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Linking of the curriculum of School and College (A study with reference to Civil Engineering Course)

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Abstract—Any course that is studied in college should have continuity of the academic structure experimented in schools. Only then, students would be able to study better. However, schools of Tamilnadu, India, do not expose the possibilities of higher education. Different subjects are studied in schools and different branches are studied in colleges. It is obvious that there is a gap in the curriculum of schools and colleges. The major problem arises when a student who studies ordinary science syllabus and chooses civil engineering for higher education. None of the fundamentals of civil engineering is taught in school. It is strange to note that students with no ground knowledge of construction choose civil engineering. It is hypothesized that this discontinuity could be one of the reasons for the poor performance of the students. This research is done to find out the importance of bridging the curriculum of school and college studies with special reference to civil engineering courses

Keywords— gap in curriculum; syllabus; fundamentals; civil engineering; higher education

I. INTRODUCTION

Education is a significant factor for any progress in a nation. Only with a significant investment in education, a country can achieve positive growth rate. Better opportunities are visible only to the educated society. Knowledge, qualifications, skills, and attitudes are the major products of education. It enriches the self and social awareness of an individual. In addition, it offers quality and comfortable life by providing all kinds of technological supports.

However, nowadays, education is just a route to get degrees and employment opportunities instead of being a tool for cultivating potential human resources. It is noted that the schools of Tamil Nadu, India, do not introduce Civil engineering course in their academic programs. Students in schools study only Maths, Physics, and Chemistry, Biology, Zoology, Computer science and Commerce and finally prefer engineering courses or other professional courses at the college level.

With zero fundamentals on civil engineering, students getting admission in construction-related courses like Civil engineering and Architecture. This inconsistency may be one of the reasons for students scoring less in their academic performances. This paper attempts to ascertain the purpose of linking the curriculum of school and college for a better learning experience. As the authors of this paper are from the state Tamil Nadu, the same state is selected for this study. Samples are collected from the students of the institution where the authors currently work.

II. STRUCTURE OF EDUCATIONAL SYSTEM OF THE STATE- TAMILNADU

The education system in Tamilnadu includes 12 years of schooling. After school education, Students choose different streams in technical and professional courses according to their marks. A major percentage of the students prefer engineering stream after their Higher Secondary Level. However, only certain branches like Electronics, Electrical, Computer science, and Information Technology are widely preferred. Whenever the software industries fall, the branches like Civil and Mechanical engineering will be widely preferred.

III. PURPOSE OF THE STUDY

According to 'National Employability Report' 2016, which is based on a study of more than 1,50,000 engineering students who graduated in 2015 from over 650 colleges, 80% of them were unemployable and only 3% had suitable skills to be employed in software or product market. [6]

"CP Gurnani, CEO & MD of Tech, has said that 94% of engineering graduated were not fit for hiring."The top 10 IT companies take only 6% of engineering graduates. What happens to the remaining 94%?" [8]

The authors of this research paper intended to find reasons for such kind of complaints. It is assumed that the absence of foundation knowledge would be a major cause. It is found that the school syllabus covers only basic sciences that don't cover major courses of higher studies. It is also found that Civil engineering is one among the courses that have inconsistency with the school curriculum and so the authors decided to work on it.

IV. METHODOLOGY

The authors belong to the department of English and so the analysis is done based on language awareness i.e. the vocabulary level of the students of civil engineering related to their branch. It is felt that the language components are imperative since students study this domain for the first time in their life

Questionnaire method is carried out in this research. Students who pursue civil engineering course in the workplace of the authors are selected for this study. Questionnaires are distributed and the opinions are analyzed.

V. IMPORTANCE AND NEED FOR TECHNICAL ENGLISH

Technical English is inevitable for an individual in an organization irrespective to his/her designation either as a chief executive or a premier scientist or a technical student of a professional institution or an engineer working at floor level.

Communication skills are essential for an engineer who aspires to carry out his/her professional practice in global areas. Engineering communication skills basically constitute several core elements such as the fluency in the English language and the fundamentals of visual communication [5]

Every human resource of technical streams needs effective Technical English skills in order to work with ease. The importance of effective technical communication skills has increased as the world has shrunken to be a global market and to be more competitive and result oriented.

These skills include understanding and explaining complex technical information in a simple and familiar style, ability to understand and explain quantitative data. It is viewed that technical skills are more important than communication skill. However, knowledge of technical skills will be useless if one does not know how to communicate in a technical organization. [4]

Joshi says that “Today’s engineer has to communicate with more number of his counterparts across the globe, A large number of ... engineers have to now travel to many continents and work away from their home country. English has become the predominant language for communication.”

With the discussion of the teachers of civil engineering subjects, certain basic terms of civil engineering are found to be important for a comfortable learning. They stated that a civil engineering aspirant cannot understand the facts of civil engineering unless he or she is aware of a maximum number of civil engineering terms in English.

VI. EXPERIMENT

I year civil engineering students were interviewed regarding the aspect of pre-knowledge of subject requirements before choosing the courses. At the outset, their motivation towards the choice of the course is requested. The details are given below in table:1

Table-1: Motivation towards the choice of the course
 Total number of respondents: 100

	Personal Interest	Parents choice	Relatives in similar jobs	No option for other courses.
No of respondents	20	54	14	12
Percentage	20%	54%	14%	12%

Any choice of higher studies should be from the inner motivation of the learner. However, this study has brought to light that only 20% of the students in a classroom have chosen the course out of their own interest. 54% of the students chose the course because of the parents’ suggestion. 14% of the students chose the course following the recommendation of their relatives. The other 12% of the students did not have other options for getting admission to other courses. Moreover, the academic structure of previous year programs must give an introduction or serious motivation towards a branch of study which can be pursued as a major subject in the higher studies.

Introduction of civil engineering concepts at school level is also questioned by giving a copy of basic civil engineering terms to each student and they were asked to circle the words which they are familiar with and the details are as follows

Table-2: Awareness of the basic terms of the course
Total number of respondents: 100

	Fully aware of	Partly aware of	Totally unaware of
No of respondents	30	48	22
Percentage	30%	48%	22%

Students don't have an introduction to civil engineering in school studies. However, they collected information from other sources. Parents and relatives who are working as civil engineers or running their own enterprises strongly recommend for this branch of study since it would be a support for them in their business. This analysis proves that only 30% of the students in the classroom are fully aware of the course and 48% of the students are partly aware of whereas 22% of the students were not aware of the terms used in the course.

VII. TEACHER PERCEPTION

In addition to the interview with the students, the teachers who handle civil engineering subjects were interviewed. It was found that the teachers also had a similar opinion closer to the students' response (table 1 & 2). They felt that it was challenging for them to introduce the concepts to the students since they join the course with less exposure. They also felt that the students should at least be informed of the basics in the schools so that that they would utilize in their higher studies. It would be better if a new branch of studies separately formed, in schools, for civil engineering in addition to the basic science, computer, and commerce courses.

VIII. LIMITATION OF THE STUDY

This short study disclosed the importance of bridging the school and college courses. The students of civil engineering are widely affected because of this inconsistency between the school and college courses. The result of the study reflected the current scenario. However, the analysis is done only with the students of first-year civil engineering; the results may not be highly authentic. The students of the final year could be included in the study for a better output. This study ends with a hope of further research including the other aspects that affect the students of civil engineering.

IX. RECOMMENDATION AND CONCLUSION

It is found that there is no relativity between school education and college education for certain higher education courses. Students need to have background knowledge for a particular study and so they may study at ease. The students of Civil Engineering are worst affected because of this inconsistency. Hence it is recommended that the syllabus and curriculum at the higher secondary level should be framed with an idea of courses for higher studies at the college level.

It is felt that it is imperative to ascertain how best the academic curriculum can suit the evolving nature of industry and changes in the labor market. In view of this, the syllabus and curriculum are

revised regularly by the universities in accordance with what industry needs. Mostly, colleges/universities are often blamed for producing less qualified engineers without matching with the industry requirements. It should be understood that of bridging of school and colleges/universities is very important in the process of bringing out qualified professional students. Courses in schools should be designed with the vision of courses available in colleges. In the schools of Tamilnadu, it would be better if the new branch of studies separately formed for civil engineering in addition to the basic science, computer, and commerce courses.

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