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Editorial

It is with great pleasure and satisfaction that we release the World Transactions on Engineering & Technology Education (WTE&TE), Vol.10, No.2, for global distribution. This issue consists of nine research and development articles coming from authors based in eight countries worldwide: the United States of America (2), Taiwan (2), Botswana, Canada, Germany, Indonesia, Scotland and Slovenia.

The other day, we were discussing the research impact through the higher education programme carried out by the WIETE's predecessor, the UNESCO International Centre for Engineering Education (UICEE), which was based at Monash University, Melbourne, Australia, until the Centre's closure on 31 December 2008. The programme, which was mostly supported by funds generated by the UICEE staff, helped several candidates financially and through the academic supervision of their higher degree research projects, to carry out research and development activities that led to the awarding of four master's degrees and three PhDs. The reality was that four of the projects continued after the closure of the UICEE, and two recent completions, one PhD and one Master's degree eventuated in 2011. Another positive aspect of this programme was that the higher degree projects also led to the publication of many peer refereed journal articles and conference papers, most of which are accessible to the local and international communities of engineering and technology educators.

In addition, we are happy that the two international journals initiated by the UICEE, and presently published by the WIETE, that is the World Transactions on Engineering and Technology Education (WTE&TE) and the Global Journal of Engineering Education (GJEE), are well received, appreciated and supported by the international community. It is important to emphasise their role in creating a forum for international discussion on critical issues pertaining to engineering and technology education. In providing members of the global community with this issue of the WTE&TE, we hope that readers will find the articles to be highly informative, useful and applicable in their own research, development and publication efforts. On behalf of the WIETE Editorial team, and indeed myself, I wish to express our sincere gratitude to the contributors to this issue for their keenness to make their achievements available to others.

Furthermore, it is my pleasure to thank the referees for their excellent work in reviewing the submitted articles at short notice. Sincere thanks are also extended to Dr Dianne Q. Nguyen and Dr Ian R. Dobson for their important input into the preparation of this issue for publication and distribution.

Zenon J. Pudlowski

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Predicting students' final results through discriminant analysis

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ABSTRACT: As an academic advisor, a full-time lecturer has the duty to help students in setting up their study plan each semester so that they can perform with maximum efficiency. The aim of this research is to ascertain which subjects determine the students' final passing results. An academic advisor is expected to be able to predict the students' final passing results. In order to achieve this goal, discriminant analysis can be applied for this purpose. This particular analysis, based on students' results obtained in several subjects was applied in this research, and is outlined and presented as an example in this article.

INTRODUCTION

One of the important aims of higher education in the Republic of Indonesia is to prepare the academic participants (students) to become society members with academic and/or professional abilities that enable them to apply-develop-enrich the knowledge foundation in science, technology and the arts (The Government Regulation on Higher Education, the Republic of Indonesia, Nr 60, Year 1999) [1]. To achieve this objective, undergraduate students are assigned to several academic advisors (an informal translation for the Indonesian term *Dosen Wali*) throughout their years of higher education studies.

Academic advisors are lecturers or other faculty members and their main task is to foster students' academic and non-academic activities. With regard to students' academic activities, one of the duties of the academic advisor is to help students in setting up their study plans for each semester. Setting up a study plan includes providing guidance for students regarding how many subjects, and which subjects, to undertake. Through this advice, students are expected to obtain the best results at the end of their undergraduate study. The passing results in the Indonesian education system are classified into three grades: Extraordinary (*Cum Laude*), Very Satisfactory and Satisfactory.

This research aims to equip academic advisors with knowledge and tools required to provide guidance. As a case study, a certain research arena was chosen. For confidentiality reasons, the arena is called the Faculty of Information Technology, University X in Bandung, West Java, Indonesia. The academic transcripts of some alumni serve as *input data* for a multivariate technique called discriminant analysis.

OVERVIEW OF BACKGROUND THEORY

Discriminant analysis is a multivariate statistical technique used in statistics. This technique classifies an *object* into one among several *groups* based on its *attributes*. Discriminant analysis has three main objectives. First, to identify the *attributes* that discriminate among the groups. The second objective is to use the identified variables to develop some functions, called the *discriminant functions*, for computing some new variables or indices that will parsimoniously represent the differences among the groups. The third objective is to use the computed scores to develop a rule to classify future observations into one of the several groups [2].

In this research:

- Objects are the undergraduate students being studied;
- Based on the passing results, there are three possible groups of students, as mentioned previously: 1 - Extraordinary (*Cum Laude*); 2 - Very Satisfactory; and 3 - Satisfactory;