IMPROVEMENT OF UNDERGRADUATE PHYSICS EDUCATION

(A Survey Report)

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Preliminary report o[illegible] UGC sponsored Workshop on Improvement of Research and Teaching of Physics in the University system appeared in IAPT Bulletin[1]. We have conducted a survey of undergraduate (UG) colleges to evaluate the impact of COSIP courses on the improvement of Physics Education in Punjab State. A questionnaire was circulated to all the science colleges affiliated to Guru Nanak Dev University and a few other colleges of Chandigarh. Response sheets have been collected from 98 Physics teachers of UG colleges.

The results of the opinion poll survey are quite interesting and will be useful for future planning of strategies for improvement of Physics education at the UG level. Some of the results are summarized in this report.

1. COSIP Courses : The UG colleges covered in this report follow COSIP courses prepared by ULP-COSIP of Physics Departments, Punjab University, Chandigarh. The majority opinion is that the UG courses of COSIP are not difficult to teach but the text books prepared under ULP-COSIP need improvement. Opinion poll favours that college teachers should be associated in preparation of text books. Some of the other improvements suggested are good printing and better quality of paper to be used for the books*. The syllabi and courses must lay emphasis on conceptual teaching of physics which needs to be supplemented by clear mathematical treatment of the subject matter. Both CGS and SI units may be given in the text books and vector approach must be followed.

It is interesting to note that a majority of college teachers are in favour of introducing new COSIP experiments prepared at various ULP-COSIP departments and the Centre for Development of Physics Education at Rajasthan University, Jaipur. It is also realised that class room demonstration of experiments motivates the students for conceptual study of Physics. The survey also reveals that most of the colleges have inadequate workshop facilities.

2. Role of Teachers : Almost fifty percent of the respondents give class room notes only. Eighty percent teachers opine that majority of students seek private tuition due to two main reasons : (a) Poor base in physics at the lower, that is, School level and (b) for appearing in competitive examinations for entry to professional courses.

* This is a general remark as COSIP books of Punjab University are prepared by offset printing on newsprint quality paper.

3. **Refresher Courses ;** Sixty five percent teachers surveyed have attended at least one refresher/reorientation course in physics for teaching of COSIP courses during the last five years. Majority opinion is in favour of such courses as these are useful to know the latest trends and developments in the subject; only a microscopic minority feels that these courses are not very effective in introducing new trends.

4. **Medium of Physics Education :** Medium of instruction in science subjects at school level is largely the mother-tongue. In an earlier survey report[2] it was concluded that this change of medium from mother tongue to English is a major handicap for students of rural areas. Most of them either fail at the initial stages or leave the science subjects opting for humanities and languages. Yet, eighty-two percent college teachers are in favour of retaining English as medium of instruction for science subjects in colleges.

5. **Examination Reforms :** The survey reveals that seventyfour percent of college teachers are in favour of examination reforms both in theory and practicals. The majority view is that question papers in theory must include objective type and essay type questions in equal proportions. Internal assessment (even upto 50 percent) must be introduced in both physics theory and practicals. Eighty two percent favour the question bank idea. Majority opinion favours a panel of internal and external examiners for the conduct of practical examinations.

The survey also reveals the growing importance of Electronics and the majority opinion favours its introduction as a separate science subject in colleges.

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