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Teaching and Learning Innovation among Teacher Educators

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Abstract

Innovation is an important competency to be honed by all the school teachers. To promote innovation among school teachers, teacher educators in Teacher Training Colleges play a prominent role. Align with this, approaches of integrating innovation in teaching and learning activities are found to be very significant in enhancing the quality of teacher education. In spite of the significance of this construct, valid instruments have proven yet to be developed in the context of teacher education. Therefore, the absence of valid instrument to assess innovation in teaching and learning activities among teacher educators has stymied researches in this area. The main aim of this study was to develop a valid instrument to assess innovation in teaching and learning activities among teacher educators. A survey comprised of 100 teacher educators was carried out in one of the Teacher Training Colleges in Malaysia. An exploratory factor analysis (EFA) was employed to identify the underlying factors. Result of EFA formed a nine-item version of Innovation in Teaching and Learning Activities Inventory (ITLAI). All the combined nine items explained 65.809% of the total cumulative variance. Based on these findings, ITLAI can be used as a valid instrument to assess innovation in teaching and learning activities among teacher educators in Teacher Training Colleges. Besides, it provides comprehensive guidelines for head of departments to organize a clinical workshop on teaching and learning innovation for novice teacher educators.

Keywords: Teaching and Learning Innovation, Teacher Educators, Teacher Training Colleges, Exploratory Factor Analysis.

Introduction

Delivering a lesson is not the main responsibility for a teacher educator in Teacher Training College. The most crucial part is to plan and execute innovative lessons in order to equip the students with special competencies and enhance the quality of the education institutions (Grenier, 2013). Teacher educators need to deliver attractive and interactive lessons rather than being comfort with *chalk and talk* teaching method. Innovation in teaching and learning is an effort of improvisation by integrating technology (Henriksen & Mishra, 2015) and creativity

(Muda & Yusof, 2015) elements. Creative teacher educators use various strategies to plan and execute the teaching and learning activities. They believe that variations which is also known as innovations, able to generate a great impact on learning outcomes (Archambault et al., 2010). Therefore, teacher educators play a prominent role in cultivating the culture of innovation in Teacher Training Colleges because they are the best models to all the teacher trainees. All the best practices in the Teacher Training Colleges will be adapted directly by the teacher trainees as the best references to be used in the schools.

Background of the Problem

Priorities has given by Ministry of Education in cultivating innovative teaching and learning approach as it is believed to enhance the effectiveness of lesson delivering in the classroom (Economy Planning Unit, 2015). According to the Malaysian Education Blueprint (2013), teachers should also be trained to plan and execute innovative pupil-centered activities to enable them to generate more proactive students. In spite of efforts taken, teachers still facing problems in integrating innovation in teaching and learning activities (Ministry of Education, 2013).

Lack of a comprehensive exposure of teaching and learning innovation in Teachers Training Colleges was one of the main reasons contributed to the above mentioned problem. Malaysian Institute of Teacher Education (2011) has reported that a few innovative teaching and learning methods such as self-regulated learning, distributed learning, individualistic learning and 21st century learning skills will be introduced gradually in Teacher Training Colleges. However, the time frame being set to implement all the above mentioned methods is worrisome as 50 % of Malaysian teachers are still practicing teacher-centered and lecture format of lesson delivery (AKEPT, 2011). Karavas-Doukas (1995) ascertained that the quality of teacher education and teacher educators must be enriched in order to foster innovation among teachers.

The New IPG-Teacher Education Transformation framework was established to upgrade Malaysian teacher education system to the international level. Excellence in Innovation was one of the three important elements listed in the strategic map of teacher education transformation. Despite the well planned teacher education transformation, valid guidelines to attain excellence in innovation have proven yet to be developed for all the teacher educators (IPGM, 2011). Lack of innovative teaching and learning activities in Teaching Training Colleges has contributed to the passive teachers in the schools (Chigona, 2015). They preferred to deliver the lessons in the traditional method rather than carrying out interactively pupil-centered lessons.

Thus, teacher educators play a prominent role to be innovative in planning and executing teaching and learning activities. A study by Supermane and Tahir (2017) has revealed that Malaysian teacher educators were able to develop innovation in their teaching and learning activities if they could manage their knowledge effectively. Given the importance of teacher educator's innovation in teaching and learning activities, this study developed a valid instrument to assess innovation in teaching and learning activities among teacher educators. Furthermore, various types of teaching and learning innovations were identified in the context of teacher

education. By providing instrument and in-detailed information about innovation, teacher educator will be able to manage the provided knowledge to develop innovations in teaching and learning activities.

Methodology

The population of this study comprised of 3109 teacher educators across Malaysia. The teacher educators were chosen as the population for this study because they were the prospective group to involve in teaching and learning innovation rather than directors and head of departments. 105 teacher educators from one of the Teacher Training Colleges in Southern Malaysia were identified for the survey. A clustered sampling procedure was used to obtain the sample for this study. The data of five respondents were excluded from the data analysis as the data received was too ambiguous. Thus, the remaining data of 100 respondents were used to conduct factor analysis.

A self-administered questionnaire was used as the main instrument for the purpose of primary data collection. All of the nine items within the instrument were constructed to measure the innovation in teaching and learning activities among teacher educators in Teacher Training Colleges. The instrument was based on five point Likert scale. Then, Exploratory Factor Analysis (EFA) was performed to extract the items with factor loadings above 0.5. According to Hair et al. (2014), items can be practically significant in measuring constructs if could extracted with factor loadings above 0.5.

Findings and Discussion

The main purpose of this study was to develop a valid instrument to assess innovation in teaching and learning activities among teacher educators. Therefore, this study examined all the psychometric properties of ITLAI and demonstrated significant results. In the context of this study, EFA was used to extract items with factor loadings above 0.5 to strengthen the validity of this instrument.

Before conducting EFA, Bartlett's Test of Sphericity (BtoS) was used to test the item level bivariate correlations and Kaiser-Meyer-Olkin (KMO) was used to test the partial correlations among pairs of items. As for this study, the obtained value of BtoS was very significant as it was closer to 0. The KMO value was 0.876, which is considered high. According to Norman and Streiner (2008), the KMO value within 0.80 and 0.89 is considered good. Therefore, the derived values of BtoS and KMO for this study showed that the data met the fundamental requirements to conduct EFA.

Then, principal component analysis method was employed to estimate the factors that contributed the most variances to the observed variables. The factor analysis revealed one factor as solution with 65.809 percent of total cumulative variance. Item 1 solely explained 65.809% of the cumulative variance because it was the only item which scored eigenvalues more than one. The results showed a sufficient percentage of cumulative variance to measure the whole construct of teaching and learning innovation.

As a final point, Orthogonal Varimax rotation was used to identify uncorrelated factors. Table 1 shows the final factor loadings for all the nine items of teaching and learning innovation in Teacher Training Colleges. The factor loadings for all the nine items were all in the range of 0.709 to 0.896. Therefore, none of the items were discarded from the instrument as all the factor loadings were above 0.5.

Table 1: Final Factor Loadings Matrix for Innovation in Teaching and Learning activities

Code	Item	Factor Loadings
INO1	I'm interested in teaching and learning innovation	0.809
INO2	I'm aware of the education technology advancement	0.884
INO3	I'm creative in carrying out teaching and learning activities	0.860
INO4	I explore educational websites to gain more new ideas about teaching and learning activities	0.800
INO5	I guide my students to use creativity in teaching and learning activities	0.780
INO6	I use technological facilities in executing teaching and learning activities	0.896
INO7	I use Technological Pedagogical Content Knowledge (TPACK) to integrate pedagogical and domain knowledge	0.709
INO8	I use online learning as one of the teaching and learning medium	0.827
INO9	I use social media to respond to my students questions pertaining teaching and learning activities	0.714

Extraction Method: Principal Component Analysis.

a. 1 factor extracted.

Rotation: Varimax with Kaiser Normalization.

In the context of this study, all the nine items were categorized under one factor. The results of this study were encouraging as the development of the ITLAI was an utmost effort of escalating innovation into teacher education.

Conclusion

Innovation among teacher educators is considered as an effort of upgrading teacher education to the international level. Despite the principal responsibilities in teaching and training, developing educational innovation among teacher educators is a lifelong learning process in Teacher Training Colleges. Teacher educators as the best models to all the teacher trainees need to initiate variety of teaching and learning activities to custom the best practices in Teacher Training Colleges.

Innovation in Teacher Training Colleges can give a great impact on the teaching and learning outcomes. However, teacher educators face difficulties in initiating innovation in teaching and learning without proper guidelines. Thus, teacher educators can adapt ITLAI as

useful guidelines to initiate innovation in Teacher Training Colleges. On top of that, head of departments in Teacher Training Colleges may use this instrument to assess their teacher educator's competency in teaching and learning innovation. Moreover, it is useful to identify novice teacher educators and plan a clinical workshop on innovation in teaching and learning for them.

As other studies, the results obtained in this study have their limitations. First, the samples for this study were chosen from a Teacher Training College in the southern part of Malaysia. Therefore, the generalizability of the ITLAI was restricted. Furthermore, the ITLAI was developed based quantitative approach. In order to obtain sensible and comprehensive views, further qualitative research is recommended to focus on in-depth interview.

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