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Construct validity of Thai lifelong learning inventory: Evidence from high-school students in Phrae, Kalasin, Prachin Buri, and Pangnga provinces

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ABSTRACT

This study aimed to assess the construct validity of Thai lifelong learning inventory: evidence from high-school students in Phrae, Kalasin, Prachinburi, and Pang-nga provinces. The participants in this study were 1,939 high-school students and were selected through multi-stage sampling. The tools were two sets of an inventory to determine the students of lifelong learning, each of which contained 70 items. The first set was a 5-scale Likert inventory and the second was a situational inventory with 4 choices for each item. The data were validated using second order confirmatory factor analysis followed by the LISREL 8.72. The results indicated that the models fitted to the empirical data found in the former inventory, $\chi^2 = 125.79$, df = 106, $p = .09$, GFI = 1.00, AGFI = 0.98 and RMSEA = 0.01, and those found in the latter,$\chi^2 = 149.96$, df = 127, $p = .08$, GFI = 0.99, AGFI = 0.98, RMSEA = 0.01.

Introduction

Lifelong learning is important for the 21st century living; as a result, every country has to cultivate the attitude of lifelong learning because a key purpose of lifelong learning the active citizenship which is important in terms of connecting individuals to the structures of social and economic activity in both local and global contexts. Lifelong learning can be divided into two phases: initial education referring to formal education and later learning referring to education or training following formal education (Gorard, 2001; as cited in Sumretphol, 2004) The two phases are related in that an individual will transfer what he has learned in the formal education to later learning. Those who are successful in the first phase have a higher motivation to pursue their learning through life (Hasan, 1996; Medel–Añonuevo, Ohsako & Mauch, 2001; Sumretphol, 2004). Therefore, lifelong learning attributes should be cultivated during the first phase and should be monitored continuously on the individual and national levels.

The assessment of lifelong learning attributes is generally carried out by using a lifelong learning attributes inventory developed according to professions such as the Oddi Continuing Learning Inventory (OCLI), (Oddi, 1986),Characteristic of Lifelong Learners in the Professions (CLLP), (Livneh, 1988), Employee Lifelong Learning Scale (ELLS), (Gardiner, 1998), Effective Lifelong Learning Inventory (ELLI), (Deakin, Patricia, & Guy, 2004), Revised Oddi Continuing Learning Inventory, (Harvey, Rothman & Frecker, 2006), Characteristics of Lifelong Learning of the Senior (Choomsai, 2008) and Characteristics of Lifelong Learning of High-School Students (Rittilun, 2012).

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The assessment of these attributes is a psychological assessment and the validity of the results depends on the quality of the inventory. The construct validity is an important feature of the assessment (Kanjanawasee, 2005) because it can confirm that the assessment has adopted a certain theory or can actually determine certain factors. According to Rittilun (2012), his first phase of exploratory factor analysis revealed that a model for determining the Thai lifelong learning inventory comprised three factors – ability to learn, effective learning management, and motivation and learning exchange. To confirm that high-school students have these factors are theoretical – based, this study was conducted based on construct validity.

Literature Review

This study based on second order confirmatory factor analysis follows the model developed by Rittilun (2012) revealing that there are 3 main factors validated by exploratory factor analysis and 26 sub-factors as follows:

1. The ability to learn comprising 7 sub-factors: 1) information seeking skill, 2) ability to analyze, synthesize and evaluate, 3) creativity, 4) ability to communicate effectively, 5) ability to summarize, 6) ability to integrate what has been learned, and 7) various learning strategies.
2. Effective learning management comprising 8 sub-factors: 1) inquisitive mind, 2) avid reader, 3) curiosity and problem solving, 4) effective recording, 5) future orientation, 6) academic challenge, 7) being able to work alone, and 8) effective time management.
3. Motivation and learning exchange comprising 11 sub-factors: 1) self-directed learning, 2) active involvement in improving oneself and society, 3) learning enjoyment, 4) moral judgment, 5) self-awareness of potential, 6) recognizing others' competence, 7) being open-minded, 8) supporting others to learn, 9) willingness to change, 10) information literacy, and 11) viewing everything as a learning process.

Research Objective

This paper aimed to assess the construct validity of Thai lifelong learning inventory from the evidence from high-school students in Phrae Kalasin Prachinburi and Pangnga province.

Methods

This research method was descriptive research to assess the construct validity of Thai lifelong learning inventory models of high-school students. The research tools included 1) a 70-item-5-scale Likert inventory whose discriminating power was between 0.21 and 0.64 and whose reliability was .96 and 2) a 70-item situational inventory with 4 choices for each item whose discriminating power was between 0.21 and 0.53 and whose reliability was .93.

Participants

The population in this study was 923,227 high-school students under Office of Basic Education Commission in 2011 academic year.

The sample in this study was 1,939 high-school students under the Office of Basic Education Commission in 2011 academic year. Four hundred eighty nine students from Phrae province in the Northern region, 481 students from Kalasin province in the Northeastern region, 483 students from Prachinburi province in the Central Plains and 486 students from Pangnga province in the Southern region. They were randomly selected through multi-stage sampling.

Data Collection

In this study, the data were collected from 15 schools in four regions: 3 schools (Rongkwanganusorn, muangkhaipittayakhom, Wiengtepwittaya) from Phrae province, 4 schools (Somdetpitayakhom, Khammuang, Noncomwitaya, Morsaunkhingpiitayasan) from Kalasin province, 4 schools (Prajantaratbamrung, Chitjaichuen, Kabinburi, Thairathwitthaya)from Prachinburi province in the Central plains and 4 schools (Deebukphangngawittayayon, Satreephangnga, Takuatungngantaweewittayakom, Takuapasenanukul) from Pangnga province.

Data Analysis

Second order confirmatory factor analysis and LISREL 8.72 were used to analyze the data.

Results

The findings can be divided into two parts.

1. According to the Likert-scale inventory, the Chi-square (χ^2) value was 125.79 df of 106 and p was .09. The χ^2 value was statistically insignificant to zero. This means that the model fitted to the empirical data, in that the Goodness of Fit Index (GFI) of the model was 1.00 and its Adjusted Goodness of Fit Index (AGFI) was 0.98. The value of Root Mean Square Error of Approximation (RMSEA) was 0.01, meaning that the model fitted to the empirical data. The linear relationship of the sub-factors is shown in Figure 1 and the results in Table 1.

Based on Figure 1 and Table 1, the factor loadings of the twenty-six sub-factors were positive. Their sizes ranged from 0.53 to 0.84 and their statistically significant level at .01. The highest factor loading sub-factor was being able to work alone, RMAN7 (0.84), followed by inquisitive mind, RMAN1 (0.76) and self-awareness of potential, RMOT5 (0.76) while the lowest factor loading sub-factor was creativity, REDU3 (0.53).

According to the second order confirmatory factor analysis, the factor loading of the three factors were positive and their sizes ranged from 0.93 to 1.00 with their statistically significant level at .01. The coefficient of

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