

國立彰化師範大學 100 學年度博士班招生考試試題

系所：科學教育研究所
組別：乙、丙、丁、戊

科目：科學教育

☆☆請在答案紙上作答☆☆

第 1 頁，共 1 頁

一、名詞解釋 (20%)

1. metacognition
2. PISA
3. portfolio assessment
4. pedagogical content knowledge
5. Social Scientific Issue

二、翻譯題 (20%)

- a. 請翻譯以下文字 (請翻譯大意，不用逐字翻譯。)

How should one deal with students' *misconceptions*? Early in conceptual change research, most people assumed that students' ideas were coherent and integrated. Under such an assumption, one has little choice but to argue students out of their prior ideas and convince them to accept the ideas of scientists. However, a very different view has gradually grown in influence. Rather than a coherent whole, students' ideas may consist of many quasi-independent elements. Instead of rejecting students' conceptions, one can pick and choose the most productive students' ideas and refine them to create normative concepts (節錄改自 diSessa, A. A., 2006). (10%)

- b. 請針對上述文字發表你的看法 (可就教學經驗或學理的角度論述) (10%)

三、(a) 何謂 Nature of Science (NOS)? 請列舉過去學者所提出的相關構念及其意涵 (10%)

- (b) 試論述 NOS 和科學學習的關係 (可就學理或實徵研究而論) (10%)

四、社會建構主義以及認知師徒制對於當前數理師資培育扮演重要的角色，請簡述社會建構主義以及認知師徒制的精神，以及兩者如何具體的應用在數理師資培育中。(20%)

五、探究教學是當前課程改革的重心，請說明何謂探究教學，此教學與概念改變教學或是建構主義教學的差異? 在探究教學中教師在課前、課堂中以及課後所應做的工作具體內容為何? 方能突顯出探究的特色。(20%)