

FRONTAL INSTRUCTION OR GROUP WORK?

By: Hans Wagner*

The heading suggests intentionally an antithesis in order to catch the reader's eye. We for one in the engineering educational profession know very, very well that for best teaching successes a "mixtum compositum" of the two techniques has to be applied. After all it is our routine's experience that justifies this overconfidence of ours, isn't it?

But do we really very, very well know, for instance, the basic concepts of higher education? Are we really anxious to keep abreast of the latest developments in the fields of didactics and teaching methods?

This kind of questioning, among others, gave rise to a WORKSHOP ON DIDACTICS AND TEACHING METHODS IN ENGINEERING EDUCATION which was held at the Faculty of Engineering, University of Dar es Salaam, during 27th May - 1st June, 1974 and was jointly organized by the Faculty of Engineering (FEUDSM) and the German Foundation for International Development (GFID). The staff of the Workshop comprised Prof. K.H. Flechsig (Chair of Higher Education at the University of Hamburg), Prof. U.P. Ritter, Mrs. J. Ritter (both of University of Göttingen), Mr. H. Glimm (Section of University and Research Promotion at GFID, Bonn) and Prof. Hans Wagner (Dept. of Mech. Eng. UDSM).

Statistics tells us that out of the 38 participants (of whom 16 were Tanzanians), 22(9) came from FEUDSM, 4(2) from other Faculties of UDSM, and 12(5) from the Dar es Salaam Technical College (DTC). It is worthwhile to note that at this Workshop staff of the two Dar es Salaam technical institutions, DTC and FEUDSM, met for the first time on a larger scale.

Unfortunately, all engineering students (the "victims" of our endeavours) were at that time out for their fourth term Practical Training and only very few of them could occasionally attend the late afternoon sessions.

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It is not the reviewer's intention to chew the cud of evident (and sometimes even commonplace) notions and conceptions that are camouflaged by such scientific and awesome terms like e.g. random didactic principles, instructional objectives, cognitive, affective and psycho-motoric categories, multiple discrimination learning, self-steering tendencies, feedback, social indicators, level of action, motivation, psychodynamic forces, multi-media instructional packages, self-evaluation, Pavlov's dog, reliability of examinations, diagnosis of hierarchy of learning levels, perspectives of curriculum evaluation, implementation strategies and what-have-you.

Instead, I will reflect upon the Workshop's activities. Its proceedings have been laid down daily in rough drafts and, subsequently, these papers have been filed. Those interested may study the material which is kept in the Dean's office for ease of reference.

However, there were some features that are worth to be put on record. In the reviewer's opinion paramount was the fact that group work can really be efficient as is proven by the findings of a number of the five working groups into which the participants split right from the beginning of the Workshop. Their topics were

- Integrating academic and practical training
- Student assessment and course evaluation
- Planning a single course
- Developing and revising the curriculum
- Interdisciplinarity in engineering education.

The working groups constituted themselves and went into deliberations after electing a chairman, a rapporteur (a recorder who also prepared the group's written reports and read them out during the daily plenary sessions) and an information co-ordinator who saw to it that sources of information outside the group (individual experts, literature etc.) were consulted. Incidentally, one rapporteur in his report postulated: "An engineer as a human being is a social animal who should not isolate himself from other disciplines of knowledge."

At least during the duration of the Workshop the participating engineers lived up to this cognition.

Other positive outcomes of the seminar were the discussions that centred on the two engineering subjects "Workshop Training" and "Technical Drawing" because they involve the most stinging problems of engineering education, not only in Tanzania. The adoption of the present continuous assessment procedure in the six training workshops of FEUDSM is a direct result of the deliberations of one group.

No doubt, the subject "Technical Drawing" is presently a stumbling block for almost all Tanzanian engineering students, particularly so at FEUDSM. At the same time it poses serious problems to the teaching staff not only in the course itself but also in subsequent relevant subjects where visual perception and pictorial representations are frequently used as a means of communicating technical information at various levels. It is a well-known, but nevertheless deplorable fact that difficulties encountered in this species of engineering training in 3rd world's countries, are usually underestimated. Our first-year students, for instance, freely admit that they still struggle with basic concepts such as top view, front view, side view, sectional view, isometric representation, hidden lines and the like, not to speak of more advanced techniques in the art of representing three-dimensional objects by two-dimensional drawings or simply, the mutual bridging between drawing and reality. Quite obvious and understandable, and notwithstanding the elaborate and fruitful discussions, the Workshop did not find a panacea for this deficiency.

Another group did not find any consensus on an explicit definition of "interdisciplinarity" and spent a long time discussing the issue and on its further implications. The outcome of this group's work was later formulated as a resolution to the Dean of FEUDSM and approved by all participants.

Having so far mentioned positive outcomes of the Workshop only implies that there have been also non-positive (not necessarily negative) ones. Admitted. After all, it was the first venture of this type and as such it deserves quite some

indulgence. However, the short-comings pinpointed were openly discussed and criticized in a final plenary session. The nucleus of the participants' criticism on the performance of the expert staff may best and most politely be described by quoting Shakespear (Hamlet 2,2): MORE MATTER, WITH LESS ART.

A reception at the end of the Workshop assembled participants (including the many silent helpers from the clerical and administrative staff of FEUDSM), Workshop staff and distinguished guests, notable among them Baron von Mullenheim-Rechberg, German Ambassador, Dean A.J. Temu, Acting Chief Academic Officer, UDSM, and Mr. Hokeroro, Chief Administrative Officer, UDSM, who graced the occasion.

Well then did the teaching staff of FEUDSM learn or gain anything from the Workshop? I venture to say: YES, although the word goes that the entire undertaking was ill-planned and poorly organized. But then, is there anything at all that ever satisfied unanimously a whole gang of teachers?

Man is bound to learn or as Professor Flechsig in that smart green booklet puts it: "The motivation to learn stems from curiosity, fear, ambition, desire to achieve, necessity, praise and rewards, penalties and boredom".

Now you know it.

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