helped me to Respond More Effectively to Deteriorating Patients (79%)

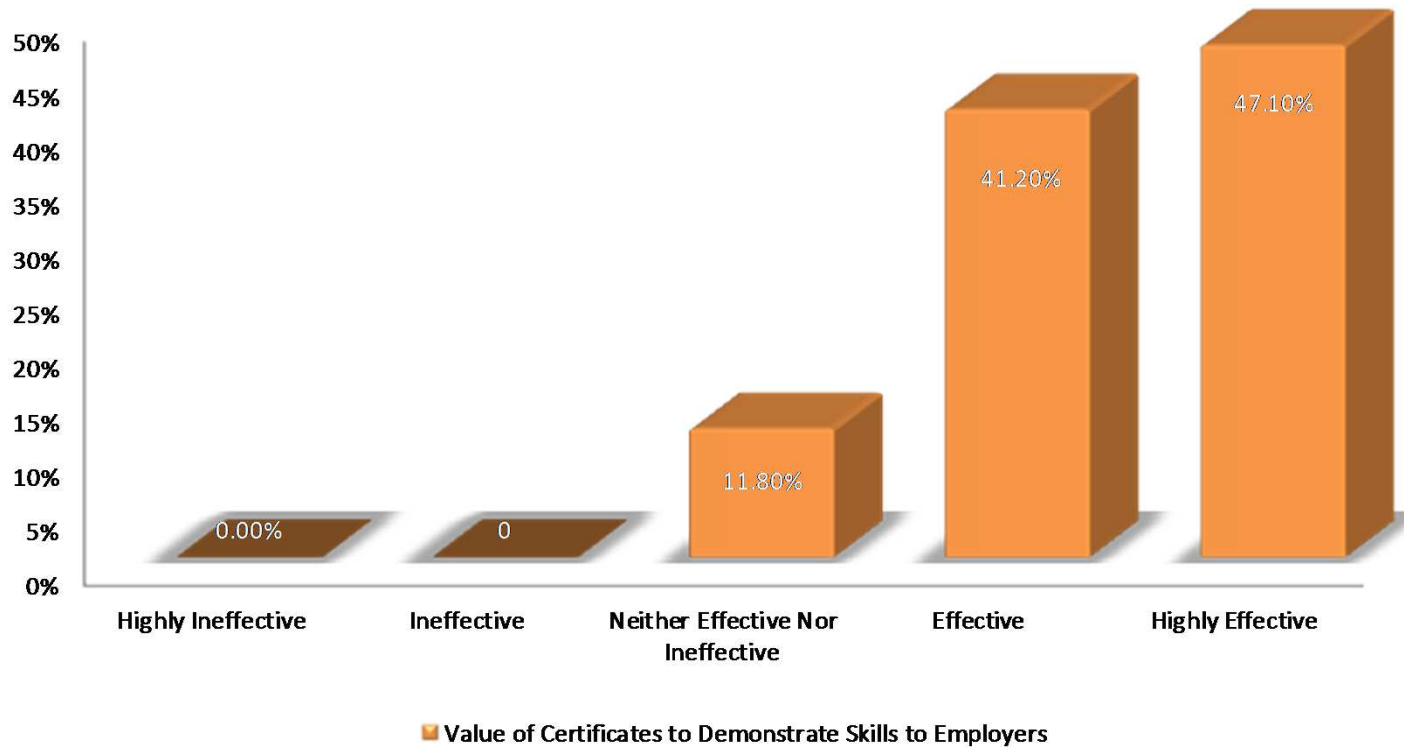


Increasing Learner Engagement with simulations

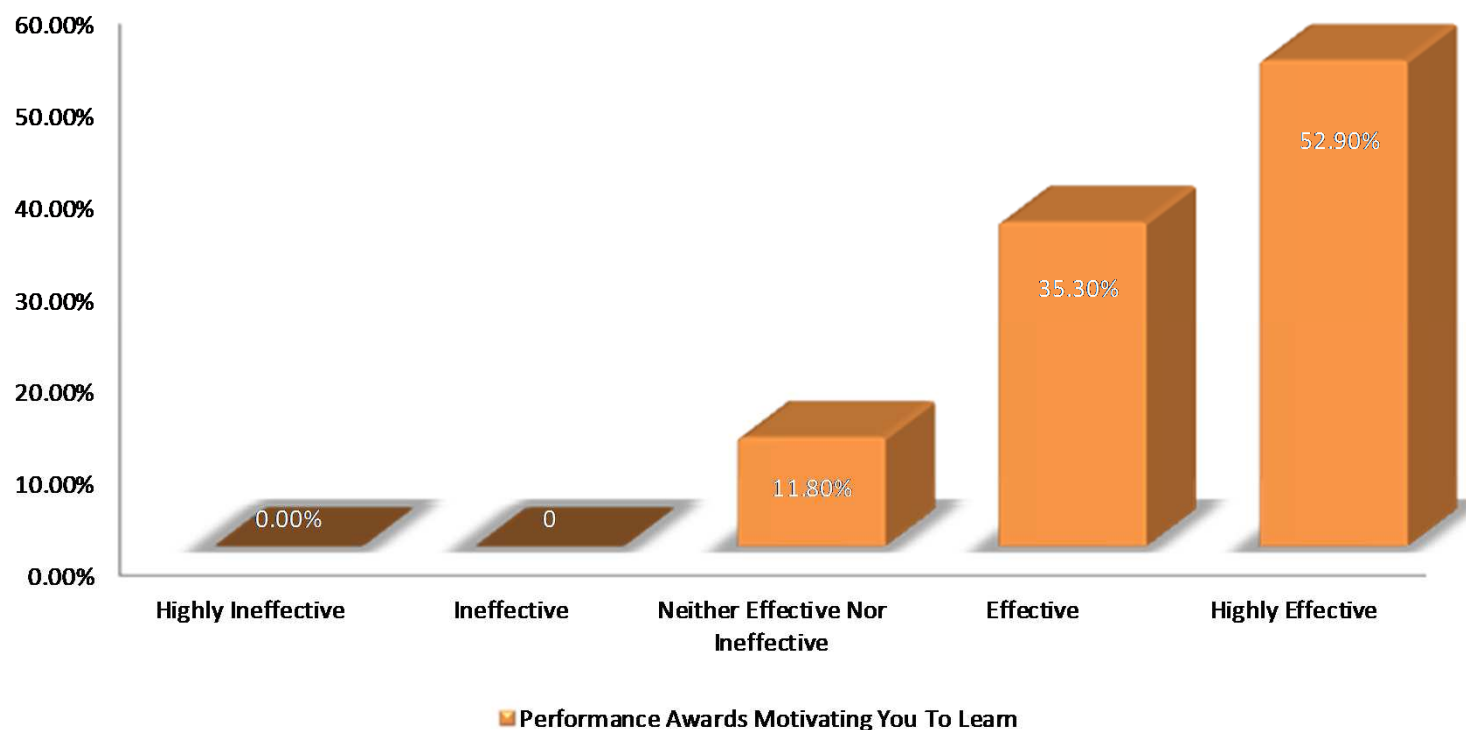
% Achievement of Benchmark and CD awards across whole cohort



Value Placed Upon Certificates: 88% ind. value



Performance Awards Motivating You to Learn – Frequency; 88% ind. Value

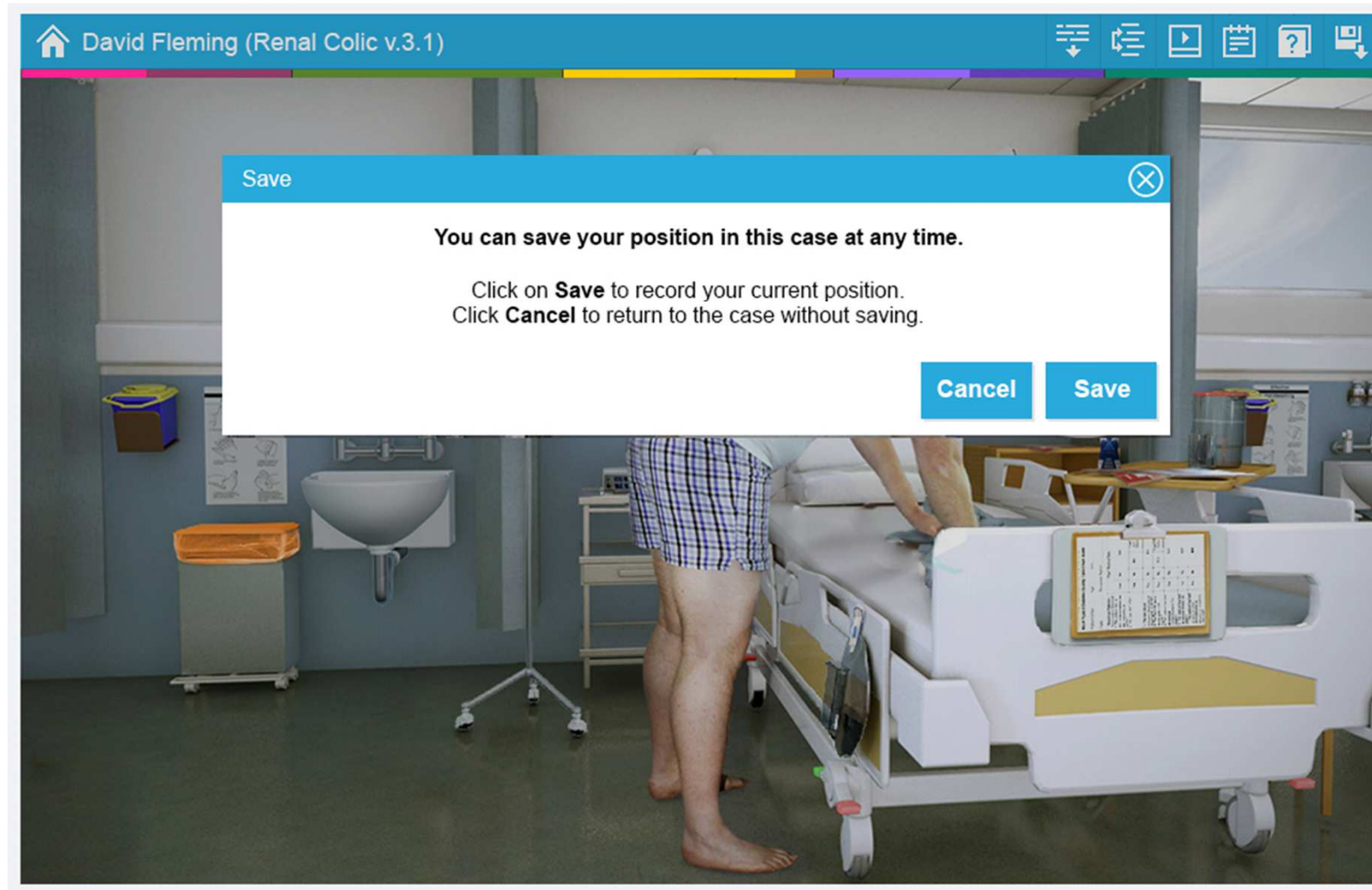


New Simulation and Serious Games platform version 3.0

Mobile Friendly




Save Progress



Meters and Cognitive Schemas

David Fleming (Renal Colic v.3.1)

All resources explored 5/17	Decisions explored 0/28	All decisions explored 39/43	Discrete skills 1/2	Time 10 mins
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Navigation icons: Home, List, Play, Calendar, Help, Download, Back

Vertical sidebar icons: Hand, Head, Lungs, Heart, Wheelchair, Stethoscope, Clipboard, Back

Cognitive Schemas



David Fleming (Renal Colic v.3.1)

Infection control

Wash your hands

Put on an apron

Put on a face mask

Advanced Handling of Resources

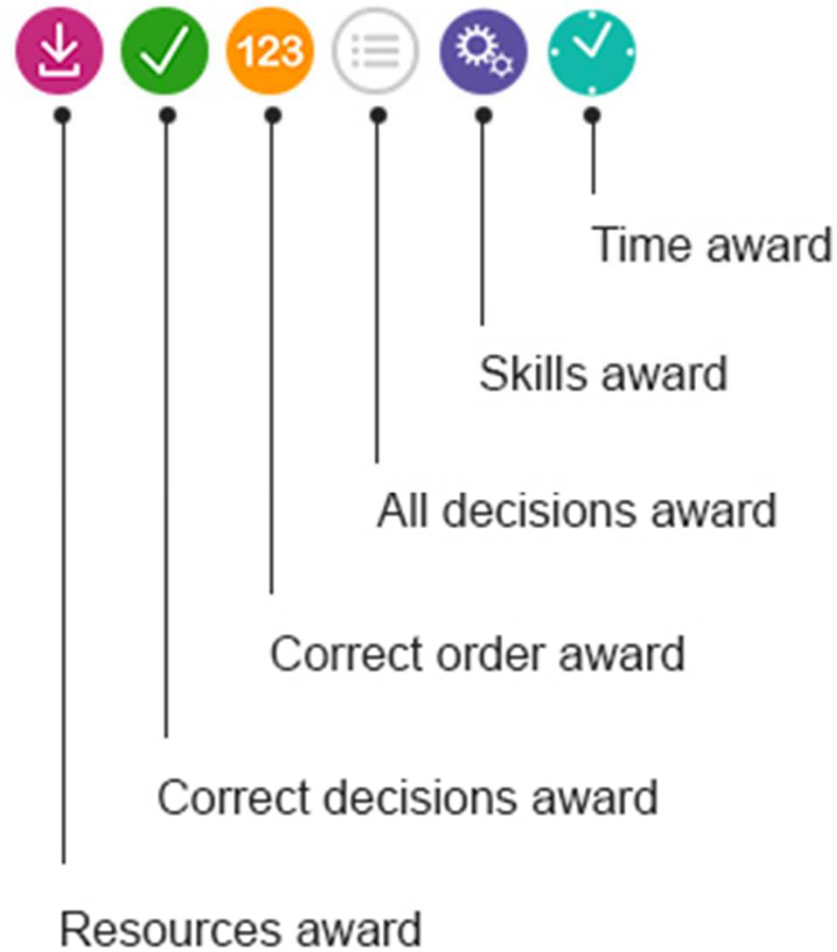
David Fleming (Renal Colic v.3.1)



Resources explored

- | | |
|---------------------------|-------------------------------------|
| Hand Washing Guidelines | <input checked="" type="checkbox"/> |
| MEWS Flow Chart | <input checked="" type="checkbox"/> |
| David's Observation Chart | <input checked="" type="checkbox"/> |
| David's Drug Chart | <input checked="" type="checkbox"/> |
| Fluid Balance Chart | <input type="checkbox"/> |
| Theatre Checklist | <input type="checkbox"/> |


More Awards – Increased Flexibility



Staged Simulations

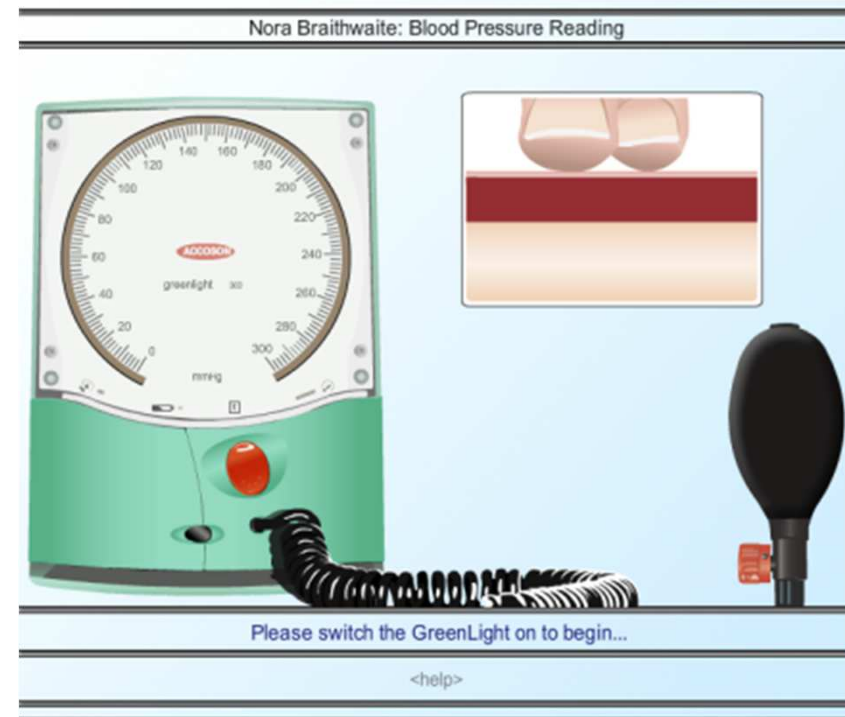
David Fleming (Renal Colic v.3.1)

All resources explored 5/17 Decisions explored 0/28 All decisions explored 39/43 Discrete skills 1/2 Time 10 mins



1. Assessment 2. Interventions 3. Evaluation

- All Mobile Friendly
- To be used separately or integrated with online simulation
- Can be linked with Skills Awards
- Promotes Spiral Curricula



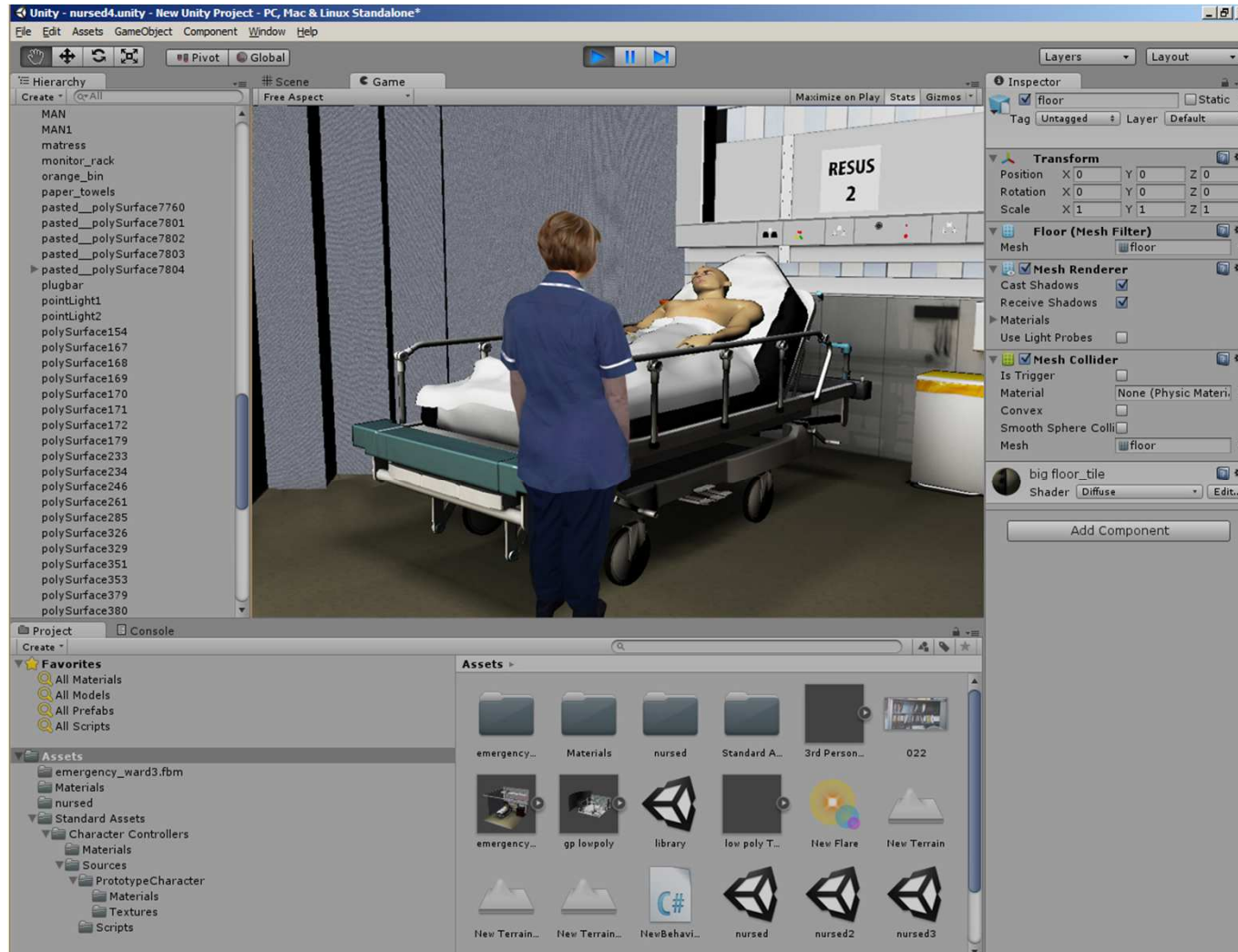
- More immersive Learning
- Opportunity to manipulate environment
- Present multi client stimuli – new skills opportunities
- Plugs into same engine as rich media sims



- Highly Immersive Experience
- Cheap Headsets
- Easy conversion from 3D to VR
- Link with Gesture Control
- Hardware in Beta
- Facebook owned
- Future Gazing?



Unity 3D



- Mobile 3D Scanner
- Creates fully textured colour models
- Reduced Lead time for resource creation
- Models Used in Rich Media and 3D simulations
- Commercial licenses for software



Mobile Light Scanners to reduce 3D Design time



Dedicated Servers to Reduce Render Times



Previous 3D Work Flow

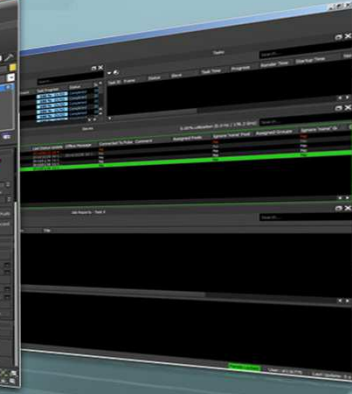
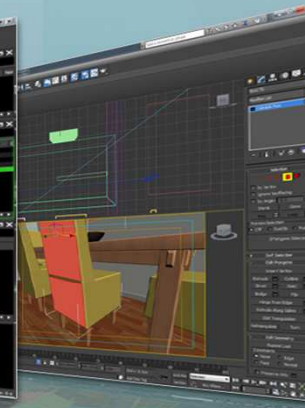
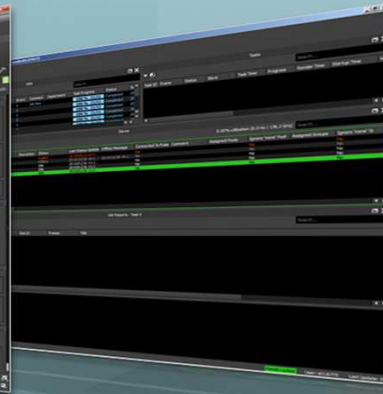
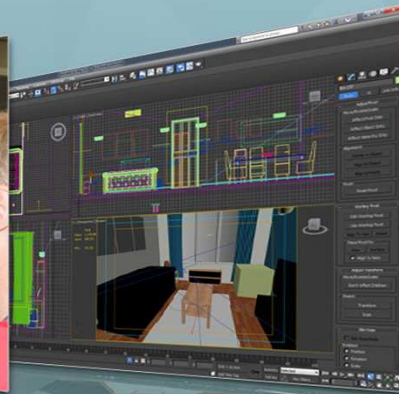


3D Modeling → Render Setup → Render → Wait..... (4 - 8 hours) → View Render



Now

Deadline Render Output



Render Farm
Installed



3D
Modeling



Rendered
via Deadline



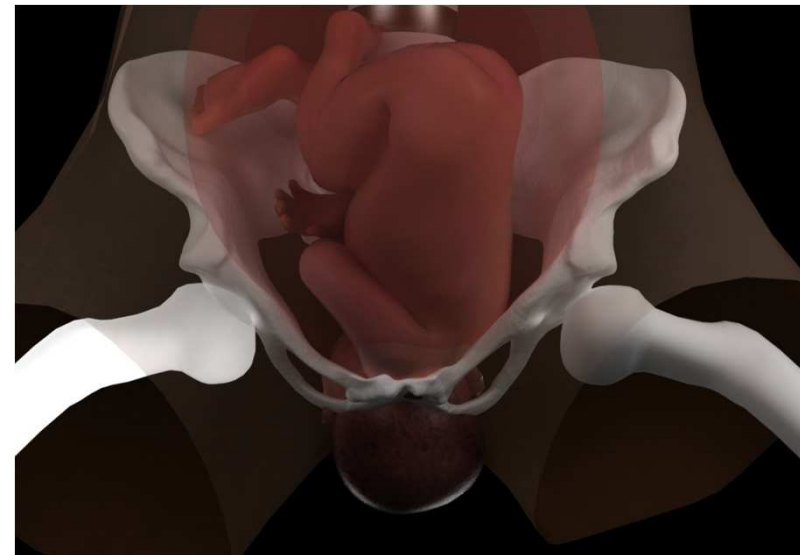
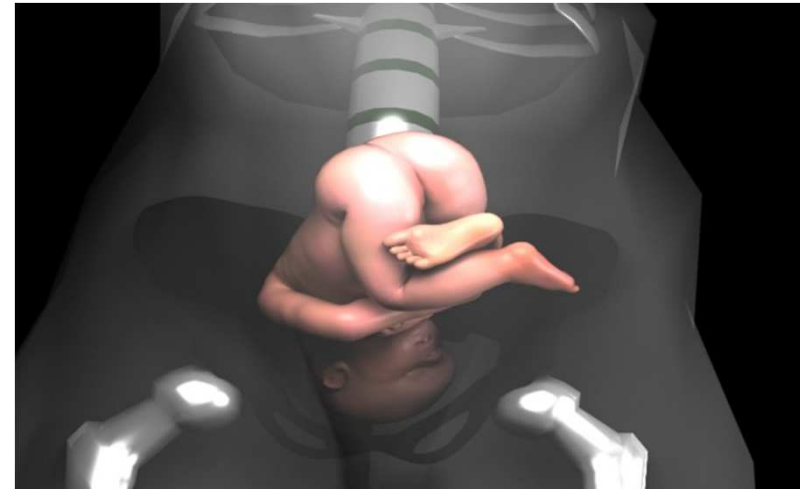
Continue
Modeling



Queue
Next Render



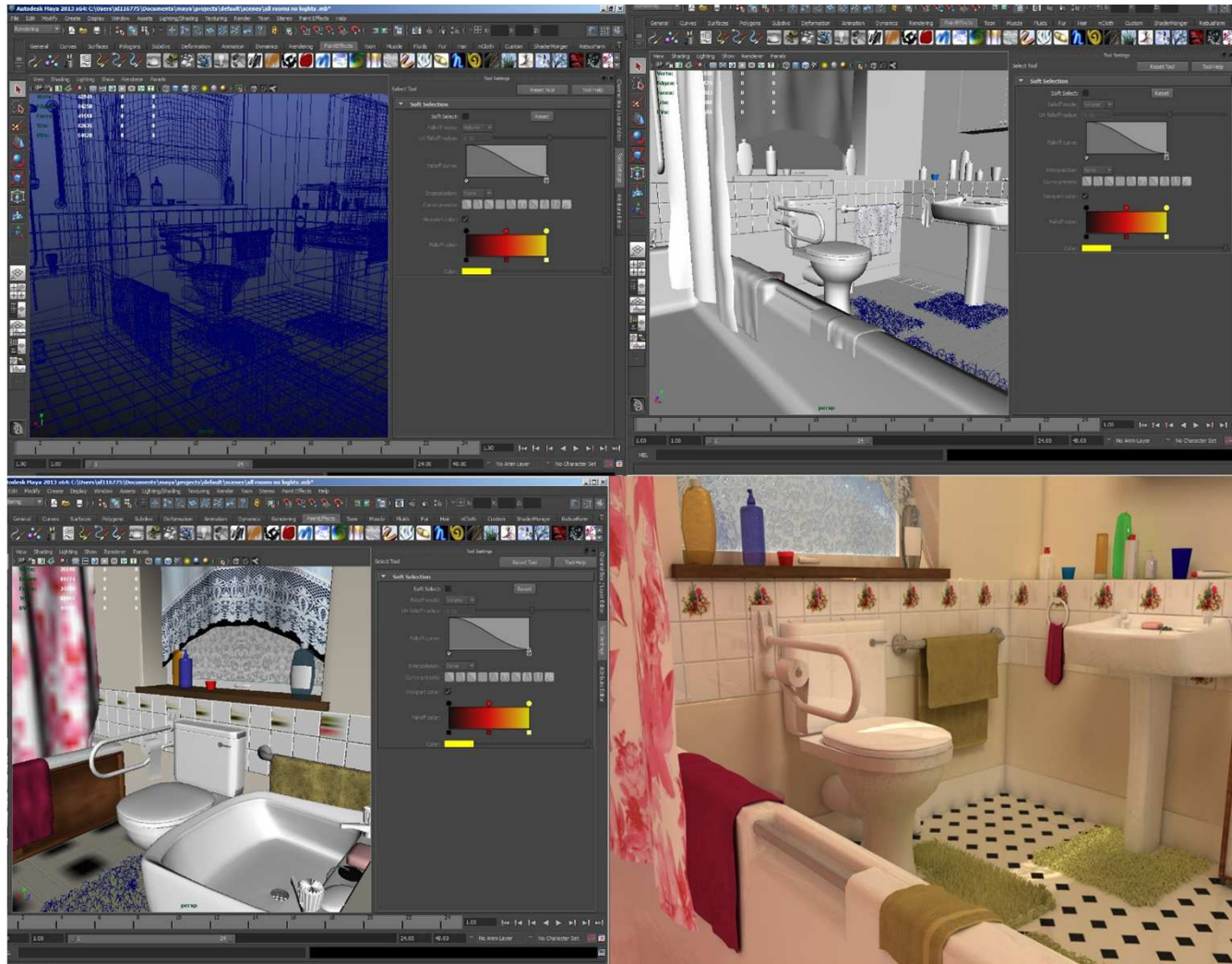
- Baby Sam Project
- Visualisation of potential Complications that Can Occur During Birth



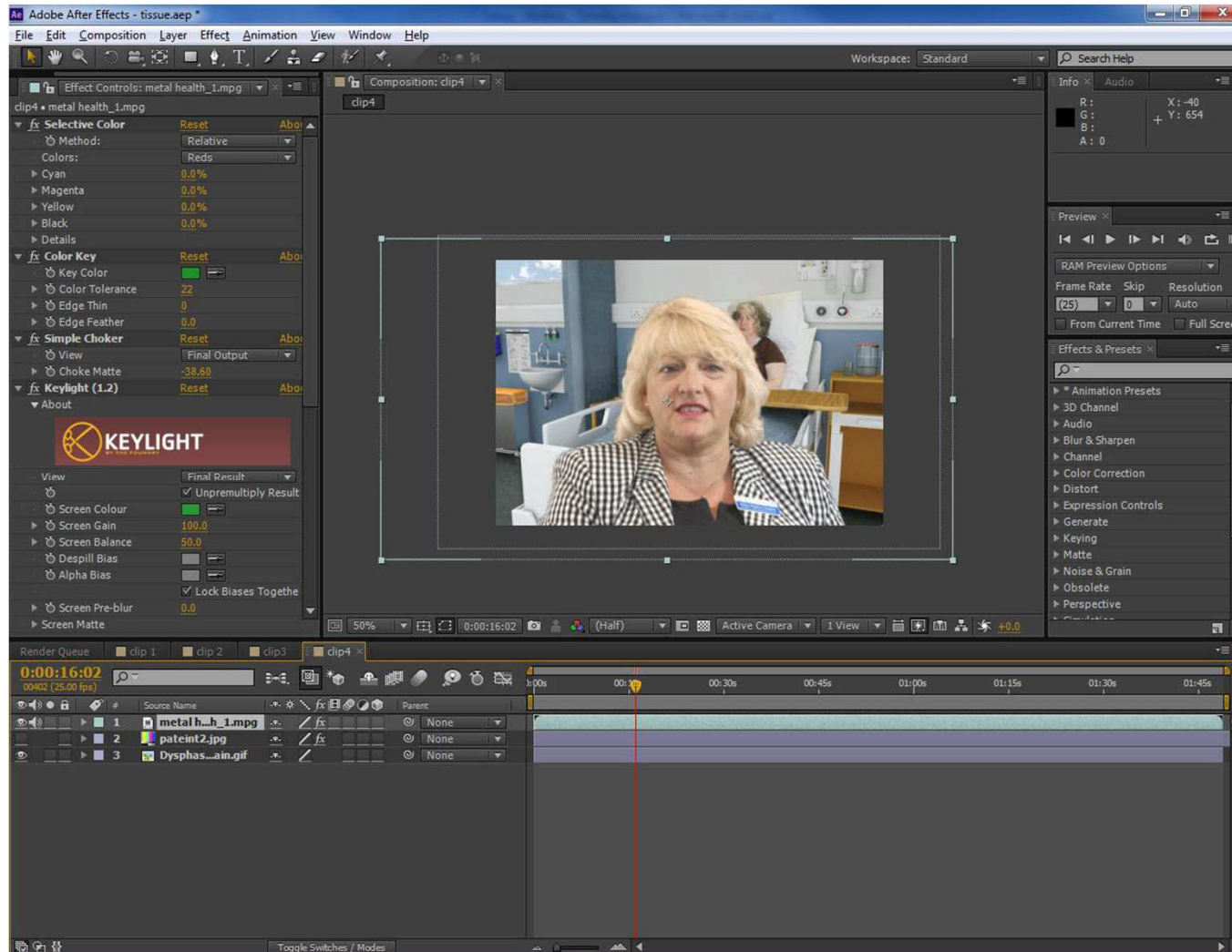
3DS Max



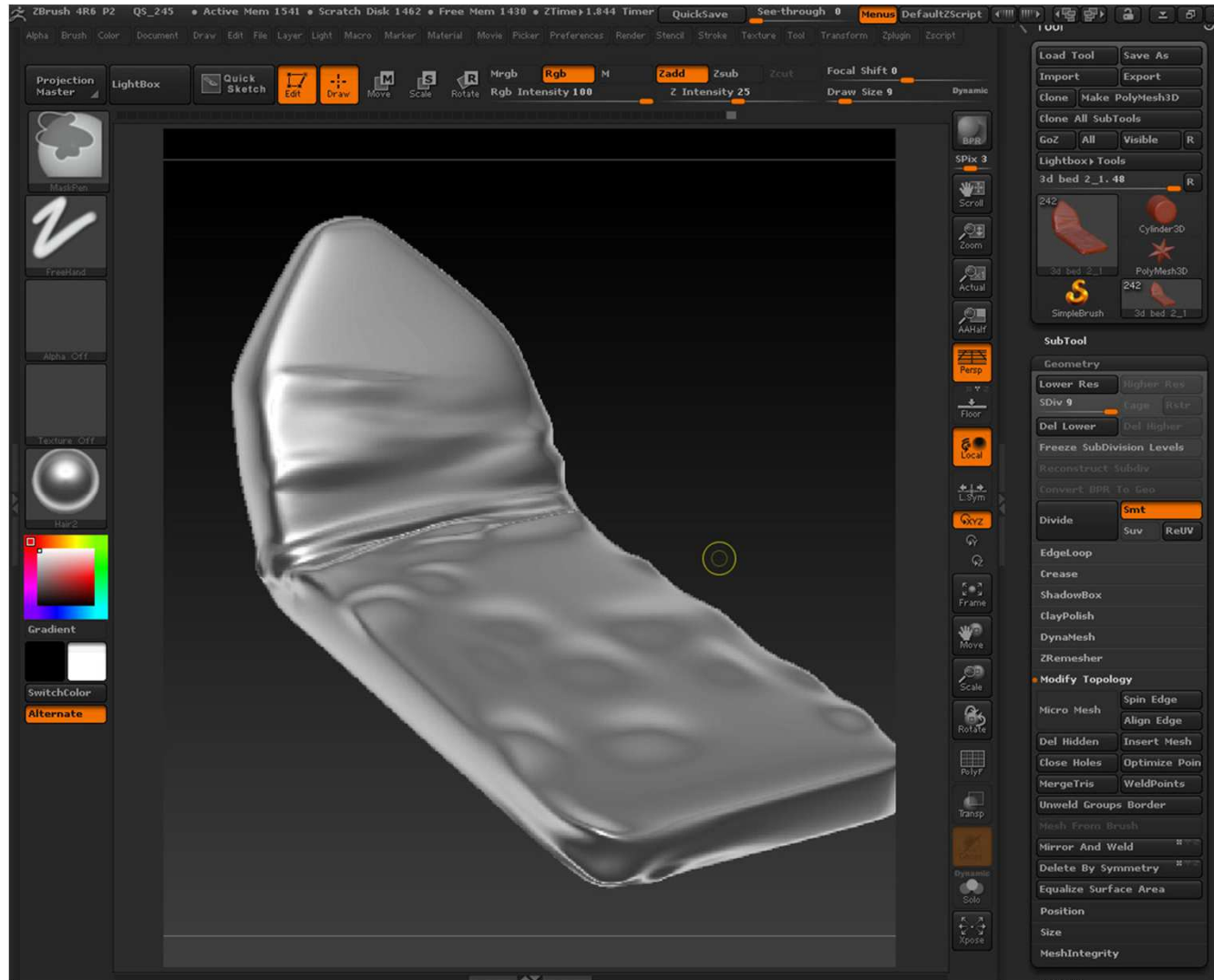
Maya



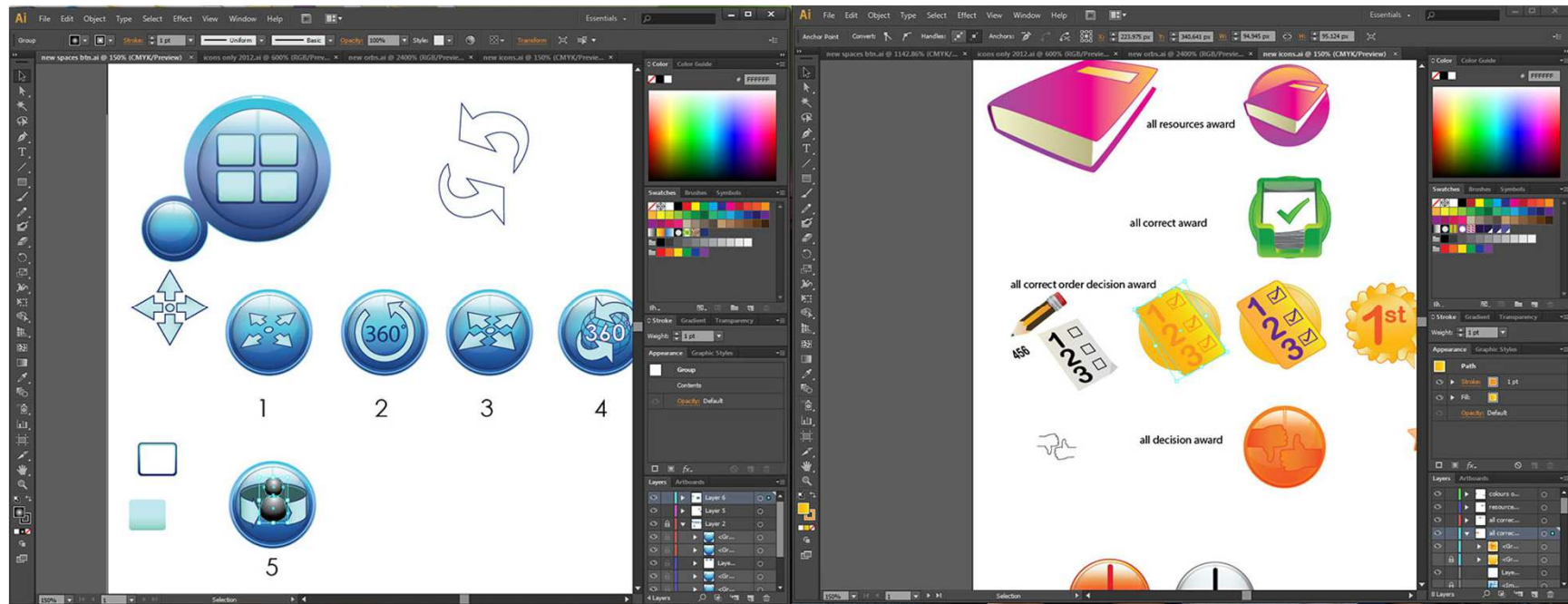
Adobe Premiere



Z-Brush to produce realistic high performance textures



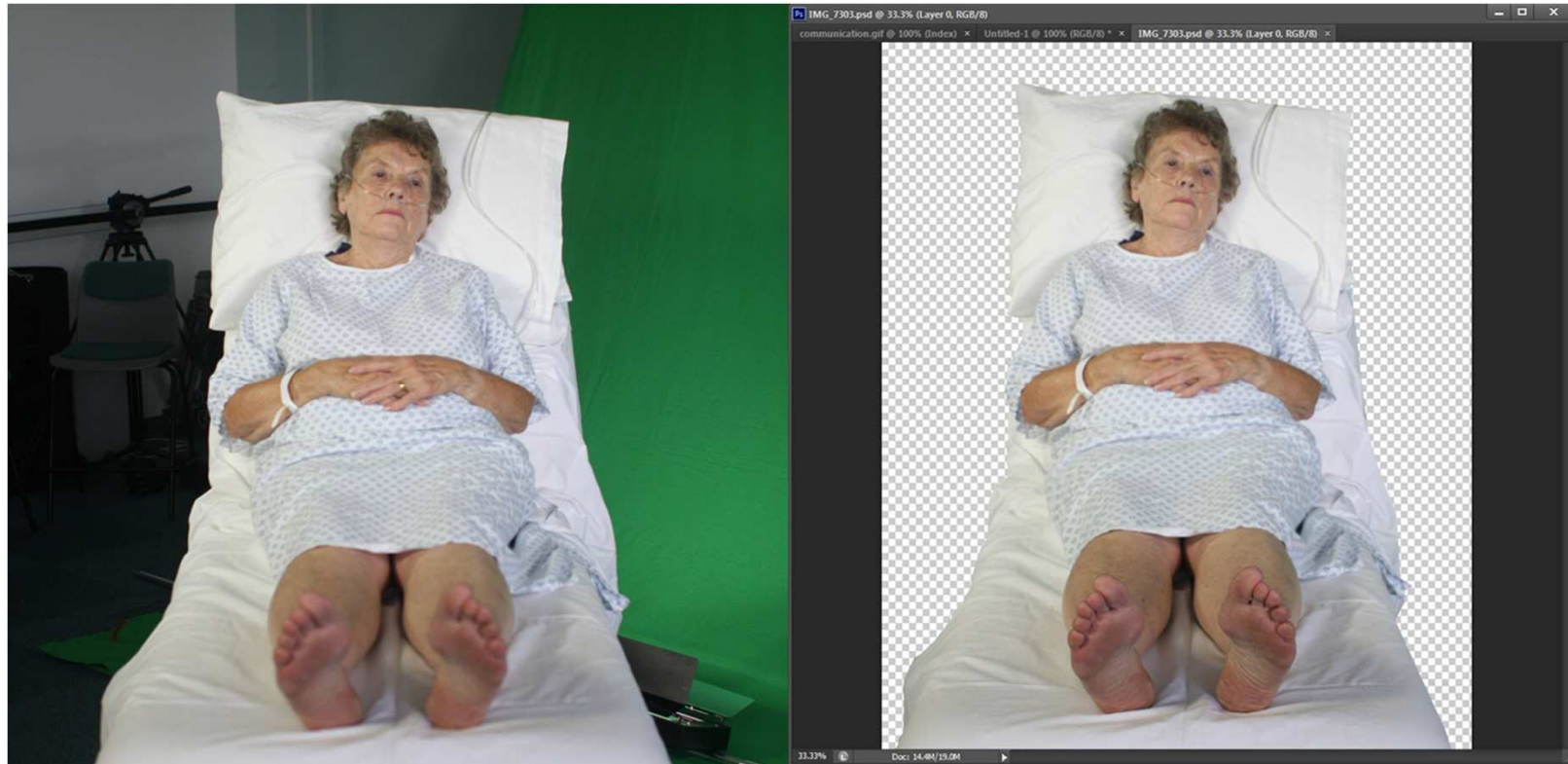
Adobe Illustrator



Green Screen Video Capture



Chromakeying



Mobile Light Scanners to reduce 3D Design time



- Over 70 staff participated
- Several hundred recordings
- Over 20,000 views
- System to be updated and expanded during 2015.

