Combining e-learning platform with web conferencing

a novel approach to running a “virtual” Radiology Workshop for undergraduates in the COVID-19 era.

Dr. Wan Hang Keith Chiu
Clinical Assistant Professor
Department of Diagnostic Radiology
LKS Faculty of Medicine
The University of Hong Kong
Introduction
Radiology Workshop

• Medical Students have traditionally little exposure to radiology in their undergraduate curriculum.

• Radiology workshops are held to supplement student experience and allow them to gain intuitive understanding of imaging modalities.

• E-learning platform developed to address of the need for a more interactive classroom and improve student learning experience.

• The emerging pedagogy of online teaching
Teaching in the COVID-19 Era

• Class suspension at HKU from January 25th

• Online Teaching for medical students

• Radiology workshops are interactive face-to-face hands-on session
Novel Solution

• Application of an experimental “virtual” radiology workshops

• Combination of Zoom meeting and eLearning platform
eLearning Platform

- Implantation of Open edX, including LMS (student-facing, delivering courseware), and Studio (course authoring) components

- Multifunctional framework supporting various types of questions

- Anonymized feedback from students

- Radiology specific functions like image scrolling and disease localization
Multifunctional framework
Various Question Types
Immediate Feedback and anonymized Polling System
Radiology Specific Functions

Drag and Drop with Outline
Label the hydrogen atoms connected with the left carbon atom.

IMAGE MAPPED INPUT (1/1 point)
There are 3 pertinent findings on the CXR. Please identify them on each image.

1. Pleural effusion
2. Opacity in the right mid zone
3. Urinary bladder, uterus, rectum, spinal cord, mass
Methodology
Running the ‘Virtual’ Radiology Workshop (1)

- Four workshops involving a total of 246 medical students were held
- On-line web conference
- The students were also invited to participate in a pre- and post-workshop questionnaire exploring their attitude towards e-learning.
Running the ‘Virtual’ Radiology Workshop (2)

• Students were separated into five groups, each tackling a clinical “vignette”.

• The vignettes included interactive components such as multi-choice questions, image clicking, and “drag and drop” functions, with individual results logged anonymously.

• Teaching switches between whole class tutorials and “break-out” groups

• The tutors were able to “drop in” to each group to guide discussions at any time
Findings
Evaluation from Students

197 (80.1%) students replied to the questionnaire

<table>
<thead>
<tr>
<th>Pre-Questionnaire</th>
<th>Post-Questionnaire</th>
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<tbody>
<tr>
<td><strong>E-learning has an effective role in medical education</strong></td>
<td><strong>E-learning must has more effective role in medical education</strong></td>
</tr>
<tr>
<td>Absolute Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>19%</td>
<td>58%</td>
</tr>
<tr>
<td><strong>E-learning can replace lectures</strong></td>
<td><strong>E-learning can replace lectures at class</strong></td>
</tr>
<tr>
<td>Absolute Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>9%</td>
<td>38%</td>
</tr>
<tr>
<td><strong>E-learning must has a complementary role in medical education</strong></td>
<td><strong>There isn't any important reasons for e-learning in medical education</strong></td>
</tr>
<tr>
<td>Absolute Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>15%</td>
<td>68%</td>
</tr>
<tr>
<td><strong>E-learning do not offer anything more than regular methods of education (books and notebooks)</strong></td>
<td><strong>E-learning must has a complementary role in medical education</strong></td>
</tr>
<tr>
<td>Absolute Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>4%</td>
<td>21%</td>
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<tr>
<td><strong>E-Learning is an effective method in teaching Radiology</strong></td>
<td><strong>E-learning do not offer anything more than regular methods of education (books and notebooks)</strong></td>
</tr>
<tr>
<td>Absolute Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>8%</td>
<td>57%</td>
</tr>
<tr>
<td><strong>E-learning is an effective method in teaching Radiology</strong></td>
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</tr>
<tr>
<td>Absolute Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>22%</td>
<td>55%</td>
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</tbody>
</table>
Evaluation from Students

• In medical students, 81% used e-learning regularly and 87% considered e-learning has a complementary role in medical education

• Specifically, 65% found e-learning effective in teaching radiology before the workshop, which increased to 71% at the end of the workshop

• The students’ acknowledgement of eLearning replacing typical class improved from 47% to 58%
Conclusion

• The COVID-19 pandemic has fundamentally changed how medical teaching is being delivered.

• In our experience, the use of interactive e-learning combined with web conferencing can be a novel and alternative method to traditional workshops with excellent student experience.
Thank You
I would like to thank my fellow colleagues:

- Dr. Elaine Lee
- Dr. Vince Vardhanabhuti
- Dr. Esther Wong
- Dr. Kathy Wong
- Dr. Gordon Wong