

KUOPIO WORKSHOP, FINLAND Associated with Helsinki Congress, 1989

IUPS representative: Keith Cooper. Local organiser: Osmo Hanninen

The meeting was held in a rural setting on a lake in Finland, with an opportunity to visit the local physiology department. There were 48 participants.

To summarize the findings that are detailed below, the highlights for participants included the opportunities for discussion, informally and in the small groups, the chance to share common problems and experiences, the wide variety of countries represented, the location and the hospitality. Criticisms, although made by relatively few participants, mainly centred around organizational problems and difficulties encountered in the financial arrangements.

Things most liked about the Kuopio workshop-

Positive

opportunities for discussion/small group work (36)

sharing common problems and experience and discussing solutions (19)

informal friendly atmosphere and easy exchange of views (11)

location, hospitality (11)

participants from a wide variety of places (10)

presentations (8) (or some of them (2)) and opportunity for discussion of them (5)

discussions on international collaboration (6)

preparation of reports, presentation and discussion of them (6)

the practical exercises (5)

learning about novel ideas (4)

two responses each: opportunity for self-evaluation; organization of the first 2 days; visit to the Kuopio Physiology Department.

There were a few critical comments on the facilities:

dinner too early (3); crowded sessions (2); no recreational facilities (1); sharing a room (1)



Workshop site



Reports Group 1

Introduction

Active learning experiences develop higher cognitive skills, such as analytical thinking, evaluation and synthesis. Physiology instruction, which describes the integration and control of body functions, can benefit from these approaches.

Individual instructors, course directors and those who set the curriculum can all introduce active learning experiences.

Recommendation 1: *Instructors adopt those active learning approaches that are appropriate to their own earning style and environment*

Active learning can occur in all environments. Faculty should interact with their peers to develop teaching skills which promote active learning in students. Trained faculty can then model this behaviour in their home institutions, particularly for potential teachers of physiology.

Recommendation 2: *Course directors incorporate a variety of techniques into physiology instruction*

Not all students learn in the same way. Incorporation of diverse teaching methodology will increase the usefulness of instruction for all students. Examples of potential active learning experiences include: problem-based learning; computer-assisted instruction; laboratories; interactive lectures; small group conferences; research projects.

Recommendation 3: *Unstructured time be protected within the curriculum for activities consistent with the active learning process*

Such time is essential to allow the independent learning which characterizes problem-based learning, problem solving and research activities.

Recommendation 4: *The local administration must provide the resources necessary to implement active learning processes*

Faculty and students involved in teaching must be trained to employ active learning processes appropriately. The physical plant, including space and library facilities, must be appropriate to the active learning experience. Finally, excellence in educational activities must be identified and rewarded.

Group members: R. Carroll (Chair), Adrianta, J.M. Chung, M. Gibson, S. Hungspreugs,

K. Lukowiak, O.A. Musa, P. Rostami, A. Rovick, A. Schott, D. Silverthorn, A.Y. Siyamak, R.E. Young.



Poster discussions

Group 2: Physiology in non-medical courses

Recommendation 1: *Basic Physiology forms the basis of all medical and paramedical professions.*

Concerned with the fragmentation of Physiology Departments, this diverse group (nurses, basic science physiologists, zoologist, pharmacologist) urged that Physiology as a subject should continue to be taught.

Recommendation 2: *Physiology courses be designed and written specifically to meet the objectives for the diverse professional groups.*

The end-objectives for each professional group are inherent in their roles and the content needs to be appropriate for those groups.

Recommendation 3: *Basic Physiology forms an integral part of all the undergraduate level of training for the professional groups while more advanced knowledge needs to be taught at postgraduate levels as students undergo more specialist training.*

It was thus agreed that the syllabus in Physiology should be written keeping in mind the requirements and future needs of the graduates of each program.

Group members: S. Caglayan (Chair), P. Chatterjee, M.A. Choe, D. Guha, B.D. Joshi (Secretary), A.P.M. Yousuf.



Group photo

Group 3: International Cooperation - the "Continental" Approach

Introduction and Retrospective

At the Kuopio Workshop (2-8 July, 1989), certain recommendations regarding the transfer of books, equipment etc to developing countries were made. It was reported that this could not be implemented because of difficulties: matching needs and availability; collating information; matching expertise with equipment; finding means of transport.

The group noted with appreciation the efforts of IUPS, and the American Physiological Society (APS) in circulating *News in Physiological Sciences (NIPS)* free of charge to developing countries. *NIPS* served as an excellent resource for updating information, cross-referencing, and for undergraduate and postgraduate teaching.

The IUPS book on *Simple Experiments in Physiology* was also praised as an excellent resource, but it is not yet widely known or distributed.

Current Problems Identified

The table below summarizes the information collated by the group from amongst its members. It was concluded that some problems are highly localized and can be solved only with changes in governmental policies and changes of attitudes. The common problems are listed. It can be seen that the lack of equipment, books, journals and adequately trained staff are common to many countries of the developing world, while the teachers of Physiology in the East European countries are quite often under-employed. The developed countries are constrained by societal pressures against animal experimentation. In some developed countries, there is an excess of functional equipment which poses problems of disposal.

Continent	Teaching		Research			Commun.	Ethical/ social
	Staff	Equip.	Literature	Staff	Equip.		
Africa	not available	not adequate	not available	not available	not available	poor	no problem
Asia-Pacific	variable	not adequate	not adequate	unmotiv., no time	not available	fair	no problem
Central, Sth Amer	heterogen. distrib.	variable	variable	variable	variable	fair	some problems
East Europe	often underempl.	ok	ok	often underempl.	ok	fair	no problem
Devel. countries	adequate	ok	*up to date	adequate	**ok	excellent	great problems
			* prev. eds may be available to distribute		**old functional rsch equip may be available		

Recommendation 1: Networking: Linkages be established between developed and developing laboratories for technology transfer, training of personnel, monitoring and trouble-shooting.

Recommendation 2: Regional Training Centers: Centers be established in regions in which the basic infrastructure is available, a core group of motivated staff exists that is willing to accept the responsibility, the local government

is prepared to sustain it and the goal of achieving self-sufficiency in the region is clearly stated as an objective.

Recommendation 3: Information dissemination: *The excellent initiatives taken by IUPS and APS are urged to continue the circulation of NIPS. Further, the distribution of Advances in Physiology Education and, for example, the IBRO Bulletin would provide a valuable resource to those who lack easy access to information..*

Recommendation 4: Teaching Modules: *An IUPS-approved and sponsored core curriculum of Physiology for medical students in the developing world could be produced cooperatively. Integrated teaching modules based on self-learning principles could be prepared using various media for distribution and modification (including translation) in local sites.*

Recommendation 5: Distance Education: *IUPS-approved and sponsored distance education modules be prepared so as to provide education in some regions.*

Recommendation 6: Equipment and Books: *It is urged that NIPS and perhaps also Advances in Physiology Education publish lists of needs for equipment and books or lists of surplus materials available. Arrangements could then be made between interested parties for transport.*

Group members: U. Nayar (Chair), K.O. Adeniyi (Secretary), A.E. Ali, V. Dawka, F.M. Goma, T.H. Huang, T. Ramakrishna, C. Riphagen, R.R. Rodriguez, J.K. Sengupta, U. Singhal, M.-J. Thaela, E. Volchan.

Group 4: Training and careers of postgraduate, postdoctoral and infrastructural personnel

The group concentrated on ways in which IUPS can help to promote research and training in Physiology, especially for teachers of Physiology from less developed countries.

Recommendation 1: *Training programs be established, in which a visiting faculty member may help train faculty at the host institution.*

Recommendation 2: *Programs of direct exchange or long-term visits be established between faculty in developed and less developed countries.*

Recommendation 3: *Postdoctoral training of recently graduated PhDs from less developed countries be promoted in research laboratories of established investigators elsewhere.*

It is acknowledged that all such activities cost money. Recognizing that IUPS could not provide the funds necessary to implement all of the activities, specific actions are recommended below that would help teachers or researchers take advantage of existing programs.

Recommendation 4: *A clearing house for information about faculty visits and exchanges be established by IUPS.*

Thus an individual seeking information about potential host institutions could consult a register. IUPS, by sponsoring such a clearing house, would make possible more exchanges.

Recommendation 5: *A database of funding sources to finance exchanges be established.*

It is noted that many programs to fund visits and exchanges already exist, but the information on availability, access and eligibility can be very difficult to obtain, whether by individuals or institutions. By maintaining a database, information would be available for institutions or individuals to identify appropriate sources.

Recommendation 6: *The case for the value of exchanges and foreign experiences continue to be put strongly.*

By continuing a program of public education, IUPS may be able to maintain existing funding and help develop new sources of financial assistance.

Group members: F. Delcomyn, S.I. Jaja, I. Komaroni, M.K. Manna, A. Vieyra.



Large group session

Group 5: The Role of Laboratory Exercises in Physiology

Recommendation 1: *Because Physiology is an experimental science, the practical aspects are an integral part of all teaching, both in traditional and newer curricula.*

Recommendation 2: *Exercises to be used would be expected to involve a combination of living preparations, computer simulations, video presentations and, where possible, measurement of clinical variables on human subjects.*

Recommendation 3: *While reflecting the practical and workforce constraints of most programs, new laboratory exercises be developed to: incorporate contemporary issues in Physiology; introduce high-technology methodology or results; increase the level of student participation.*

Recommendation 4: *A forum for exchange of information on laboratory work, new techniques, suppliers of economical equipment and evaluation of laboratory exercises.*

(Dr George Moore to act as coordinator.)

Group 6: Curriculum Development

Summary of Issues Discussed

1. Curriculum. One curriculum cannot be prescribed as being suitable for all institutions and for all time. General guidelines have been established which may assist in curriculum development. Every curriculum should be subject to continuous review as circumstances change and must take account of the local circumstances in which it will operate. Reviewing the Curriculum document from Kuopio, the following issues were raised:

- objectives;
- teaching and learning methods for achieving objectives;
- assessment of performance;
- evaluation of the program;
- strategies for change.

2. Factors that influence curriculum objectives were identified:

- educational program;
- professional requirements (e.g. nursing, pharmacy, medicine);
- institutional circumstances (mission, human and physical resources);
- community demands (e.g. health care needs);
- students' educational backgrounds, motivation, abilities (effects of student selection);
- educational advances and trends;
- scientific advances.



Relaxing outside

3. Curriculum objectives must be matched to methods of teaching and learning:

OBJECTIVES	TEACHING AND LEARNING METHODS
Knowledge objectives	
Body of knowledge appropriate to the factors that impact on design, with adequate depth and breadth	Assignments and assessments that encourage deep learning Use emotional affect to improve learning and retention (images, humor, anecdotes)
Skills objectives	
<i>Cognitive</i>	
Understanding of current scientific methods	Students design experiments, criticize experimental design, compare computer modeling and real life experiments
Skills for deep learning, problem-solving, numeracy, literacy, communication (especially clarity and accuracy)	Discussion to improve oral communication Report writing, essays
<i>Psychomotor</i>	
As appropriate for particular educational programs (e.g. working with living tissue)	Observation, data collection and analysis in practicals
Attitudes/behaviours objectives	
Spirit of inquiry	Emphasize understanding, not memorization
Value excellence	Be a model for desirable attitudes
Value Physiology (perceive relevance)	Exhibit enthusiasm, use diverse teaching modes including live demonstrations Explicitly refer to Physiology in terms of past experience and future career
Humaneness (respect for life)	Emphasize ethical issues in animal experiments; encourage debate on issues Address issues of informed consent, confidentiality and privacy in human experiments

4. Assessment of performance. The methods used to assess the students' achievement of the objectives must be coherent with the methods of teaching and learning employed. Assessment must be feasible, reliable and valid. The group recommends: using validated question banks when appropriate; selecting and validating questions by committee rather than by one individual; doing continuous assessment with feedback to students.

5. Evaluation of programs.

a. Why evaluate?

- new program or major change;
- to compare programs;
- to improve learning;
- for continuous fine-tuning;
- to guide staff development in improving the effectiveness of individual staff.

b. For whom?

- present and future students;
- teaching staff;
- the institution;
- to meet requirements of professional bodies.

c. What to evaluate?

- objectives;
- methods of teaching and learning;
- methods of assessment.

d. When to evaluate?

- continuously;
- periodically.

e. By whom?

- students;
- peers (faculty colleagues from inside and outside);
- educational experts.

6. Strategies for change. Program evaluation will establish any need for change and show what needs to be changed. The authority required to effect the change will then become apparent (e.g. the Head of the unit whose members will be affected by the change).

Recommendation 1: *Educational objectives, teaching and learning methods and methods of assessment be closely correlated to produce diverse curricula which are continuously reviewed according to changing circumstances.*

Recommendation 2: *Case studies of attempted curriculum changes be collected and studied, including the rationale, mechanisms, outcome and perceived reasons for success or failure.*

Recommendation 3: *"Core" curricula in Physiology from various universities be collected, compared and contrasted in order to define similarities and differences.*

(Dr Mandira Das of the United Arab Emirates will serve as the coordinator for these latter two activities.)

Group members: P. Hansen (Chair), M. Das, C. Jooste, J. Mares, S. Mazumdar, L. Nwoye, M. Setiabudi, C. Ukebam.

Group 7: Computers in the Teaching of Physiology

Introduction

Programs designed for teaching Physiology were available on IBM and Macintosh computers; all participants were offered opportunities to use and explore them. Members of Group 7 worked with all of the software provided. Discussion reflected personal experiences with those programs and any other programs previously encountered together with comments made by other participants and colleagues.

Recommendation 1: *A catalog of software for use in teaching Physiology should be compiled and widely disseminated to the community of teachers of Physiology.*

The catalogue should:

- include a standard description of the program, but no evaluation should be provided or implied;
- be prepared in a short and a long form:
 - the short form should be published periodically in some widely circulated journal of Physiology, for example *Advances in Physiology Education* or *NIPS*;
 - the long form should be compiled in a database or some other computer medium to be accessed on demand;
- the published short form of the catalog should include:
 1. Title of program;
 2. Author and address (or name and address of contact person);
 3. Specific computer and hardware required (e.g. maths co-processor, video board);
 4. Student audience for which it was written or for which it could be used (identify any specific courses for which it was intended);
 5. Subject matter in Physiology;
 6. Approach to learning (e.g. drill and practice, simulation, tutorial);
 7. Price (single user and class) and conditions of sale;
 8. Is a demonstration disk available?
- the long form should include in addition:
 9. Whether the program is modifiable by the user and to what extent;
 10. The nature of documentation, if any, available;
 11. Whether the software will be maintained and/or updated by the author (and how);
 12. Any special features of the program (e.g. on-screen help, glossaries etc);
 13. Whether the program can be run on a network;
 14. How long does it take an average student to "do" the program?
 15. Are there any users in my local area who can be contacted?

Recommendation 2: *A mechanism for peer evaluation of teaching software and the publication of the resulting reviews be established.*

Such evaluations should take into account:

- the intended audience for the software;
- the accuracy and appropriateness of the scientific content;
- the nature and appropriateness of the interaction between the user and the program;
- the appropriateness of the computer medium.

Recommendation 3: *Guidelines for effective teaching software, as well as guidelines for the appropriate use of teaching software in the curriculum should be developed and disseminated.*

Good features of Teaching Software include:

- ability to save so that it can be restarted on a second attempt;
- adequate on-screen instructions about how to proceed;
- consistency from screen to screen;
- clear, consistent and standard terminology on screen;
- unambiguous questions and answers.

Bad features of Teaching Software include:

- too much text on screen;
- a screen that is too cluttered with pictures and/or text;
- not knowing how to EXIT program or not being allowed out;
- program too long (boring, too many questions);
- being trapped in program (won't accept answer, won't go on, won't exit);
- lack of immediate feedback;
- not accepting normal variations in answers (very specific requirements);
- not readily translatable into other languages;
- program too complex for students/staff to run;
- requiring irrelevant or inappropriate skills (e.g. hand-eye coordination).

Recommendation 4: *Authors be encouraged to write software for the many areas of Physiology for which little or no teaching software is available.*

Recommendation 5: *Workshops be supported on using and developing teaching software for Physiology. IUPS and national physiological societies be encouraged to assist in organizing such efforts.*

Group members: J. Michael (Chair), O. Baskurt, O. Hrachovina, W. van Rijswijk, F. Verdonck.



The lake

Feedback: overall comments on the workshop

General:

Follow-up and evaluation of Kuopio outcomes (4)
sharing focussed solutions to problems and experiences (3)
two responses each: more student involvement ; select session chairs early and have them organise the sessions; organizers must be committed full-time, throughout
one response each: better stipends; opening more channels for physiological employment; reports should be aired twice, once in progress and finally; need a cultural evening; hold it in a developing country.
one response each : generated interest; the use of computers an eye-opener; timing with the IUPS congress; learning how IUPS operates; opportunity for free communication; organization by committee; Osmo's involvement; evaluation; curriculum topic; audiovisual methods; opportunity to visit Finland.

Critical comments were made about -

Poor focus, too general, no resolution (12)
the organization generally and the programme (11)
the financial arrangements at the workshop itself (11)
some topics were poorly chosen and irrelevant (6)
workshop too long (6)
too little time for discussion (6), whether plenary or more particularly small group;
too many talks leading to a tight schedule early (4); too long was spent on identifying problems, not resolving them or sharing solutions (4); not enough time was spent on materials, laboratory teaching and related issues (4)
presentations too long (3) and some done poorly
two responses each: talks ran late and lectures were interrupted; lack of contact with Kuopio department; too few students or young physiologists present; no published proceedings; early sections overloaded, free time later; few posters from departments about problems and solutions; foreigners can't help
one response each: not long enough; inadequate prior information; no midweek break; some repetition; lack of available computers for 'hands on' experience; need to learn more skills; reservations about the usefulness of the group reports; poor balance of responsibilities; some attitudes patronising; no individual research projects discussed.

A few critical comments related to the facilities:

dinner too early (3); sessions too crowded (2); no recreation facilities (1); sharing a room (1).

General recommendations for the following workshop (to be held in Inverness)

For the next Workshop (Inverness, associated with the Glasgow Congress 1992), participants suggested the following:

Duration: 5-6 days (a mean of 5.7)

Themes: 53% preferred a concentration or focus on 2-3 topics.

34% wanted a wider coverage but specialization for discussion.

Little support for either a single-issue workshop or wide coverage of many issues.

The general consensus favoured a balanced range of activities.

Nearly 50% of the formal time was recommended to be spent in small group discussion.

About half of the respondents suggested that these be led by experts; some discussion of posters presented by participants was supported.

Nearly 40% of the time was recommended for presentations by experts (defined to mean from the participants, not 'outside' experts) and plenary discussion of the presentations. The remainder (10% of the time) was suggested to be left for participants' communications. The preferred length of oral presentations was 20 minutes.

Specific preferences for listed items were (in order: of strength of response yes:no) -

workshops to learn a particular skill (40:6),

participants encouraged to bring teaching materials for display (38:6),

participants encouraged to bring a poster display to provide information about teaching in their country/department (35:10),

some lectures on teaching specific physiological topics (28:18).

In free comment, many interesting ideas were generated for the next workshop.

Suggestions for discussion topics at the next workshop -

Research applications and needs, including the involvement of students

Teaching processes: techniques, curriculum planning

Human resources: staff development

International collaboration: including twinning, cooperation

Topics/areas: technical activities, broader skills

Physiology in different contexts: research applications, basic sciences, integration, materials

General: follow-up and evaluation of Kuopio outcomes, share experiences, financial support

Little support for either a single-issue workshop or for wide coverage of many issues

Activities: a general consensus favoured a balanced range of activities

Nearly 50% of the formal time was recommended to be spent in small group discussion.

Nearly 40% of the time was recommended for presentations by experts amongst participants

Poster discussions, free communications

Some time for free communications by participants.

The preferred length of oral presentations was 20 minutes.



Jenolan “survivors” at Kuopio

