Telementoring in Surgery in East Coast

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Abstract

Telementoring in surgical operations in remote areas of Malaysia as inaccessible parts of rest of the world could be made a reality making use of existing hardware/ software solutions and facilities over the WWW in a cost effective way. The project making use of MSN Community and My Web was found to be viable even with the available facilities. at a reasonable cost. An acceptable teaching-learning mechanism could be achieved for –clinical use for surgical trainees

This is a continuation of a pilot project in the new educational pedagogy with promising future expansion, allowing real-time supervision of students of surgery. The teaching-learning process, takes place in an environment shared by the learner and facilitators; the teacher being at a remote site. Learning could be achieved at a minimum cost especially in training of surgeons in districts like East coast of Malaysia

1.Introduction

Mentoring or supervision in surgical operation is very labour-intensive. Hand on learning needs to be achieved in teaching-learning process in operation theatre. This requires one to one learning in the presence of an instructor, expensive and time consuming. Telementoring in surgical operations in remote areas of Malaysia like the inaccessible parts of rest of the world could be made a reality making use of existing hardware/ software solutions and facilities over the WWW in a cost-effective way.

This is a continuation of a pilot project in the effective use of new educational pedagogy, with a future. Instead of presence of the teacher on–site, he is at a remote site, but still has the advantage of letting the trainee see through a series of slides, take through the operative steps as if in real-time but still manage to guide the necessary important steps to achieve better end therapeutic results; with more lives being saved.

2.Hypotheses and Rationales

Telementoring in surgical operations in remote of the world could be made a reality making use of existing hardwares/software and facilities over the WWW in a cost effective way at the same time achieving an acceptable end result. The protocol must lead to improved clinical care for decision making before and during surgical undertaking.

3.Objectives of Project

Step1.a.To try out clinically acceptable quality recordings of surgical operations while the author operate in Operation Theatre during emergency surgery in Kuantan General Hospital (HTAA) and digitize them.

b.To try to transfer images over the internet using easily available existing hardware and software solutions.

c.Evaluate the acceptability of output, results for clinical decision making after use of this new facilities.

3.Materials and Methods

Step (1)Archival of operative steps and setting up teaching protocol for major life saving under-taking like emergency surgery as in acute abdomen example liver injury. All put into a series of power-point slides. 1. Recordings were done using a Sony TRV 301E Digital camera on Sony Hi 8 digital tape while surgery was carried out by the author. The video recordings were turned into digital clips (of 100 Megabytes AVI approximately) on a Sony VAIO Laptop Personal Computer, PCG-F360 using video-capturing software DV Gate Motion / DV Gate still from Sony bundled together in the laptop and Firewire Link IEE 1394 for fast transfer at 200MB/sec rate in real time.

Firstly the clips of approximately 100 Meg were converted into raw avi uncompressed using software MainActor. The resulting avi produced were turned
into media file compatible with Microsoft Media Player using on Demand Producer, a Window 2000 Professional product. From each of these digitized clips good clinical operative pictures were put into series of powerpoint slides.

2 These series of teaching -learning slides with vivid operative steps were up-loaded onto the shared document files in My Picture/ My Web Document files of MSN community which is usually shared by my trainees in the district like Jeruntut (and and my students of surgery in the IIUM alike). The trainee would look into these before he or she go in for the emergency surgery or manage such a case before transfer to our tertiary center for further management. This protocol can reduce the possible mortality and morbidity. This is in the pipeline to study the effectiveness of such a use of this newer teaching – learning facility for the benefit of the community..

4. Results

4.1. Findings - The evaluations as shown in the table for the available digital capture and powerpoint teaching slides made from them were used over the WWW MSN chat and MSN Community My group(MY WEB),showed favorable results on all test-runs Same Powerpoint slides containing archived digital clips of operation on repair of Liver lacerations / acute abdomen surgery were used for standard comparison. It was tested in 9 occasions involving two to four trainees/students.

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<tr>
<th>Understanding of pathogenetic mechanism</th>
<th>Before</th>
<th>After</th>
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<tr>
<td>Improved patient management before transfer</td>
<td>++</td>
<td>++++</td>
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<tr>
<td>Confidence gained by the trainee</td>
<td>++</td>
<td>++++</td>
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<tr>
<td>Happy with clarity of clinical digitized picture resolution</td>
<td>++</td>
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<th>PowerPoint slides over the web</th>
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<td>Before</td>
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5. Conclusion

The pilot project was successful even wit the available facilities. Transfer of knowledge and teaching–learning was achieved with acceptable resolutions, clarity and definitions for clinical use and supervision prior to surgical undertaking, at the remote site. This is a pilot project with a view to future expansion in the use of new educational pedagogy allowing the real-time supervision of teaching–learning process of students. One site in IIUM Kuantan and satellite site in Jeruntut where junior medical officer are stationed.

6. Inference

This is an interim results report of our encouraging on-going research. It is cost effective too. Using relatively less costly, easily available hardware software solutions and Internet which could be used to enhance the teaching -learning process where the mentor the senior surgeon or the instructor can allow the teaching-learning to take place and the quality of patient care in a remote area can be effectively enhanced making possible telementoring of surgical undertakings/ operations over the internet; a very cost-effective solutions in this part of the world where rough terrain and problems of access into inner parts of Pahang make immediate transfer of patients impossible. This could also be used in other parts of Malaysia or rest of the world.

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