國立臺北教育大學 98 學年度博士班招生入學考試
自然科學教育學系博士班 科學教育專業英文 科試題

作題注意事項：
一、每題 25 分，四大題，合計 100 分。
二、各題作題說明於各題內，請參閱。

1.名詞解釋(請翻譯並以中文說明意涵，每題 5 分，共 25 分)
(1) Action research
(2) Internal consistency reliability
(3) Content validity
(4) Self efficacy
(5) Cognitive style

2.閱讀 Part A 後，回答 Part B 的題目（作答方式：中文英文書寫均可）(25 分)

Part A:（閱讀）

This empirical study comprised a mixed-methods approach involving a pretest-posttest experiment and semi-structured interview. The experiment consisted of 132 grade 9 students randomly assigned into experimental and control groups. Students had not studied the unit on moon phase in their junior high school but may have had relevant prior knowledge about the moon phase. The experimental group read the colored Chinese SFLT (systemic functional linguistics text, SFLT) about the moon phase, which was written utilizing the principles of technicality construction, imagery-exhaustive structure, and high-modality expression. The control group read the colored Chinese TT (traditional textbook, TT) on moon phase from a current junior high school science textbook. The groups were administered a pretest to probe their prior understanding of moon phase. After 2 weeks, students read the assigned versions of the text and were administered a posttest. Sixteen students from both groups were selected randomly in terms of high or low performance on the posttest to participate in an in-depth interview. The main purpose of the interview was to investigate students' reading processes and their comprehension of the image included in the text.

Part B: （回答問題）

2-1 本研究探討的問題是什麼？（5 分）

2-2 使用的研究方法為何？（5 分）

2-3 請以簡單的圖描述該研究設計。（10 分）

2-4 實驗組的處理為何？（5 分）

3.閱讀 Part A 的英文摘要，回答 Part B 列述的問題。（25 分）

Part AABSTRACT.

This study is a cross-cultural comparison between the ideas of 49 Thai Grade 9 students and the 30 New Zealand Grade 9 students (approximately 15 years old), about energy related to technological and societal issues. Students' ideas were explored using the Questionnaires for exploring Students' ideas about Energy, Technological, and Societal issues (QSETS). The QSETS questionnaire gave students the opportunity to express their ideas bout energy related to societal and technological issues. Both groups of students were presented with the same set of issues, but specific places were related to each student's own country. The study reveals some interesting student ideas that might be generated from engaging in different contexts. It seemed that the 15-year-old students had difficulty in perceiving the relationship between the study of society and energy. Around 50% of both groups of students did not understand, and did not know enough about, questions which referred to the relationship between society and energy. Thai and New Zealand students held different values in decision-making. Thai students placed value on decision-making concerning the development of country. They strongly believed in scientific application for solving social problems. New Zealand students valued decision-making in relation to environmental issues. They were not quite sure that caused damage to the environment. This study has implications for the development of teaching approaches in different countries.

Part B

3-1 由摘要內容寫出本研究的題目(title)。（中英文回答皆可）（7 分）

3-2 簡單敘述研究方法。（請以中文回答）（5 分）

3-3 兩群研究發現結果之共通處為何？（請以中文回答）（5 分）

3-4 兩群研究發現結果不同之處為何？（請以中文回答）（8 分）

4.請閱讀下列一段文章後，陳述文章重點並作分析評論，中英文均可。
（重點 15 分，評論 10 分）

Having solved major mysteries about the physical and the biological worlds, scientists and technologists have more recently turned their attention to the understanding of the human mind and brain. More knowledge about psychology and neuroscience has been accrued in the past fifty years than in all prior historical eras combined. We now have well-developed, empirically based theories of intelligence, problem solving, and creativity—along with the tools, software, and hardware based (or purportedly based) on these scientific advances. Educators, professionals, managers, and leaders in business need to be cognizant of what has been established, and what may soon be established, about the nature, workings, potentials, and constraints of the human mind. Curricula developed fifty or a hundred years ago no longer suffice. But don't toss out the exquisitely evolved infant with the sudsy bathwater of earlier eras. It is easy—but dangerous—to conclude that all education in the future should simply concentrate on mathematics, science, and technology. And it is equally easy—and equally dangerous—to conclude that the forces of globalization should change everything. (Howard Gardner)