Chapter 5
Online Automated Essay Grading System as a Web Based Learning (WBL) Tool in Engineering Education

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ABSTRACT

Automated Essay Grading (AEG) or Scoring (AES) systems are not more a myth they are reality. As on today, the human written (not hand written) essays are corrected not only by examiners / teachers also by machines. The TOEFL exam is one of the best examples of this application. The students' essays are evaluated both by human & web based automated essay grading system. Then the average is taken. Many researchers consider essays as the most useful tool to assess learning outcomes, implying the ability to recall, organize and integrate ideas, the ability to supply merely than identify interpretation and application of data. Automated Writing Evaluation Systems, also known as Automated Essay Assessors, might provide precisely the platform we need to explicate many of the features those characterize good and bad writing and many of the linguistic, cognitive and other skills those underline the human capability for both reading and writing. They can also provide time-to-time feedback to the writers/students by using that the people can improve their writing skill. A meticulous research of last couple of years has helped us to understand the existing systems which are based on AI & Machine Learning techniques, NLP (Natural Language Processing) techniques and finding the loopholes and at the end to propose a system, which will work under Indian context, presently for English language influenced by local languages. Currently most of the essay grading systems is used for grading pure English essays or essays written in pure European languages. No one in today's world can ignore the use of English in Engineering education. Better to tell in professional courses. All the Engineering branches or streams are normally supported with modern English and sometimes known as English-for-Engineers. This write-up focuses on the existing automated essay grading systems, basic technologies behind them and proposes a new framework to show that how best these AEG systems can be used for Engineering Education. E-learning has created the path of alternate education. Whereas the Web-based-learning (WBL) has made the path much easier. Use of AEG systems in a web based learning environment helps the students to know, use,

and understand English much better than they used to do in normal classroom based study. Such kinds of AEG systems are very useful mainly for non-English spoken students, better to say – students whose mother tongue is not English. Normally found that English used by such students are influenced by local languages. Use of a AEG system will not only help students to write better English essay, score better in English and others subjects written in English.

1. INTRODUCTION

Evaluation and Grading considered playing a central role in the educational process. The interest in the development and in use of *Computer-based Assessment Systems* (CbAS) has grown exponentially in the last few years, due both to the increase of the number of students attending universities and to the possibilities provided by e-learning approaches to asynchronous and ubiquitous education. Presently more than forty commercial CbAS are currently available on the market. Most of those tools are based on the use of the so-called objective-type questions: i.e. multiple choice, multiple answer, short answer, selection/association, hot spot and visual identification. Most researchers in this field agree on the notion that some aspects of complex achievement are difficult to measure using objective-type questions. Learning outcomes implying the ability to recall, organize and integrate ideas, the ability to express oneself in writing and the ability to supply merely than identify interpretation and application of data, require less structuring of response than that imposed by objective test items (Gronlund, 1985). It is in the measurement of such outcomes, corresponding to the higher levels of the Bloom's (1956) taxonomy (namely evaluation and synthesis) that the essay question serves its most useful purpose. One of the difficulties of grading essays is the subjectivity, or at least the perceived subjectivity, of the grading process. Many researchers claim that the subjective nature of essay assessment leads to variation in grades awarded by different human assessors, which is perceived by students as a great source of unfairness.

Furthermore essay grading is a time consuming activity. It is found that about 30% of teachers' time is devoted to marking. A system for automated assessment would at least be consistent in the way it scores essays, and enormous cost and time savings could be achieved if the system can be shown to grade essays within the range of those awarded by human assessor. Furthermore using computers to increase our understanding of the textual features and cognitive skills involved in the creation and in the comprehension of written texts, provide a number of benefits to the educational community.

Purpose of this paper is to present a new concept over the existing ones, through which we can overcome the problem of influence of local Indian languages in English essays. The system can do the grading of English essays as well as it can also provide sufficient feedback so that the students/user can understand what are the basic errors (spelling, grammar, sentence formation etc.) made by them and whether there essay is influenced by local language or not and how to overcome all these problems. The paper also discusses the current approaches to the automated assessment of essays (English Essays) and utilizes this as a foundation for the new framework. Thus, in the next section, research of some of the following important automated grading systems will be discussed: Project Essay Grade (PEG), Intelligent Essay Assessor (IEA), Educational Testing service I, Electronic Essay Rater (ERater), C-Rater, BETSY, Intelligent Essay Marking System, SEAR, Paperless School free text Marking Engine and Automark. All these systems are currently available either as commercial systems or as the result

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