

THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Scheme 3: eLearning Pedagogy Research

Interim Report (2015-16)

Report due 31 July 2016.

Please return by email to mmcd@cuhk.edu.hk

PART I

Project title: Evaluation of the effectiveness of eLearning

Principal supervisor: Wai Kit CHU

Department / Unit: Department of Ophthalmology and Visual Sciences

Project duration: From February 2016 to January 2017

Date report submitted: 18 July 2016

1. Project objectives

Is the project on track to meet its objectives? The two objectives remain unchanged. Examination results of students using eLearning will still be analyzed and the student experience of using eLearning will still be collected.

Have the objectives been changed as a result of the experience of working on your MMCDG project? There is no change in the objectives.

2. Progress on process, outcomes or deliverables

What have been accomplished so far? We plan to film eight videos demonstrating basic technique of eye examinations. So far five videos have been finished filming and two of them have been edited. Here is one example:
<https://drive.google.com/open?id=0B3g5qh2OY8tUMWVidGlhSF84SFU>

Have any obstacles been encountered and what are the remaining tasks to be finished? No obstacles have been encountered. We will finish the remaining videos and upload them online. Students will view these videos online in the next semester.

Is the project still on time for completion (which includes preparation of the final report) on or before the grant expiry date? I expect to finish this project on-time.

Provide a listing of project outputs to date.

Videos that we have filmed so far:

1. Pupil examinations and RAPD
2. Visual field by confrontation
3. Slit-lamp examination for anterior segment

4. Demonstration of applanation and Gonioscopy
5. Thyroid eye assessment

Please see detailed descriptions of these videos at the end of this report.

3. Evaluation Plan

Have you altered your evaluation plans? My evaluation plans remain unchanged.

Does your evaluation indicate that you have achieved your objectives? We are still waiting for the exam results from the medical students. Therefore there is no indication at the moment.

4. Dissemination Activities (reports, websites, video links, products, etc.)

Provide a listing of dissemination activities to date.

Here are the two video links we have got so far:

1. <https://drive.google.com/open?id=0B3g5qh2OY8tUMWVidGlhSF84SFU>
2. <https://drive.google.com/file/d/0B3g5qh2OY8tUeTZOTTVRQ0VtcU0/view>

Video Proposal

Aim: To demonstrate the ophthalmological clinical skills via several short videos by our Faculty staff.

Format: short videos about 5 mins. Two parts: 1) several PPT slides teaching 2) clinical demonstrations

The videos will be uploaded to CUHK Faculty's website. Medical students will be required to watch the videos at home before the commencement of the ophthalmology rotation.

(Flipped Classroom Teaching)

Topics	Durations	Proposed Teaching Staff
Visual Acuity test	5 mins	Dr. Danny Ng
Pupil examinations and RAPD	5 mins	Dr. Vishal Jhanji
Visual field by confrontation	5 mins	Prof Chris Leung / Dr. Carmen Chan
Extra-ocular examination and cover test	5 mins	Dr. Jason YAM
Slit-lamp examination for anterior segment	5 mins	Dr. Alvin Young
Direct Ophthalmoscopy	5 mins	Dr. Tommy Chan
Demonstration of applanation and Gonioscopy	5 mins	Prof Clement Tham / Dr. Poemen Chan
Demonstration of BIO and 90 D for posterior segment	5 mins	Dr. Marten Brelen
Thyroid eye assessment	5 mins	Dr. Kelvin Chong

Suggested Examination Flow & Items

Essential

Visual Acuity

Unaided VA

Aided VA

Pinhole VA

VA for near (Handheld Snellen)

1. (Slides) How to quantify/grade/measure/interpret visual acuity
 - From No Light Perception -> Light Perception -> Hand Motion/Movement -> Counting Finger -> fractions: what does numerator / denominator mean

2. Demonstrate the measuring distance for both Distance & Near
 - *Instrument to prepare: Snellen Chart for near & distance/ ward or clinic setting*
 - Person being examined should be properly seated at 6m/20ft or 3m/10ft if mirror used
 - Show the distance that one should hold the hand-held Snellen Chart to examine near VA
 - Remind students that when measuring near VA, one should bear in mind the age of patient and he/she may need reading glasses for the lack of/reduced accommodation

3. Measure each eye separately (some students measure visual acuity without covering either eye)
 - *Instrument required: occluder / patient's own hand / pinhole / glasses*

 - Demonstrate
 - i. **UNAIDED** – examination through Snellen lines from top to bottom
 - ii. **AIDED** – mention distance glasses – ask patient to wear them if available
 - iii. **PINHOLE** - when to use pinhole ?
 1. To correct for mild residual refractive error
 2. When is pinhole VA worse than unaided ? -> Macular diseases

4. (Optional)
 - Slides/actual props -> tools for measuring infant/children VA
 - i. Fixate & Follow

- ii. Objection to occlusion
- iii. Cardiff card etc

Suggested Examination Flow & Items

Essential

Pupil Examination

Direct Light Reflex

Consensual Light Reflex

Relative Afferent Pupillary Defect

Accommodation Reflex

1. Direct light reflex

- *Instrument to prepare: a direct ophthalmoscope / room with adjustable light*
- Remind students not to block/ hold the direct ophthalmoscope/torch OR stand right in front of the eyes to stimulate accommodation
- Ask the person to be examined to fixate at a distant target

2. Consensual light reflex

- *Instrument to prepare: Torch from side to facilitate observation of contralateral pupil*

3. Relative afferent pupillary defect

- Also known as Marcus Gunn pupil
- What does a positive RAPD mean to a clinician
- How to perform swinging torch test
- *(Optional) Video of a positive Marcus Gunn*

4. Accommodation reflex

- Ask the person to be examined to fixate at a distance target
- Then ask the person to fixate at an accommodative target
- *Instrument: accommodative target*

Suggested Examination Flow & Items

Essential

Visual Field Examination by Confrontation

1. Explanation of rationale

- Trying to match the examiner's (assumably intact) visual field with the patient's visual field

2. Points to remind students

- Examiner and patient should be seated at similar eye level
- Both examiner and patient should cover one eye during examination
- Fixation target/ examiner's hand should be placed equidistant from examiner and from patient –
 - i. If the target is closer to patient's side -> patient's VF may not be able to include the target
 - ii. If the target is closer to examiner's side -> patient's VF may be able to reach beyond the target, peripheral scotoma may be missed.
- Always observe the patient's fixation and patient should fixate at the nose of the examiner and not peeking

3. Testing visual field

- Either with target / fingers
- Central field and peripheral field – bearing in mind the vertical and horizontal meridian
- Of both eyes sequentially

Suggested Examination Flow & Items

Essential

Extraocular Motility & Cover Test

1. Explanation of rationale

- EOM : to detect
 - i. Restrictive pattern: Orbital fracture
 - ii. Neurologic palsy : CN3, 4, 6
- Cover test to detect
 - i. Manifest
 - ii. Latent strabismus

2. EOM

- Make sure person to be tested does not move his head
- Testing object (finger/hand/red target)
- *Optional – videos of different nerve palsy / muscle restriction*

3. Cover test

- At near & at distance
- With glasses & without glasses
- Check glasses for any prism / Fresnel
- Cover test:
 - i. Observe contralateral eye for any refixation movement
 - 1. From out to in -> exotropia
 - 2. From in to out -> esotropia
 - ii. Recognize and differentiate between refixation & voluntary eye movement
 - 1. Ask the person to be tested to concentrate on the target
 - iii. Then perform uncover test: observe uncovered eye for any refixation movement
 - 1. From out to in -> exophoria
 - 2. From in to out -> esophoria
 - iv. Perform alternate cover test (*Optional*):
 - 1. to dissociate both eyes and observe sum of latent and manifest strabismus

2. Persons with intermittent exotropia may break down upon alternate covering
- v. (Advanced): Alternate prism cover test – to quantify the amount of strabismus

Suggested Examination Flow & Items

Advanced

Anterior Segment Examination with Slit-lamp

1. Skills to demonstrate
 - Diffuse illumination + low power
 - Slit beam + high power
 - Cobalt blue light + Fluorescein
 - i. To stain up epithelial defect (e.g. corneal abrasion)
 - ii. To assess and evaluate tear film
 - (Optional) Red free filter
2. Suggested systematic approach
 - Eye adnexa - eyelids, fornices, eversion of upper lid
 - Conjunctiva – chemosis / injection
 - Sclera / Episclera
 - Cornea (students often report difficulty differentiating corneal vs conjunctiva)
 - Anterior chamber
 - Iris & pupil
 - Lens

Suggested Examination Flow & Items

Essential

Direct Ophthalmoscopy

1. Skills to demonstrate

- Observe red reflex
- Using DO to observe
 - i. Disc
 - ii. Retinal vessels/ Retina
 - iii. Macula

2. Suggested systematic approach

- Adjust own refractive preference
- Observe red reflex from distance
- Move forward to track red reflex
- In a direction towards the anticipated location of the optic disc
- Observe disc and report
 - i. Colour – pink or pale
 - ii. Margin – sharp or blurred
 - 1. Should not mention ‘swelling’ per se because monocular vision
 - 2. Also should mention ‘papilloedema’ is reserved for bilateral disc swelling SECONDARY TO increased intracranial pressure only
 - iii. +/- cup disc ratio
- Then trace from disc to blood vessels
 - i. Look for blood vessel changes – silver / copper wiring
 - ii. Look for retinal changes – haemorrhage / scars from previous lasers / cotton wool spots / hard exudates / drusen
 - 1. Red = haemorrhage
 - 2. Yellow = hard exudates or drusen
 - 3. White = cotton wool spots or fresh PRP scars
 - 4. Black = old PRP / scars
- Finally ask person to be examined to look into the light to assess the macula

Suggested Examination Flow & Items

Advanced

Applanation & Gonioscopy

1. Skills to demonstrate

- i. Applanation
 - 1. Non-contact
 - 2. Contact : Goldmann
 - ii. Gonioscopy
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- Explain rationale of applanation
 - Explain rationale of gonioscopy
 - Demonstrate steps to perform goldmann applanation
 - i. LA + stain
 - ii. Coarse & fine movement of joystick
 - iii. Endpoint (touching semicircles through eyepiece)
 - Demonstrate steps to perform gonioscopy
 - i. LA
 - ii. Apply gel to goniolens
 - iii. Apply goniolens to ocular surface
 - iv. Observe opposite angle through goniolens (image through eyepiece)

Suggested Examination Flow & Items

Advanced

Indirect Ophthalmoscopy 20D & 90D lens

1. Skills to demonstrate

- i. BIO + 20D
 - ii. Slitlamp + 90D
-
- Demonstrate steps to perform BIO
 - i. Putting on indirect ophthalmoscope
 - ii. Placing the 20D in front of the eye
 - iii. Converge light from BIO through indirect lens to visualize retina

 - Demonstrate steps to perform 90D
 - i. Slitlamp – retroillumination setting
 - ii. Placing 90D in front of eye
 - iii. Observe retina / posterior pole through 90D

2. Mention difference between 90D and 20D

- 90D = higher magnification, narrower field
- 20D = lower magnification, wider field

Suggested Examination Flow & Items

Advanced

Thyroid eye assessment

1. Skills to demonstrate
 - i. External appearance – general examination
 - ii. Eyelid examination
 1. Upper lid retraction
 2. Lid lag
 3. Lateral flare of upper lid
 4. Lagophthalmos
 5. Acquired epiblepharon
 - iii. Proptosis
 1. From above (Medical/ Surgical)
 2. From below (chin-up)
 3. Exophthalmometer
 - iv. Ocular signs
 1. Chemosis
 2. Injection
 3. Corneal scars
 4. (Optional) Caruncle swelling
 5. Fluorescein stain to look for ocular surface damage
 - v. EOM
 1. Upgaze limitation most common (most commonly involved EOM = IR)
 - vi. Strabismus
 1. Exotropia / esotropia/ hypotropia
 2. Hypoglobus
 3. Differentiating hypotropia and hypoglobus
 - vii. (optional) Clinical Activity Scores
 - viii. (optional) Severity Grading – NOSPECS
 1. N = No sign / symptom
 2. O = Only sign, no symptom
 3. S = Soft tissue involvement

4. P = Proptosis
5. E = Extraocular muscle movement
6. C = Corneal involvement
7. S = Sight loss