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Evaluation Metrics: An Explicit Outcome to Foster Engineering Students' Writing Skills

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Abstract

In our world of social media posting, texting, email communications, blogs and beyond, good writing is essential to convey the messages effectively. Good writing is fundamentally good thinking that follows a logical path and forces to organize thoughts. In this age of text messaging, business communication increasingly demands a firm grasp on writing skill. Writing skills ensure effective business communication. It helps the professionals to have good company connect with their partners and stakeholders. Everything that professionals write must be tailored in a proficient, comprehensive, and informative. Professionals must be good at composing clear messages. In this digitalized era, Good writing skills are valued everywhere and build a solid web presence. At this situation, improving writing skills of professional students has become mountainous task. The present study aims at evaluation pattern followed in engineering colleges with a detailed analysis and suggesting ways to bridge the gap between what is delivered and what they actually evaluate to develop the writing skill of the engineers.

Keywords*: Writing skills, Evaluation Metrics, Engineering students, Technical Communication Skills*

Introduction

The competency to communicate effectively in writing is needed for professional success. In today's digital era, the thrust is on to achieve results fast from the written document. So, the professionals are expected to be clear in written communication and it is also very essential to put forth ideas in a newest usage that is clear, precise and concise to save time for both writer and reader. Writing skills ensure effective business communication. It helps the professionals to have good company connect with their partners and stakeholders. Everything that professionals write must be tailored in a proficient, comprehensive**,** and informative. Professionals must be good at composing clear messages. In this digitalized era, Good writing skills are valued everywhere and build a solid web presence.

In Bachelor of Engineering programme, the writing skill in Technical Communication Skills (TCS) syllabus is added to accentuate the fact that skilled in writing is an important criterion in hiring process. But the current structure of TCS syllabus in Autonomous Institution includes only one semester. Within this one semester, all language skills LSRW(Listening, Speaking, Reading and Writing) have to be taught. So, the major inconvenient falls in the teaching and evaluation process. According to Cecilia Mavrow (1994), when teaching writing to engineering students the teacher has to take into account four activities: 1. description: engineers need to describe production equipment, components, machines, gadgets; 2. explanation: engineers need to explain how an equipment works, or what to be done in case of malfunction; 3. persuasion: sales engineers need to convince customers to buy their products, they need to write proposals, reports; 4. summarization: summaries engineers write can be descriptive, informative and combined. Developing writing skills among engineering students is one of the difficult tasks of the language instructor. The reason is, the technical writing process needs lot of exercises like start from a variety of real contexts to complicated tasks and follow up activities that is the evaluation pattern, which all these are not done to the maximum level by the instructors due to time constrains.

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The Technical Communication Skills course is common for all the first-year engineering students studying at colleges affiliated to the Anna University and deemed universities in Tamil Nadu. The aim of the course is to encourage learners to do participative learning of the English language and help them in acquiring communication skills. The syllabus of this course is comprising of various components: listening, Speaking, Reading, Writing and Language in Use. They allocate 18 hours for teaching writing skills. The subskills listed in writing skills are: sentence definition, extended definition, comparison and contrast, transcoding, recommendations, highlighting problems and providing solutions, formal and informal letter writing, business letters, paragraph writing, essay writing, report writing, business proposals, safety instructions, check list, letter of application and data sheet/resume.

The current structure of the English syllabus in our university includes four semesters during the first two academic years. During this period, all language skills (speaking – students are taught how to make oral presentations and portfolios, reading, writing, listening and integrated skills) have to be covered with special focus on specialized technical vocabulary. Despite the four semesters assigned to teaching English to engineering students, and given the skills and specialized vocabulary students need to acquire, we believe that the major inconvenient in the teaching process is represented by the time constraint. As the curriculum is not established by the ministry, the teacher can take the liberty to cover all skills needed in empowering students with efficient communication abilities.

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The study findings indicate that percentage of marks of post- test, which was evaluated using parameters by the instructors is positively high when compared to the percentage of marks in pre-test, which was evaluated without any parameters by the instructors. This gives a clear picture that the reframe in evaluation metrics can definitely bring promising changes in developing the writing skills of the students.

Methodology

This paper focuses on a study conducted for the First year Engineering student who were introduced to a set of writing skills in their course "Technical Communication Skills". 60 students from Computer Science Engineering and 60 from Electronic Communication Engineering were taken for the study from an Autonomous College. All participants in CSE (60) and ECE (60) (N=120) agreed to take part in the study. The data were collected from students in two classes during their second semester for the Bachelor

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of Engineering (CSE & ECE) program. They were from a variety of cultural, social, and educational backgrounds and were aged between 18 and 22. A 30% of the respondents were females.

Execution Pattern of the study

A rating scale questionnaire was provided to the respondents before taking up the test. The questions were asked to study the respondents' level of interest and views on writing skills. The data from the questionnaire were exported to excel. The data analysis tools namely the statistical functions, and charts were used to obtain the required values that were fed into the graphs which highlight the response outcomes.

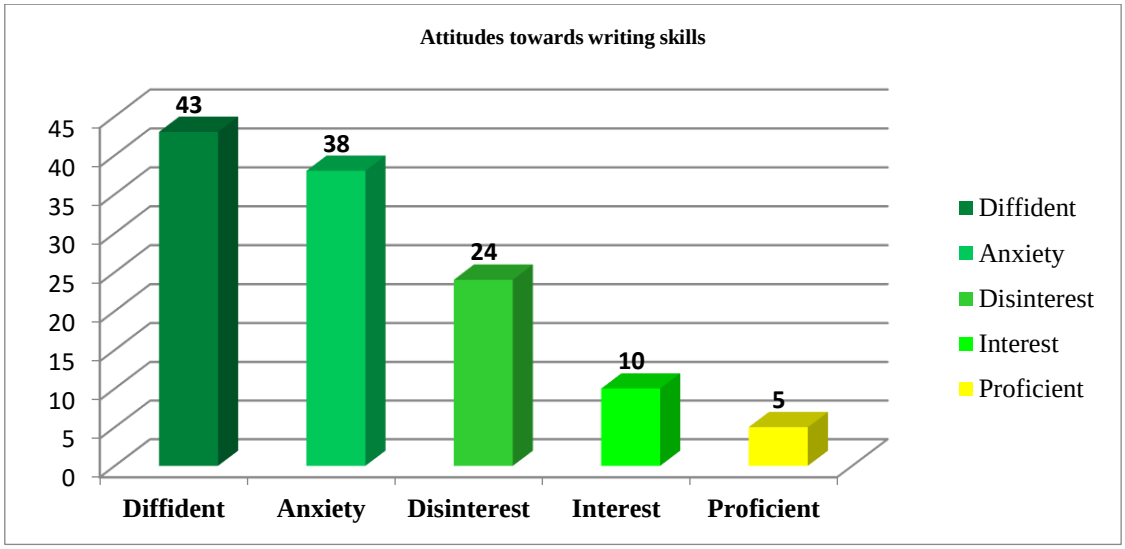

Figure 1: Respondents' Attitude Towards Writing Skills

The graph represents that respondents' diffident level takes the highest percentage, anxiety takes the second place and disinterest occupies the third place. The respondents' interest and proficient level reflects very least percentage. This shows that writing is a challenging task for the respondents. There is a possibility of making the writing skill even more challenging by developing negative attitudes towards writing. So, the instructors must learn about their students' attitude towards writing to make their instructional practices positive.

Pre-test

The respondents were asked to write an essay on the topic given by the instructor related to their branch. They were not exposed to either any set of rules or expectations from the instructor. They were given about 40 minutes to complete an essay. The data were collected and distributed to ten different evaluators. They were asked to evaluate the scripts using existing pattern that is, without any metrics or parameters.

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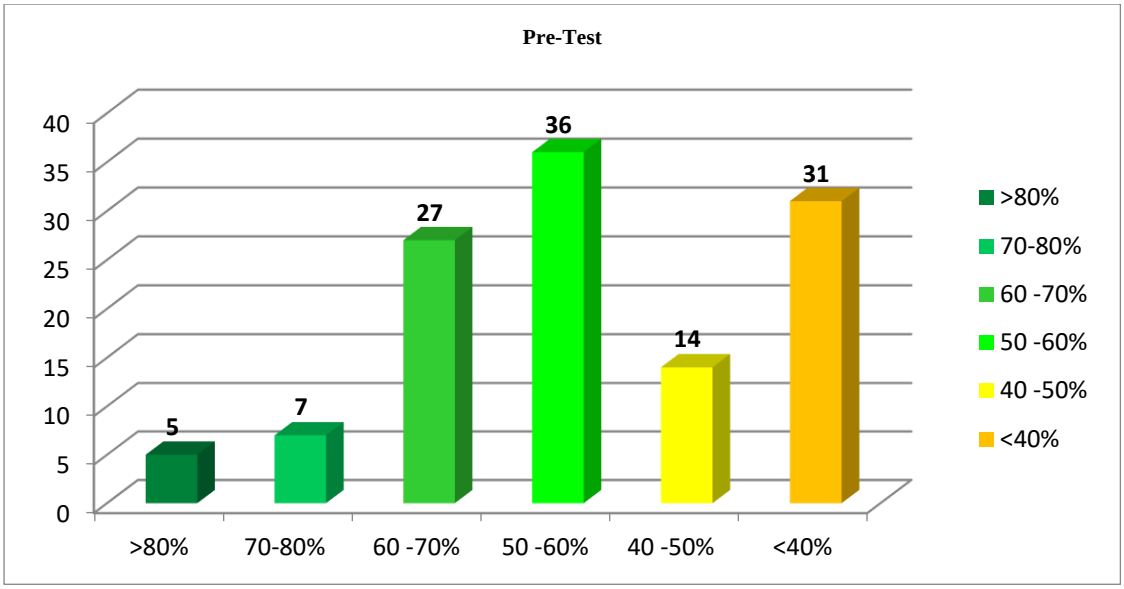

Figure 2: Pre-Test

The graph depicts that more respondents fall under 50% to 60 % category and only very few have scored more than 80%.

Post-test

The same set of respondents a week after were exposed to how to go about writing an essay, its types, introductory paragraph, body paragraphs, concluding paragraph, transitional words, organization of thoughts, coherence, grammar, spelling, punctuation, expectation of the evaluators, etc. The respondents were a given a different topic and same 40 minutes time limit was given to complete the task. The data were collected and distributed to the same set of evaluators with an evaluation metrics.

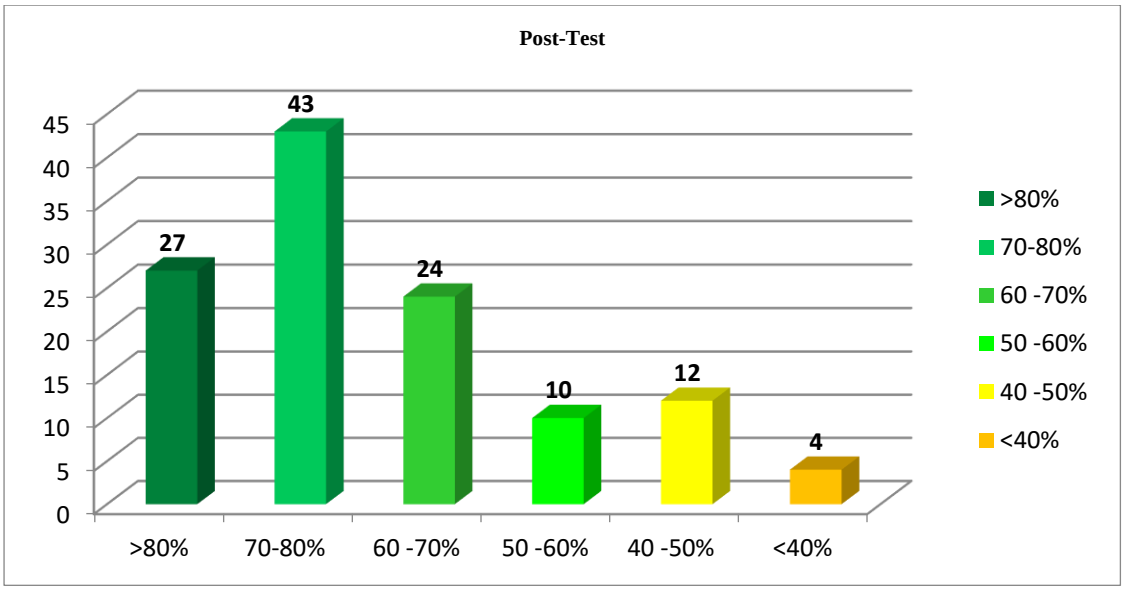

Figure:3 Post-Test

The graph depicts that more respondents fall under greater than 80% category and only very few have less than 40%. This shows a great progress in their writing skills. So, the analysis of pre-test and post-test helped the researcher gain an insight that respondents should be exposed to the evaluation metrics before their test in order to develop their writing ability.

Recommendation

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The focus of this paper is to gather information about the effectiveness of the existing evaluation pattern, analyse the data and recommend changes in the same. According to Dudley-Evans and St John (1998), ―evaluation is a whole process which begins with determining what information to gather and ends with bringing about change in current activities of influencing future ones. The primary purpose of evaluation is to provide the students with feedback that allows them to develop and improve their writing skills. Skill improvement remains the most important aspect of evaluation. It is crucial that evaluators should maintain a positive attitude throughout their evaluation process. This helps the students in acquiring better communication. The ability to provide positive and constructive feedback is the goal to which all evaluators must aspire. To measure the growth, an analytic scale analysis of skills, (Cooper and Odell, 1977) can be developed and used effectively with samples of students' writing. This instrument describes an analytical scale as (i) the students' ability to use words accurately and effectively; (ii) the ability to use standard English; (iii) the ability to use appropriate punctuation; and (iv) the ability to spell correctly. In addition to these instruments, various evaluators share the different strategies they have developed for measuring writing quality. An analytic rating scale generally includes a number of writing elements―namely, organization, content, cohesion, register, coherence, mechanics of writing, and accuracy of linguistic devices (Weigle, 2002), with each element being marked independently of other components.

Nevertheless, before the evaluation of any piece of students' work, evaluation criteria or traits in form of a scale must be set. These criteria or the traits may be called rubrics. As MarkBook (17.3.2011) states, rubrics provide a means of judging student's performance. A rubric is a rule or guide. A rubric enables an evaluator to convert (i.e. "grade") a given quality of student work into a letter grade, percentage, or level. Tests involving multiple choice, fill in the blanks, matching, or other "right/wrong" items don't need rubrics. However, complex student work, such as an essay, cannot be properly and fairly graded using a simple "right/wrong" rubric. Instead, the evaluator should devise a rubric chart that enables conversion of the work's quality into a percentage, letter grade, or level. This chart may contain more than one criterion for grading. For instance, the evaluator may be expected to grade an essay on grammar, punctuation, structure, works cited, logic, etc.

Evaluation Metrics

Writing Components	Criteria/Traits	Score
Content	extent, relevance, subject knowledge	30%
Organization	coherence, fluency, logical sequencing	20%
Vocabulary	richness, appropriate register, word form mastery	20%
Language Use	accuracy (a usage of articles, word order, tenses, preposition, sentence constructions	25%
Mechanics	paragraphing, spelling, capitalization, punctuation	5%

Table 1 Evaluation Metrics

There exist many different scales on evaluating writing. However, the researcher recommends Bacha's model (2001). The profile is divided into five major writing components: Content, organization, vocabulary, language use, and mechanics with each one having four rating levels of very poor, poor to fair, average to good, and very good to excellent.

Conclusion:

Writing is a conscious art as it is the best way of expressing one's ideas, feelings and thoughts. In today's technological world, writing plays an important role. Especially, Professionals' stature would gain a boost with their effective writing skills. The medium may be electronic but writing has become a very powerful medium of communication. All text messages, emails, social media post, blogs and

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comments rely completely on written communication. That's the reason, the researcher conducted the study with an aim to improve engineers' writing skill by adopting evaluation metrics. It also encourages students to take up the responsibility for their own learning, and enhance student-teacher communication. In addition, evaluation metrics has a potential to demonstrate students' learning process and leaning product over time. After reviewing and analysing research studies which are relevant to the issue, the researcher come to an agreement that following the evaluation criteria has become the remedial measures in honing the professionals' writing skills.

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