透過分析 PISA2006 科學素養調查數據探究澳門基礎教育的教育公平問題

A study of educational equity of Macao basic education through analyses of PISA2006 scientific literacy survey data

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摘要

PISA2006 國際報告顯示，澳門屬於教育公平的地區。然而，研究者從學校資源環境、學校家長選校考慮和學校收生政策三類因素，對澳門基礎教育的教育公平存疑。

研究者採用 PISA2006 科學素養調查學生、家長和學校數據，探索澳門基礎教育可能存在的教育不公平現象。首先應用階層線性模型(HLM)中介變項對以上三類可能影響澳門基礎教育公平的學校階層因素進行中介變項分析，以檢驗這三類因素能否中介學校 ESCS 對學校科學素養表現的影響；然後，透過結構方程模式(SEM)分析學生階層因素中的家庭及電腦教育資源對學生科學素養表現的影響。

研究發現有三：學校之間的科學素養表現存在差異；學校階層證實有兩項與學校家長選校考慮的完全中介變項；證明家庭及電腦教育資源透過科學和資訊通訊科技(ICT)自我效能感對學生科學素養產生影響。研究結果後有政策建議，進一步完善澳門基礎教育的教育公平。

關鍵詞：教育公平、社經文化地位、科學素養、學生能力國際評估計劃(PISA)

Abstract

In the PISA2006 International Report, Macao is considered one of the most equitable educational systems amongst the 57 participating economies. From the perspectives of: (1) school resources and environment, (2) parental school choice, and (3) school admission policies, the researcher of the present study has grave doubt about this finding.

Using student, school and parent data in PISA2006 Scientific Literacy Study, the present study seeks to uncover that there is inequity in Macao's basic education system. At the school level, through the use of Hierarchical Linear Modeling (HLM), variables pertaining to school resources and environment, parental school choice, and school admission policies are used to examine whether the variables mediate the effect of school ESCS on scientific literacy performance. At the student level, through employing Structural Equation Modeling (SEM), variables pertaining to family and computer education resources are used to examine how the resource variables affect scientific literacy performance.

There are altogether three key findings. First, there are substantial differences in scientific literacy performance amongst schools. Second, two variables pertaining to parental school choice are confirmed to mediate totally the effect of school ESCS on scientific literacy performance. Third, family and computer education resources are

found to affect scientific literacy performance via scientific efficacy and ICT (information and communication technology) efficacy of the students. The thesis ends by formulating policies that tie in well with the Macao schooling contexts for the betterment of equity in Macao's basic education system.

Keywords: educational equity, ESCS, scientific literacy, PISA

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