

Application of **e-case studies** to enhance Outcome based education (OBE)

Prof. Cecilia Li

Professor and Associate Head
Department of Rehabilitation
Sciences

Background – The Need

- Generic learning outcomes vs professional learning outcomes
- New 3+3+4 curriculum
- Problems of integrating all learning outcomes into real case management (essential for professional programme)

Bridging the gap

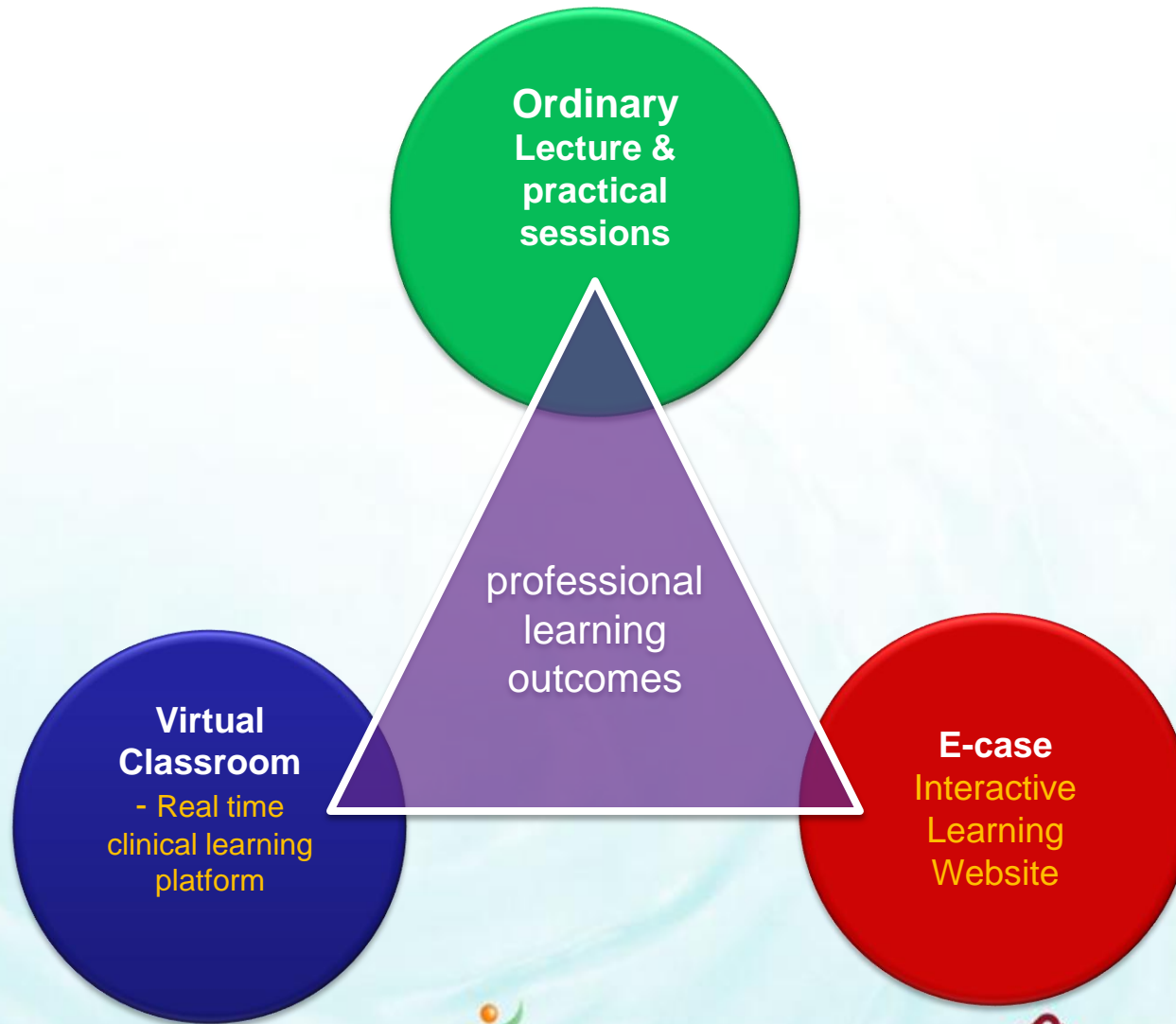
- Clinical education to bridge the gap from classroom to real life practice
- Problem based learning at classes
- Practice in real life situation: students placed in clinical environment
- Clinical educators coaching students

Limitations in Clinical education

Traditional clinical placement

- Can only afford a limited student number in each clinical setting
 - Students are usually assigned to a specific field or area or practice
 - Thus, limited their exposure to diverse case types
-
- The cut-down of local university funding in the clinical placement other than hospital settings
 - Exposure of a variety of case management limited
 - Clinical education vs clinical assessment

Alignment of teaching, learning and assessment of students in clinical case management



Virtual Classroom:

Observing Professionals at work in 'Real World' and 'Real Time'

Why using virtual classroom?

- Communication technologies that increase access to faculty members and clinical therapists would enhance students to share useful resources, and provide opportunities for joint problem solving.
- A virtual clinical classroom in the format of videoconferencing allows shared learning and augments face-to-face contact among students, teaching faculty and the clinical therapists in different locations.
- This teaching-learning format can facilitate implementation of theories into the real clinical situation.
- Tele-learning was launched worldwide, such as in Faculty of Medicine at The University of Calgary and Faculty of Rehabilitation at University of Alberta.
- Instead of requesting a large group of students to travel to a number of clinical settings for clinical observation or demonstration, technology can help to bring the scenes to the classrooms and thus reduce travelling time and distance barriers to learning.

Method

- A tele-conferencing network were set up between the university and hospital (PWH) which enable students to view the demonstration of patient management by the clinical therapists at the hospital.
- Each site (PWH and PolyU) has a technician and an occupational therapist present for support and coordination of the technical running.
- Each semester, 2-3 sessions of virtual clinical classes were scheduled for the Occupational Therapy students in the subject – RS341 OT in Physical Dysfunction
- All sessions last for about 1.5 hours.



Method

- Prior to the classes, the students were given a summary of the patient's medical history, prepared by the clinical therapist.
- During the class, teaching faculty will accompany the students to provide explanations and guidance to students when needed.



Direct communication among therapist, patient and students



- Patient's sharing on course of injury, personal feeling and expectation on rehabilitation

Direct communication among therapist, patient and students



- Illustration on etiology and most up-to-dated conditions by therapist

Direct communication among therapist, patient and students



- Illustration on interventions and clinical management by therapist

Direct communication among therapist, patient and students



- The interaction between the university side and the hospital side.

Difficulties encountered

- Difficulties:
 - Lack of cases and collaboration settings
 - High cost of installation of equipments
 - Technical limitations of the network and the equipment
- Suggested Solutions:
 - Explore different types of settings
 - Consolidation existing networks
 - Providing immediate technical supporting staffing and maintenance of equipment



Evaluation method

Student's feedback

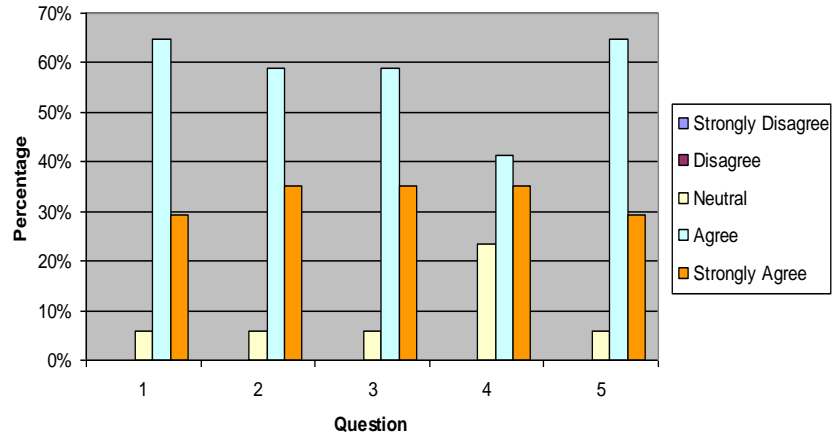
- **A self-completed questionnaire**
 - five-point Likert scale agreement statements & open-ended questions
 - comments on the **format of teaching, degree of interaction**, level of **clinical knowledge, professional skills** and clinical reasoning learned
- **Focus group interview**
 - semi-structured interview
 - Six to eight students
 - to explore further student reflection on this learning method and areas for improvements.

Teaching faculty and clinical therapists' feedback

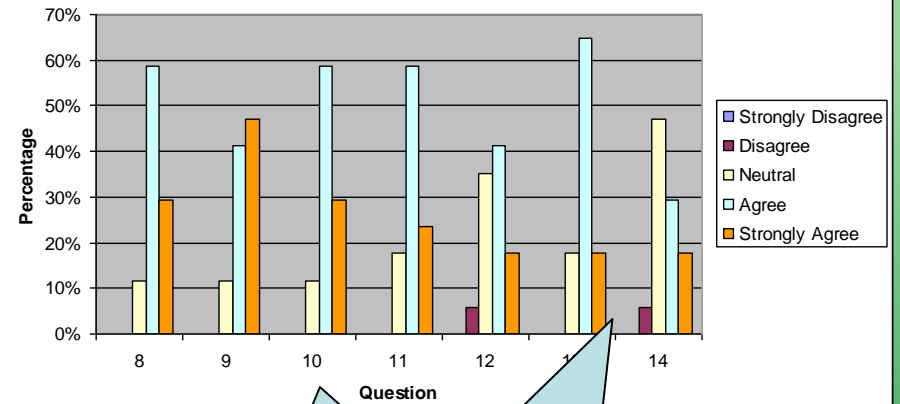
- A self-completed questionnaire
 - satisfaction level of on its time, duration, topic, cost effectiveness, and communication among the student, the clinical therapist and the academic faculty
 - open-ended questions
 - format of teaching, acquisition of clinical knowledge and skills, interactions, quality of audio and visual images, and difficulties in using this format of teaching

Students Questionnaire Results

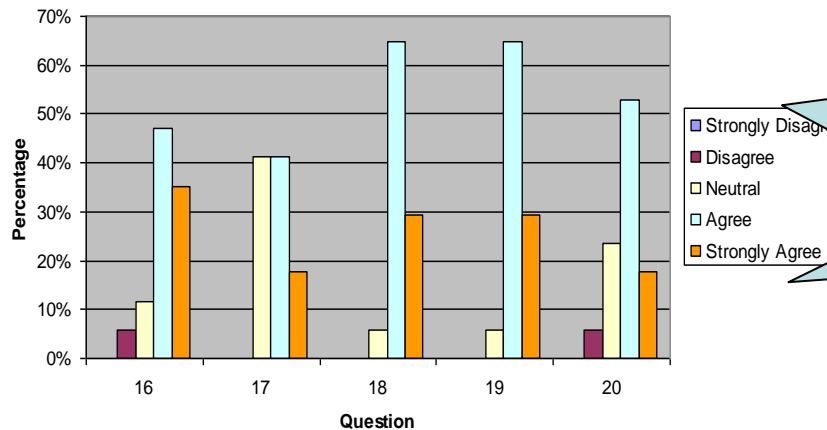
I. Format of teaching



II. Professional knowledge and skills

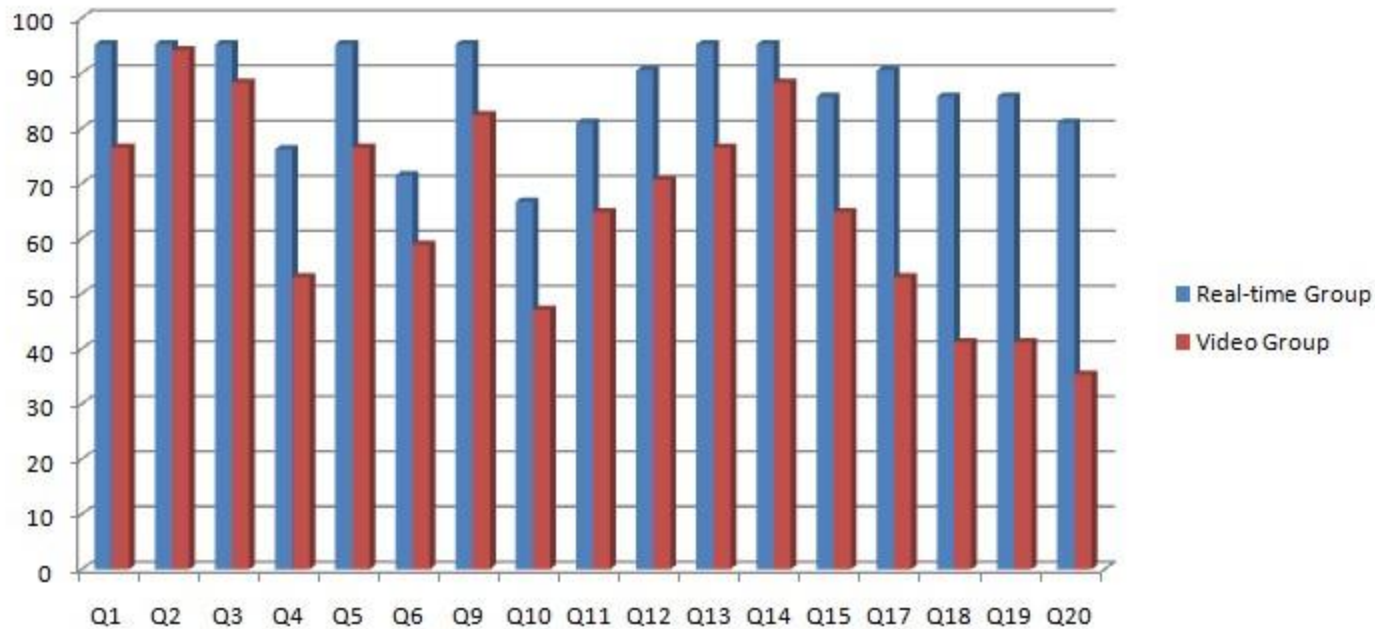


III. Interactions



High overall satisfaction in all aspects!

A comparison of the percentage of students from real-time group with those from video group in their level of satisfaction toward the teaching method



- The overall level of satisfaction of the students from the real time group (teleconference) is **higher than** those from video group (watching video playback), especially in aspect of interactions.

Students' feedbacks

From the questionnaires and focus group interview, in general,

- **Students enjoyed the learning method and found the method was interactive**
- **Teleconference/ Virtual classroom enable students to have direct and instant communication with the case therapist and the patients**
- **It's a cost effective teaching-and-learning method to:-**
 - provided real time case demonstration
 - let students have an idea of the common practice and clinical techniques used in actual clinical setting
 - help the understanding of the symptoms or clinical features for the kind of disabilities
 - improve students' critical thinking skills through the interaction with therapist
 - further enhanced students' professional manners through observing the clinical educator's interaction with patients during the demonstration.
- **Finally, students expressed that the classes would help their preparation of clinical placements, and would be beneficial in learning in case of suspension of placements due to pandemics.**

Professors'/Clinical Educators' Feedbacks

- Both teaching faculty(from the university) and the clinical therapist(from clinical settings) believed that the teaching-and-learning method to be cost effective.
- It was found that teleconference could provide a good communication with students, therapists and academic faculty.
- The method also provided a favorable environment to students, patients and therapists as the patients and therapists could stay in the clinical setting while a large group of students could observe the demonstrations without travelling and would not disturb the clinical setting.

Limitations

- Cases to be identified before the class
- Technical arrangement between hospitals and the university classrooms
- Cross sectional studies of case management (not a longitudinal review)
- Effect of intervention may not be demonstrated
- Inputs from other clinical teachers

Conclusion

- After a few years of experience, the overall satisfaction of the students was maintained with minor variations between items.
- Each year, students expressed higher satisfaction on the usefulness of the learning contents and the interaction with the clinical educator.
- Most technical problems were highly improved each year
- Hence, the overall quality of delivery of contents had been improved.
- The teaching and learning method had been proved its value and it's worth to continue in the coming future.

E-CASE Learning

An Interactive Learning Web Platform

E-Case Learning Web Platform

Platform

Outline

Dev.Team

Feedback

Login

- This platform applies the virtual case study method to enhance students' clinical knowledge in the web platform.
- A variety of cases will be collected from different clinical settings and followed up to at least one year of rehabilitation to provide a comprehensive review of client's management from the acute, subacute to the final rehabilitation stage of management.
- Student therapists will learn clinical reasoning, assessment, and therapy skills through these "virtual cases", with interactive guidance from the Case Manager (academic faculty) at various levels of study (ranged from year one to year three).

YOUR DISPLAY MODE



E-Case Learning Web Platform

Platform

Outline

Dev.Team

Feedback

Login

- In our occupational therapy programme, the protagonist here refers to a practising “clinical consultant or a therapist” and that the case refers to a “client” referred for rehabilitation and settlement in the community.
- Through the development of the case based method, a student therapist is expected to equip himself/herself the full range of knowledge and analytical tools that they should know as a professional OT, such that they could confront with the management of the client.

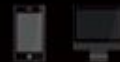


Department of Rehabilitation Sciences



The Hong

YOUR DISPLAY MODE



E-Case Learning Platform



- Subsequent group discussion at the tutorials would be conducted and students would lead the discussion during subject teaching emphasizing the process of occupational therapy intervention (ie. Assessment, treatment, evaluation and follow up).
- Demonstration of professional skills in a real life situation would be incorporated into the e-case based learning

E-Case Learning Web Platform

Platform

Outline

Dev.Team

Feedback

Login

In this project, we selected seven subjects with three types of clinical conditions as listed below, and we would start with building cases with four types of clinical conditions:

Core OT subjects (theory)

RS320 Environmental Issues in OT Practice

RS220 OT Theory and Process I

RS348 OT Theory and Process II

Applied OT subjects (practice)

Musculo-skeletal

RS330 Clinical Sciences in Musculo-skeletal Conditions

RS341 OT for Physical Dysfunction I

Paediatric dysfunction

RS343 OT for Developmental Dysfunction

Psycho-social dysfunction

RS345 OT for Psychosocial Dysfunction

With initial trial in these areas, we intend to use the E-Case method for other clinical conditions commonly handled by occupational therapists, with a view that this will form the main stream of outcome based education in the OT curriculum.



Department of Rehabilitation Sciences



The Hong Kong Polytechnic University

YOUR DISPLAY MODE



“All Stories”

featuring all clinical cases for selection

E Case Learning Platform

http://www3.rs.polyu.edu.hk/caseman/

LOGOUT TUTOR CHUNG

Search...

E CASE LEARNING
My Clinical Learning Platform

All Stories

Clinical Case Files

"Every person is unique"

"I wanna play with other children"
~ Aliu ~

a 7 year-old girl who had burn injury 3 years ago resulting severe deformities over neck and bilateral hands...

Read my story

A Walk Through

E CASE LEARNING
My Clinical Learning Platform

All Stories

Clinical Case Files

"Every person is unique"

"Focus on your capabilities but not weaknesses"
~ Mr. Kwon ~

Mr. Kwon was a 50 year-old man, who was diagnosed to have CVA with right hemiplegia 8 years ago.

Read my story

A Walk Through

E CASE LEARNING
My Clinical Learning Platform

All Stories

Clinical Case Files

"Every person is unique"

"Life is no boundary"
~ Mr. Leung ~

Mr. Leung, a 48 years old man who suffered from CP, CK complete tetraplegia for more than 20 years, everything changed ever since...

Read my story

A Walk Through

E CASE LEARNING
My Clinical Learning Platform

All Stories

Clinical Case Files

"Every person is unique"

"Doing homework could be fun"
~ CK ~

CK, a P4 student attending mainstream school was diagnosed with moderate degree of Dyslexia when he was in P.1.

Read my story

A Walk Through

“My story”

Video clips illustrating patients' entire course rehabilitation

The screenshot shows a web browser window displaying the 'E Case Learning Platform'. The address bar shows the URL <http://www3.rs.polyu.edu.hk/caseman/cases/case-01/my-story-01.php>. The page features a navigation menu with buttons for 'ALL Stories', 'My Story', 'Rehab. Journey', 'Interactive Zone', and 'Tutorial'. A yellow arrow points to the 'My Story' button. The main content area is titled 'File 01. Burns Injuries' and includes a quote: "Ailiu, a 7-year-old girl who was born in mainland. Three years ago she was caught in a fire and was found to have third-degree burns over her body. In 2009, she was brought to Hong Kong for further management. "

On the left side of the page, there are two vertical buttons: 'QUICK EXPLORER' and 'DISPLAY MODE'. The main content area features a large image of a young girl, Ailiu, with the text: "I wanna play with other children" ~ Ailiu ~. Below this image is the link '01. My full story'. To the right of the main image are six smaller thumbnail images, each with a caption: '01 - From Mainland to Hong Kong', '02 - How burn impacted on me', '03 - Occupational therapy and me', '04 - Pressure garment - my new friend', '05 - Living with scars', and '06 - My way ahead'.

“Rehab. Journey”

Systematic description to unfold every aspect of rehabilitation

The screenshot displays the 'E Case Learning Platform' interface. The browser address bar shows the URL: <http://www3.rs.polyu.edu.hk/caseman/cases/case-01/journey-pc-01.php#2>. The platform logo 'E CASE LEARNING My Clinical Learning Platform' is visible. A navigation menu includes 'ALL Stories', 'My Story', 'Rehab. Journey' (highlighted with a yellow arrow), 'Interactive Zone', and 'Tutorial'. Below the menu, a sub-menu shows 'Introduction', 'Performance Components' (selected), 'Performance Areas', 'Identified Problems', 'Intervention', and 'Reference'. A secondary menu lists 'WOUND', 'SCAR' (selected), 'RANGE', 'HAND', 'DEFORMITY', 'ORAL-MOTOR', and 'PSYCHOLOGICAL CONDITIONS'. The main content area is titled 'Hypertrophic Scars on 2 weeks post-surgery over neck and both hands'. The text describes 'Extensive scar formation' and its effects, and lists 'trivia' questions. On the right, there are six image thumbnails: 'Mature scar', 'Immature scar', 'Hypertrophic scars over abdominal skins', 'Skin itchiness', 'Ultrasound assessment', and 'Ultrasound picture example'. A 'QUICK EXPLORER' sidebar is on the left, and a 'DISPLAY MODE' button is at the bottom left.

Introduction Performance Components Performance Areas Identified Problems Intervention Reference

WOUND SCAR RANGE HAND DEFORMITY ORAL-MOTOR PSYCHOLOGICAL CONDITIONS

Hypertrophic Scars

on 2 weeks post-surgery over neck and both hands

Extensive scar formation occurred on Ailiu due to improper handling of wounds after the injury. Those are called hypertrophic scar and may lead to cosmetic disturbance when the scars are developed on exposed area like the face or limbs. Further functional disruption may occur when contracture develops owing to the scar formed over joints.

Hypertrophic scars can be classified into immature or mature ones. Immature scars are in higher blood-flow than normal skin (>3.4 times) that higher metabolism rate was assumed. Abnormal sensation like pain and itchiness were common in immature scar as the nerve endings within the scar heal, and Ailiu always complains of itchiness over scar formed after surgery. In mature scar sweat glands and hair follicles are absent and perspiration of the body would be affected.

In assessing the scar condition, Vancouver Burn Scar Scale and some others more advanced technology (e.g. TUPUS and ultrasonic machine) are used.

trivia:

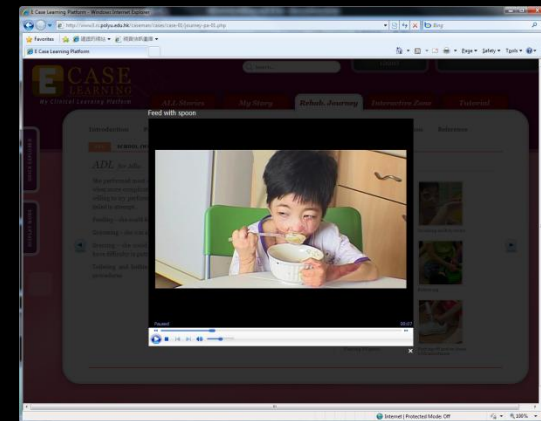
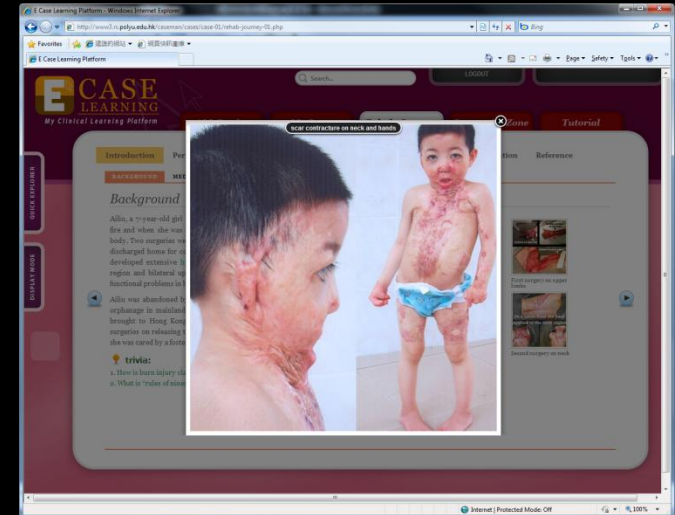
1. What is the other type of abnormal scar formation?
2. What are the parameters that necessary for therapists to assess?
3. How long is the period for a hypertrophic scar to become mature?
4. When is the golden period to apply pressure therapy?

Mature scar Immature scar

Hypertrophic scars over abdominal skins Skin itchiness

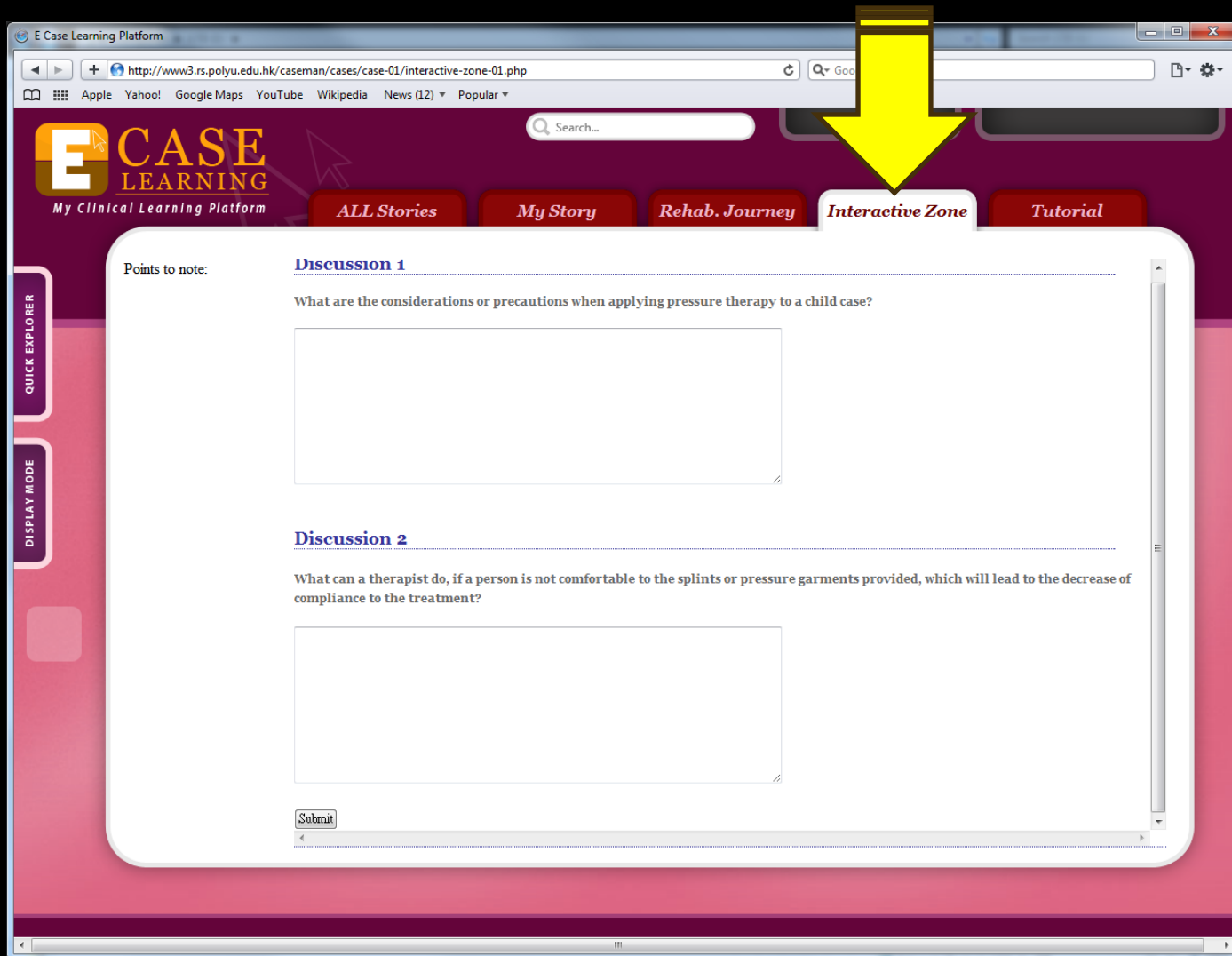
Ultrasound assessment Ultrasound picture example

“Rich Media in terms of images and videos”



“Interactive Zone”

A reflection of student’s learning
in knowledge and clinical reasoning



The screenshot displays a web browser window titled "E Case Learning Platform" with the URL <http://www3.rs.polyu.edu.hk/caseman/cases/case-01/interactive-zone-01.php>. The page features a purple header with the "E CASE LEARNING My Clinical Learning Platform" logo and a navigation menu with buttons for "ALL Stories", "My Story", "Rehab. Journey", "Interactive Zone", and "Tutorial". A large yellow arrow points to the "Interactive Zone" button. On the left side, there are vertical buttons for "QUICK EXPLORER" and "DISPLAY MODE". The main content area is titled "Points to note:" and contains two discussion questions:

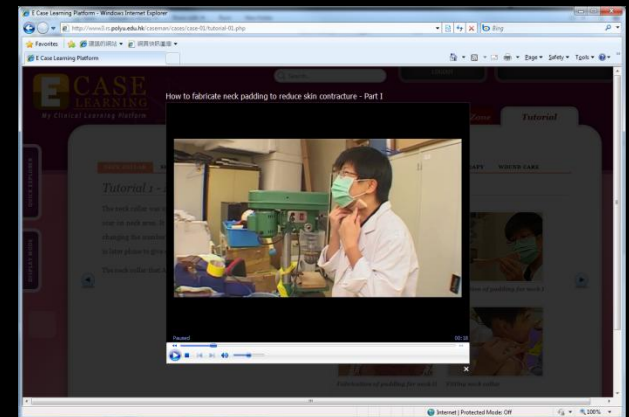
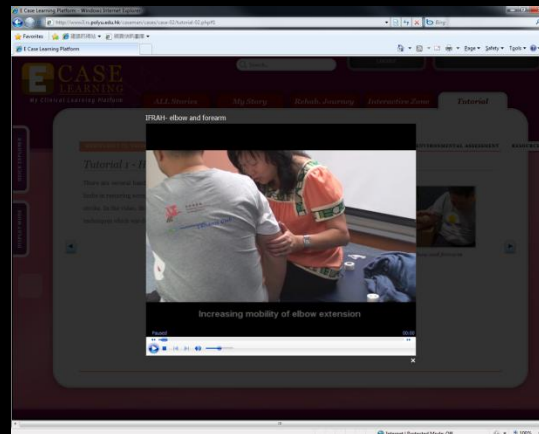
Discussion 1
What are the considerations or precautions when applying pressure therapy to a child case?

Discussion 2
What can a therapist do, if a person is not comfortable to the splints or pressure garments provided, which will lead to the decrease of compliance to the treatment?

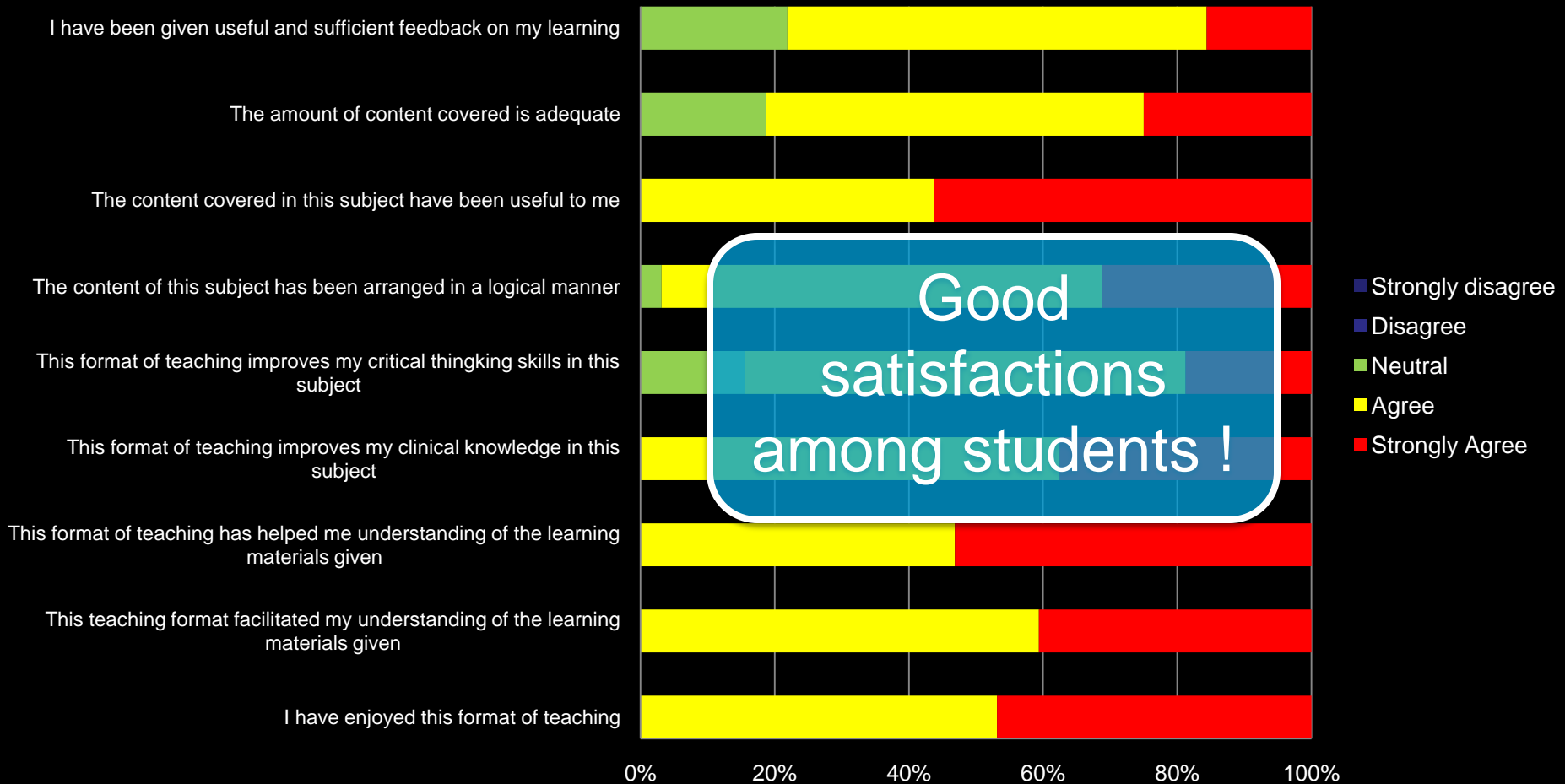
A "Submit" button is located at the bottom of the content area.

“Video Tutorial”

To learn the most practical clinical skills



Feedback from students



Feedback from students

- Motivated to go through the e-cases, more ready to respond to the questions and interactive discussion
- Less stress (from clinical education)
- Enjoyed the rehab. Journey that they can follow through the case
- Able to integrate learning from different subjects to case management
- Inputs from different clinicians (different views)

Challenges

1. Time and resources consuming
2. Student's participation
3. Learning progress tracking
4. Outcome evaluation



1. At the beginning only
2. Integrate to overall assessment weightings
3. Interactive learning components (e.g. quiz) added
4. Ongoing feedback

Up Next...



The way forward:
“**Mobile E-Cases**”

Mobile E-case learning

*“In its earliest forms, knowledge and learning came from lectures, a linear format from an **authoritative 'sage-on-the-stage'** with no pause, fast forward or rewind, and from books, substantial and linear but segmented and randomly accessed.*

*“**Educational provision is built around time and place: the timetable, hand-in dates, the classroom, the year-group, the deadline and the laboratory...** the education system, especially the formal university system, is getting out of step with how many students perceive the world they live in and... changes are needed to keep universities aligned to a changed and mobile society.”*

Traxler, John (2009) *Students and mobile devices: choosing which dream*. In: ALT-C 2009 “In dreams begins responsibility”

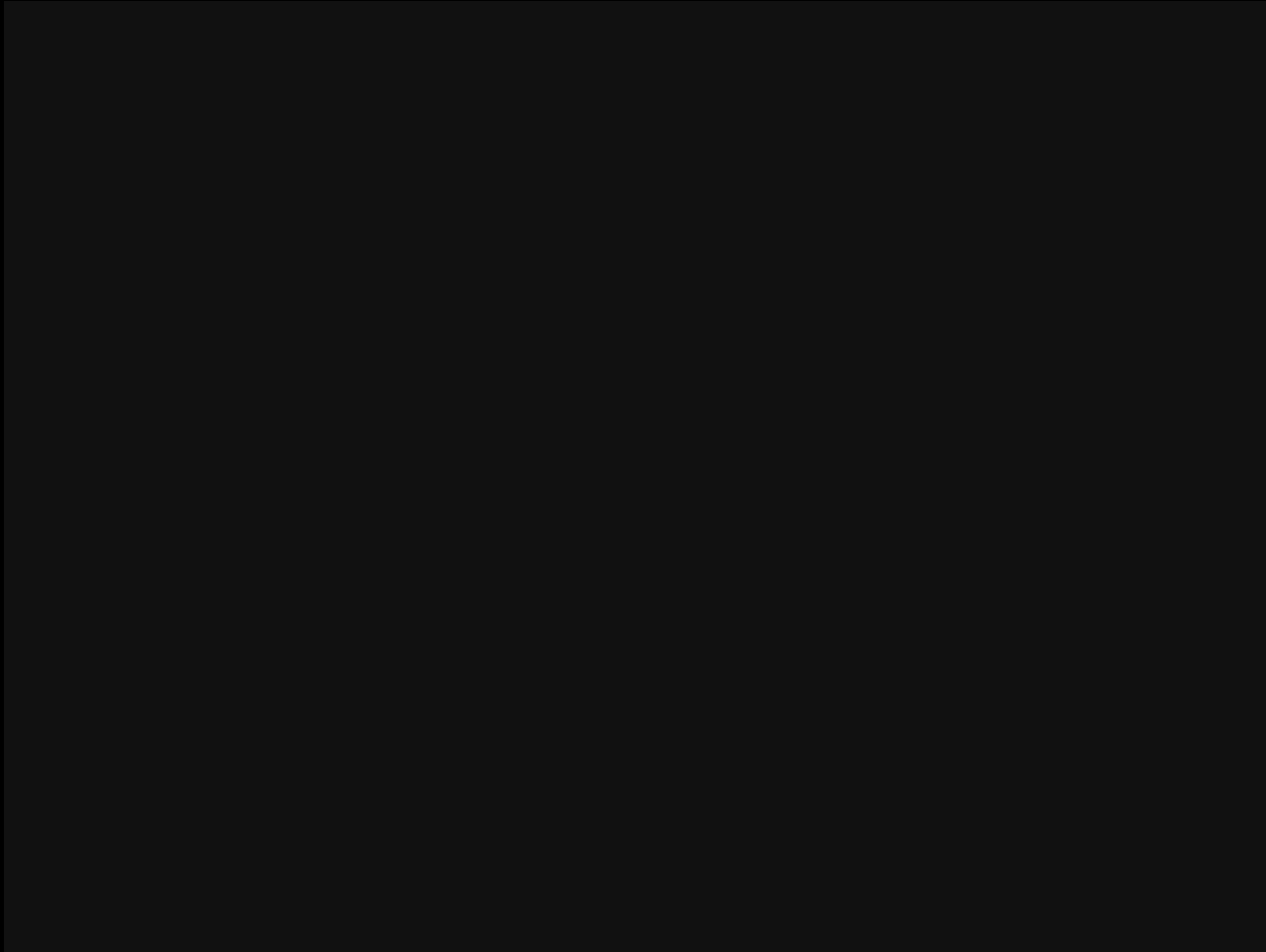


“E-Case **Mobile**”

A DEMO



“E-Case **Mobile**”



Some thoughts on mobile e-learning

- *“Interacting with mobile technologies is different and **is woven into all the times and places of students’ lives.**”*
- *Mobile phones have created **“simultaneity of place”**: a physical space and a virtual space of conversational interaction, and an extension of physical space, through the creation and juxtaposition of a mobile social space.”*
- *“Students no longer need to engage with information and discussion at the expense of real life but can **do so as part of real life** as they move about the world, using their own devices to connect them to people and ideas...”*

Traxler, John (2009) Students and mobile devices: choosing which dream. In: ALT-C 2009 “In dreams begins responsibility”

Project Team

- **Project coordinator:**
 - **Prof. Cecilia Li**
 - Professor & Associate Head, Dept of RS
 - E-mail: rscecili@inet.polyu.edu.hk
- **Co-investigators:**
 - Mr. Tang Kin Chung
 - Clinical instructor
 - Dr. Karen Liu
 - Assistant Professor, Dept of RS
 - Ms. Rebecca Wong
 - Clinical Associate, Dept of RS

The End

Thank you!