Three C Model: A Positive Spiral for Technical Education

(The contents were originally from ISEM 2014)

Eiji Kobayashi, MD, PhD
Department of Organ Fabrication,
Keio University School of Medicine, Japan
A Proposal Concept of ‘Translational ‘Microsurgery

Experimental Microsurgery covered world-wide area as a powerful tool for Translational Research

Animals

Human

Immunology

Pharmacology

Ischemia/Reperfusion

Transplantation

Microsurgical Devises

Tissue/Organ Engineering

Minimum Invasive Surgery

(Kobayashi E 2009)
3 C Approach
教育を科学する
3 C Approach

• **Curriculum:**
  Teaching is driven by a written curriculum which is given to the students to guide their learning

• **Competency:**
  After the teaching, learners are evaluated to see if they have acquired the desired competency

• **Clinical outcomes:**
  Learners report their clinical experiences over the long term, to evaluate the value of the training in the clinical practice of medicine
「メスよ輝け」は、1989年から4年半、ビジネスジャンプ（集英社）で掲載された、高山路爛原作、やまだ哲太画の医療漫画のタイトル。
Contents

Laparotomy  How to use surgical materials

Observation
  ▪ Gastrectomy
  ▪ Observation
  ▪ Suture  1. Hand
             2. Staple

Manage for organ injury
  ▪ Splenectomy

Close the abdomen
Scientific Competency

Albert-Lembert Suture

Anastomosis by GI stapler
Morphological Evaluation
–Hand Swen vs Stapled Anastomosis–
## Required time for the suture of porcine stomach

<table>
<thead>
<tr>
<th>Method</th>
<th>Minutes (Mean ± SE) (range of required time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand-Swen Anas</td>
<td>66 ± 10.0* (50-105)</td>
</tr>
<tr>
<td>Stapled Anas (GIA)</td>
<td>14 ± 4.5* (3-27)</td>
</tr>
</tbody>
</table>

*:Values with different superscripts are significantly different (P<0.01).

*(Tanaka H & Kobayashi E  2006)*
Practical Approach for Education

Patients

Wet Lab (Animal Lab)

Cadaver Lab

Dry Lab (Non-Bio materials)

Dummy Lab

Virtual-Reality Lab

(E Kobayashi 2014)
3 R Approach

動物福祉の観点から
Replacement

実験動物を使わない方法を駆使する
Education for Tube Insertion by use of the scarified pigs

Survey Before (Q1)

Lecture (Show Video) \[N = 30\]

Divide into Randomized 2 Groups

Group A \[N = 15\]

- Mannequin Simulation

Group B \[N = 15\]

- Live Animal Training Work Shop

Survey After (Q2 or Q3)

Reduction
実験動物の数を減らす
有効利用をする
The cryopreserved kidney is perfused by a peristatic pump after thawing and contained entirely in a “Bento” lunchbox.

A total 32 trainees participated in the five separate training sessions.

(Konno K, et al. Transplantation Research 2012)
Educational Model by use of the abdominal walls obtained from the scarified experimental pigs
Educational Model by use of the intestine obtained from the scarified experimental pigs
Refinement

手術プロトコールを洗練する
Competency for the stitched site

Time for anastomoses

SD
Proposal Educational System; 3 C

Curriculum Based Education

Competency Based Assessment

Positive spiral

Clinical Outcomes

Clinical Outcomes

Competency Based Assessment

Competency Based Assessment

Clinical Outcomes

Competency Based Assessment

Certified physician

Super Doctor

Board Specialist

Student

Resident

Reliable & Safe Medical Skills
Thank you for supporting ISEM 2014

See you in Tianjin, China 2016

Thank you for supporting ISEM 2014
International Society for Experimental Microsurgery

PROF. EIJI KOBAYASHI
10th President of the ISEM
Project Professor of Department of Organ Fabrication, Keio University, School of Medicine
35 Shinnanmorachi Shinjuku-ku,
Tokyo 160-8582 Japan

May 19, 2014

Dear Professor Kobayashi,

The Japanese contribution has always been determinant and highly important in our beloved Society, the ISEM.

I cordially greet Prof. Nozawa, Prof. Kajimoto, Prof. Ito, Prof. Kobayashi, Prof. Uemoto and your colleagues! The Congress in Kyoto was a wonderful and unforgettable event. Thank you very much for the great organization!

And again, I would like to express a heartfelt welcome toward the new councillors from Japan: Dr. Fujimoto and Dr. Nakao.

I would like to address this message to the Participants of the Meeting on 21 May, 2014. National Chapters have a grandiose importance within the ISEM. Like many arms, joining hands — reflecting also the symbolic logo of our Society. National Chapters and laboratories contributed a lot to the international world of microsurgery both in clinical and experimental fields. Not only MDs, but experts of DVM, and BSc/MSc in biological sciences are also cordially welcomed! Because in this multidisciplinary society we are a big family, but the common denominator is the microsurgery, the high-standard microsurgical techniques. The benefit of these techniques has been shared with the veterinary medicine (clinical and experimental) and zoological research too, that should be enforced further.

Thus, the trainings also for veterinary surgeons is highly important, using Prof. Kobayashi’s ‘positive spiral’ 3-C education system. I cordially greet the initiative act, the East Japanese Chapter of the ISEM – co-organized by Dr. Hiroshi Ishi – being open also for veterinary surgeons. I encourage all the participants to actively join our Society, and feel its multidisciplinary attitude and enjoy its scientific contacts.

Wishing you very good work, successful courses and wonderful, inspiration-full microsurgical activities!

Hope to see you during the forthcoming congresses of the ISEM in 2016 (Tianjin, China) and in 2018 (Budapest, Hungary)!

Sincerely yours,

Norbert Nemeth M.D., Ph.D.
President of the ISEM
head of Department of Operative Techniques
and Surgical Research, Institute of Surgery,
Faculty of Medicine, University of Debrecen
Address: Nagyerdely krt 98, H-4032 Debrecen, Hungary
Phone/fax: +36 52 416 915
E-mail: nemeth@med.unideb.hu, surg.res@med.unideb.hu
Website: www.surg.res.dote.hu

Website: http://www.isem.unideb.hu
Why we can not contribute companion animals, while we killed experimental animals?

(Kobayashi E  2009)
A Proposal Concept of Two Way Approach

Human Trail

Classical Way

Large Exp Animals

Small Exp Animals

A Proposal Way

Veterinary Medicine

Companion Animals

Patient

(Kobayashi E 2009)
Frankensyein’s Monster
(1818 The first edition)

Mary Shelly (1797-1851, UK)
Luigi Galvani (1737-98, Italy)

*De viribus electricitatis in motu musculari commentarius*
（筋肉の運動による電気の力について）’(1771)
Frankenweenie
( 1984, 2012 )

Tim Burton (1958- 、USA)
Japanese Chapter of ISEM (The East Branch)

• **Monthly One Day Training**
  We will use dry lab models in basic skills. Ten meeting will be opened while we help to progress the skills of competent participants.

• By more than 80% of attendance in every year, the young veterinary surgeons will receive *the certificate for a year*.

• Recommendation to be a *member for ISEM*
  We encourage that young veterinary surgeons will present their works in ISEM 2016 in China.

• This is *volunteer work*. We would like to donate some money for *Shelter Animals*.

*(Ishii & Kobayashi 2014)*