

**DECISION TREE ALGORITHMS TO DETERMINE GCE ORDINARY-LEVEL
STUDENT PERFORMANCE FACTORS INFLUENCING ENGLISH AS A
SUBJECT**

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The General Certificate of Education Ordinary Level (GCE O/L) Examination is a milestone in the Sri Lankan Education system. The GCE O/L results are used to screen students for selecting subjects for the Advanced Level Examination. Students' learning strength depends on many factors, such as environmental, mental, and physical factors. Since these factors directly affect the student's learning ability, it is crucial for educators to identify the most important factors among these. Randomly selected student data were used in this study. The questionnaire consisted of questions that were assumed to affect the outcome of the English subject result. Seventy-two Grade 12 students answered the questionnaire. Various decision tree algorithms were used for the classification. J48, LMT and Random Tree were used to build the classification models using WEKA, and their accuracies were compared. During the study, English writing reading ability, family help and contribution of tuition classes showed an association with the student grades. After the model creation, J48, LMT and Random Tree obtained 51%, 47% and 55% accuracy, respectively. The decision tree model with the highest accuracy was then considered, and the decision tree classification rules were converted manually into If-Else statements. Random Tree obtained the highest accuracy. Using the classification rules generated by the Random Tree model, the performance factors related to English as a subject were identified.

Keywords: Decision Tree, J48, LMT, WEKA