

資料探勘技術在學生國語學習成就之分析運用

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摘 要

本研究主要採用由下而上（button-up）的決策樹資料探勘方法，以台東縣教育長期研究資料庫2003年及2005年之國語學習成績為樣本，運用SPSS 13.0電腦套裝軟體進行分析，本研究得到如下結論：

一、在家長背景變項方面：判別六年級學生國語成績的關鍵因素為父親的職業，當父親的職業愈是屬於社會的高層階級，對學生國語成績的影響就愈高；而當父親的職業為農或工或買賣服務工作時，學生性別、母親的族籍等因素，對學生的國語成績表現會有較明顯的影響；判別八年級學生國語成績的關鍵是家長對學生的期望學歷。當家長對學生的期望學歷愈高，對學生國語成績的影響就愈明顯，而在家長期望學生學歷的影響因素下，父親的族籍、學生的性別、母親的族籍、家長對學生的期望學業成績表現等因素，對學生的國語成績表現會有較明顯的影響。

二、在學生背景變項方面：2003年判別國語成績的關鍵因素是家中的藏書量，當家中的藏書量愈多時，則對學生的國語成績有明顯的影響。當家中的藏書量愈多時，對學生國語成績的影響就愈高；而當家中的藏書量50本（含）以上時，學生性別、母親族籍、是否參加合

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唱團等因素，對學生的國語成績表現會有較明顯的影響；而2005年判別國語成績的關鍵因素則是學生自己的期望成績，當學生對自己的成績期望愈高時，則對其分數愈高。尤其當學生對自己期望的成績高時，加上教師高的期望成績與好友的閩南族籍，學生的國語成績有較高的表現，同時當學生對自己的期望成績比別人好時，校外學習英語與好友的族籍因素亦對學生的國語成績有較明顯的影響。

關鍵字：決策樹分析、國語學習成就、資料探勘

Data Mining Techniques in the Analysis of Students Mandarin Learning Achievement: Using TTEPS as An Example

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Abstract

This study adopts button-up Decision Tree Data Mining and analyzes Mandarin course grades using the Taitung Educational Panel Survey (TTEPS) in 2003 and 2005 using SPSS 13.0. The purpose is to recognize the more significant factors affecting the students' Mandarin course grades.

The conclusions are listed below:

1. Analysis of the parents' background variables: The key factor in sixth graders' Mandarin course grades is the fathers' occupation. If the fathers' occupation is considered as possessing a higher socio-economic level, the influence on the students' Mandarin course grades is more significant. If the fathers' occupations fall into the categories of agriculture, industry, or trading, both the students' gender and the mothers' nationality significantly influence the students' Mandarin course grades. The key factor in eighth graders' Mandarin course grades is the parents' expected educational level in respect to the students. If the parents expect a higher educational level to be achieved by the students, the influence of this on the students' Mandarin course grades is higher. Along with the factor of the parents' expected educational level to be achieved by the students, the fathers' nationality, the students' gender, the mothers' nationality, the parents' expectations with

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respect to the grades of the students will more significantly influence the students' Mandarin course grades.

2. The students' background variables: In 2003, the key factor in Mandarin course grades is the size of book collections at home. A larger book collection at home has a more significant influence on the students' Mandarin course grades. When the book collection is 50 books or more, the students' gender, the mothers' nationality and student participation in a choir will significantly influence the students' Mandarin course grades. In 2005, the key factor in Mandarin course grades is the students' expected grades. When the students have higher expectations in terms of their grades, there is a greater influence on the grades. Along with the students' high expectations about their grades, the teachers' high expectations about student grades and the Minnan ethnic background of the students' friends meant that students' Mandarin course grades will be higher. When the students expect their grades to be higher than others, extracurricular English learning and their friends' ethnic background will significantly influence the students' Mandarin course grades.

Keywords: decision tree analysis, Mandarin learning achievement, data mining