

Climate of Inquiry and Critical Reflection Element in Teaching and Learning in Higher Education Institutions

Azwani Masuwai

Faculty of Education and Human Development, Universiti Pendidikan Sultan Idris, 35900 Tanjung Malim, Malaysia

Corresponding author: m20132002450@siswa.upsi.edu.my

Article history: Received: 17 September 2017 Received in revised form: 24 March 2018 Accepted: 6 Jun 2018 Published online: 22 November 2018

Abstract

The purpose of this study is to explore the importance of climate of inquiry and critical reflection in teaching and learning. The study was established by using Teaching and Learning Guiding Principles Instrument (TLGPI) to identify the reliability and validity of the instrument in generating teaching and learning guiding principles (TLGP). Participants consisted of 355 Malaysian educators from higher education institutions and teacher training institutions. It is an essential instrument to reflect in generating the teaching and learning guiding principles in higher education level in Malaysia. Confirmatory Factor Analysis has validated all five items of Climate of Inquiry (CI) construct of TLGPI whereby all items indicated high reliability and internal consistency. A Confirmatory Factor Analysis also confirmed that a single factor model was used to generate teaching and learning guiding principles.

Keywords: Teaching and learning guiding principles, climate of inquiry, critical reflection, higher education institutions, confirmatory factor analysis

Abstrak

Tujuan kajian ini adalah untuk meneroka kepentingan iklim siasatan dan refleksi dalam pengajaran dan pembelajaran. Kajian yang ditubuhkan dengan menggunakan Instrumen Prinsip Panduan Pengajaran dan Pembelajaran (IPPPP) untuk melihat kebolehpercayaan dan kesahan instrumen dalam menjana Prinsip Panduan Pengajaran dan Pembelajaran (PPPP). Peserta terdiri daripada 355 pendidik guru Malaysia daripada 10 institusi pengajian tinggi dan institusi pendidikan guru. Ia adalah instrumen penting untuk menjana prinsip panduan pengajaran dan pembelajaran di peringkat pengajian tinggi di Malaysia. Analisis Pengesahan Faktor (APF) telah mengesahkan kesemua lima item bagi konstruk Iklim Siasatan (IS) bagi PPPP di mana semua item menyatakan kebolehpercayaan yang tinggi dan konsisten. APF juga telah mengesahkan bahawa model faktor tunggal telah digunakan untuk menghasilkan prinsip panduan.pengajaran dan pembelajaran.

Kata kunci: Prinsip panduan pengajaran dan pembelajaran, iklim siasatan, refleksi kritikal, institusi pengajian tinggi, analisis pengesahan faktor

© 2018 Penerbit UTM Press. All rights reserved

1.0 INTRODUCTION AND BACKGROUND OF THE STUDY

The students are getting a new era. It is a world in which rapid technological progress goes hand-in-hand with environmental, social, economic and political crises. The new generation must take the world as it is, accepting an education that enables them compliant with society. Otherwise, learn to query for what they perceived and respond creatively out of a sense of personal integrity that bring them for whatever will coming in a life in the future.

Climate of inquiry is the process to develop the environment of life-long practices of self-discipline, hard work, commitment, and stick-to-itiveness as well as those more-subtle practices of looking at problems from multiple perspectives, grappling with ambiguity and recognizing that the truth of things needs deep and abiding exploration. On the other hand, Mezirow (1990) highlighted that critical reflection has been elevated to the major objective of adult learning. He maintains that such reflection on assumptions and presuppositions (particularly about oneself) leads to “transformative learning”. In reflection process, is not only question the knowledge but also our beliefs to reflect beyond content.

One of the six themes of teaching and learning guiding principles (TLGP) were chosen in this study that provide the structure and methodology of institutional teaching and learning excellence which are interrelated and interdependent which is “To nurture climate of inquiry and critical reflection”. Fundamentally, these principles are based on the National Philosophy of Education, the Philosophy of Teacher Education as well as the National Education Transformation Plan. The principles define holistic mechanisms of the teaching and learning process that reflect the balance of suggestion in the research literature on the environments under which student learning thrives.

Every principle has a direct bearing on the quality of students’ intellectual development and their overall experience of university life and beyond as they entered on a process of lifelong learning. The main objective of teaching and learning programs is to equip quality

teachers for future with characteristic attributes that enable them to contribute to ever-changing global context in a meaningful and positive way (University Education Research Laboratory, 2014). Figure 1 shows the teaching and learning guiding principles.

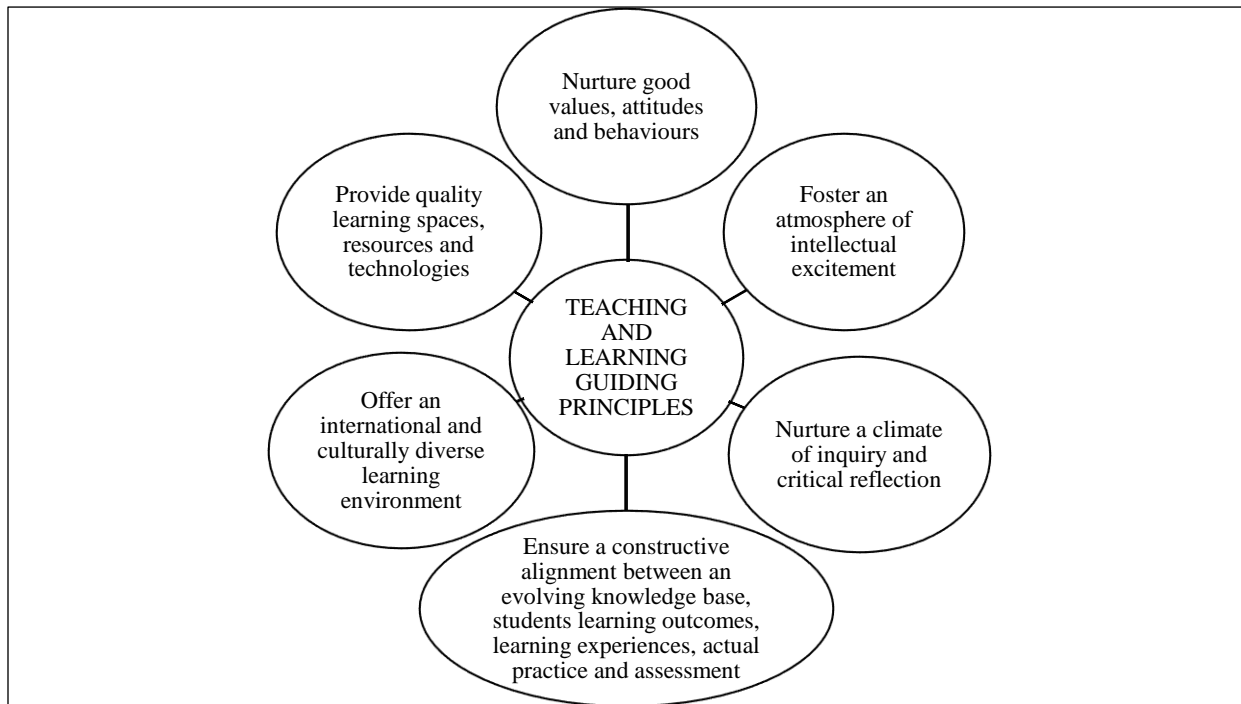


Figure 1 Teaching and learning guiding principle themes

2.0 LITERATURE REVIEW

The researcher believes that teaching and learning also encourage a climate of inquiry and critical reflection. Students value from thoughtful, supportive and stimulating feedback, in both formal and informal contexts. They are also assistance from a structured framework, where assessment desires are designed to give them the chance to learn from feedback as they progress. An environment of this kind should gradually transfer concern for monitoring learning to students themselves, thus preparing them for current independent learning throughout life, careers and further study (University of Melbourne, 2007). A climate of inquiry and critical reflection impulsion for teachers' professional development as well as allows the possibility of transformation and regeneration (Tajudin et al., 2014).

According to Vygotsky and Kozulin (1986), learning is a social process, and students advanced by teaching others as they learn themselves. They presented evidence for a classroom where students teach and learn from one another in both traditional and renewed ways. In other words, students learn in community and through team building, as well as through student-led conferences in which novices teach experts and experts at time assume the roles of novices.

Reflection refers to one of the modes of thought: "active, persistent, and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the future conclusions to which it tends" (Dewey, 1933, p. 7 as cited in Rodgers, 2002). Rodgers (2002) also characterised Dewey's four standards for reflection as follows:

- a. Is a meaning-making process that moves a learner from one experience into the next with deeper understanding of its relationships with and connections to other experiences and ideas.
- b. Is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry.
- c. Needs to happen in community, in interaction with others.
- d. Requires attitudes that value the personal and intellectual growth of oneself and of others.

Practitioners regularly engage in reflection as a means of understanding the environment of teaching, personal values, and beliefs using common processes (Wang, 2004). We believe that teaching and learning cultivate a climate of inquiry and critical reflection. Students benefit from thoughtful, supportive and challenging feedback, in both formal and informal contexts. They also benefit from a structured framework, where assessment requirements are designed to give them the opportunity to learn from feedback as they progress. A framework of this kind should gradually transfer responsibility for monitoring learning to students themselves, thus equipping them for ongoing independent learning throughout life, careers and further study (University of Melbourne, 2007). A climate of inquiry and critical reflection impetus for teachers' professional development as well as allows the possibility of transformation and renewal.

For an example, Ngang (2004) had recognized that teachers have a high perception in collaborative management in school. This result emerged from the critical reflection of teachers towards their practice involving principle, teacher and environment aspect. Well understanding about collaborative management can build a new character among teachers to control them in achieving work objective and personal life (Ngang, 2004). Caena (2014) also indicated that supported environment was needed to build awareness of the complexities of

teaching and to develop learning disposition. This stage known as initial teacher education to reinforce the climate of inquiry and critical reflection among teachers. Therefore, teachers need to attentive the same element to infuse their student as they are most influenced person of learner achievement.

As a result, climate of inquiry (CI) element also included in other institution's guiding principles like Melbourne University, Griffith University, Hong Kong University, Wichita State University, Carroll University and the study by Kanuka (2002) to build the meaning of the learning as evidence of new understanding of the learners. The CI element respectively embedded in the principle as shown in Table 1.

Table 1 The Principles for climate of inquiry and critical reflection

Study / University	Principle
TLGP	<ul style="list-style-type: none"> Teaching and learning could nurture a climate of inquiry and critical reflection (CI).
Hong Kong University	<ul style="list-style-type: none"> Pursuit of academic/professional excellence, critical intellectual inquiry and life-long learning. Critical self-reflection, greater understanding of others, and upholding personal and professional ethics.
Melbourne University	<ul style="list-style-type: none"> Effective teaching involves progressively refining our courses based on reflection and feedback.
Griffith University	<ul style="list-style-type: none"> Continuously improve teaching practice through academic staff professional development, and critical reflection informed by a range of evaluation approaches.
Carroll University	<ul style="list-style-type: none"> Critically Reflective Teachers use multiple formal and informal methods to review their teaching and student learning in order to strengthen both.
Wichita Stae University	<ul style="list-style-type: none"> Professionalism and reflection on the vocation.
Kanuka (2002)	<ul style="list-style-type: none"> Learning that require learners to build meaning. Learning that require learners to understand their own world view. Learning that require learners to provide evidence of new understanding.

■3.0 PROBLEM STATEMENT AND RESEARCH OBJECTIVE OF THE STUDY

Ratnavadivel et al., (2014), in their study to develop Teacher Education Model for Preparing Quality Teachers for the Future (2014 - 2018) had proposed eight provisional guiding principles as a basic teacher education philosophy and aims that frame the qualities desired in teacher education. Meanwhile, Kennedy (1997) introduced a possible indicator by standards for teacher educators and teacher education programme in defining an ideal reformation to try for. A list of guiding principles in restructuring teacher preparation program in University of Toronto was proposed by Fullan (1993). Ragan (1999) also defined the development of guiding principles as a focus of the true mission of any educational system.

Since the guiding principles stressed as a major driver conducting an educational shift, it is strongly recommended that research should be conducted on generating teaching and learning guiding principles in Malaysian Higher Education Institutions (MHEI) as recommended by Fullan (1993); Kennedy (1997); Ragan (1999); Grossman (2009) and Reid (2014). Such ineffective exemplification of teaching among Malaysian teachers warrants immediate attention and appropriate intervention. Some teacher education programmes are appropriately providing the survival skills but there are lack of training from expertise and without necessary knowledge (Darling-Hammond & Sykes, 2004).

Consequently, it is vital to review existing teacher education programmes, giving suitable attention, emphasis and focus on the aspect of teaching and learning in the teacher education programmes. This is to enhance and where necessary, to transform their teacher education programmes so that it will be able to produce teachers for the 21st Century and beyond. As such, this study will form the guiding principles for teaching and learning to ensure that appropriate and effective pedagogies are used in the curriculum, with the objective of preparing teachers with the instructional approaches required for effective classroom instruction. Therefore, quality learning spaces, resources and technologies and constructive alignment in education are the main element to focus on with the intention required.

Based on the problem statements, guiding principles is the biggest concern as an action and proposals to transform teaching and learning environment in the higher teacher education institutions. The gap of knowledge about TLGP in Malaysia is an encouragement for need analyses to be conducted in the Malaysian teaching and learning practices. There is a need for research in identifying the elements that are important for teaching and learning. Hence, there is need to understand the classifying of elements for further analyses to generate TLGP for Malaysian Teacher Education Programme (MTEP) with a valid and reliable instrument.

Due to the importance of quality learning spaces, resources and technologies and constructive alignment element in TLGP, this study attempted to assess the CI construct in TLGPI and the items included in this construct based on teacher educator views. Specifically, the research objective of the study were as follows:

1. To assess for model fit and reliability of CI construct in TLGPI using CFA.
2. To assess the convergent validity of CI construct using CFA.
3. To finalise the items obtained in CI construct in TLGPI.

■4.0 METHODOLOGY

Research Design

This study employed a descriptive research design using the survey method as our interest to obtain the teaching and learning guiding principles. Teacher educators responded to the survey to gather information about what local teacher educators think are important in teaching and learning. Furthermore, the confirmatory factor analysis (CFA) was used to test the higher order scale structure. CFA permits the direct testing of the TLGPI as a theoretical model through the calculation of a measure of fit between the proposed model of the designated TLGPI scales, and the optimal model resulting from estimates of the various relationships. According to Awang (2012), CFA is engaged to test whether the measures of the construct are consistent with the researchers understanding of the nature of the constructs.

Sample

An overall of 355 of teacher educators from 10 public universities and teacher training institutions in Malaysia were intentionally selected to be involved in this study. They were selected based on proportional stratified random sampling. Malaysia was separated into five zones which are Northern, Southern, Western, Central/Eastern, Southern and Sabah/Sarawak zone. The mailed survey administered to the samples.

Instrumentation

A set of 5-point Likert scale (ranging from 1 = “not at all important” and “5 – “Extremely important”) instrument, specifically the Teaching and Learning Guiding Principles Instrument (TLGPI) was administered to the samples. The samples were required to response to the 44 items which may address an early indication of the importance of each domain to establish teaching and learning guiding principles.

The instrument consist of six themes that obtained from the related literature to generating the items from. There were eight items to assess teaching and learning should foster an atmosphere of intellectual excitement (Theme 1); the following eight items to assess the teaching and learning should provide quality learning spaces, resources and technologies (Theme 2); the next five items to assess the teaching and learning should ensure a constructive alignment between an evolving knowledge base, students learning outcomes, learning experiences, actual practice and assessment (Theme 3); seven items to assess the teaching and learning should offer an international and culturally diverse learning environment (Theme 4); three items to assess the teaching and learning should nurture a climate of inquiry and critical reflection (Theme 5); and the last seven items to assess the teaching and learning should in students nurture good values, attitude and behaviors (Theme 6). The mean and standard deviation for CI construct is 4.40 and 0.70.

■5.0 RESULTS AND DISCUSSION

CI construct as a latent variable with five observed variables were measured on the instrument. Figure 2 shows the measurement model for CI construct. The measurement model will assess the degree and numbers of indicators representing a measured construct through CFA. The CFA was tested for model fit, reliability and construct validity of the construct measured. To examine the model fit of this study, the CFA encompassed four indices namely $TLI > 0.90$, $CFI > 0.90$, $RMSEA < 0.08$ and $Chisq/df < 5.0$ and the factor loading should be above 0.5.

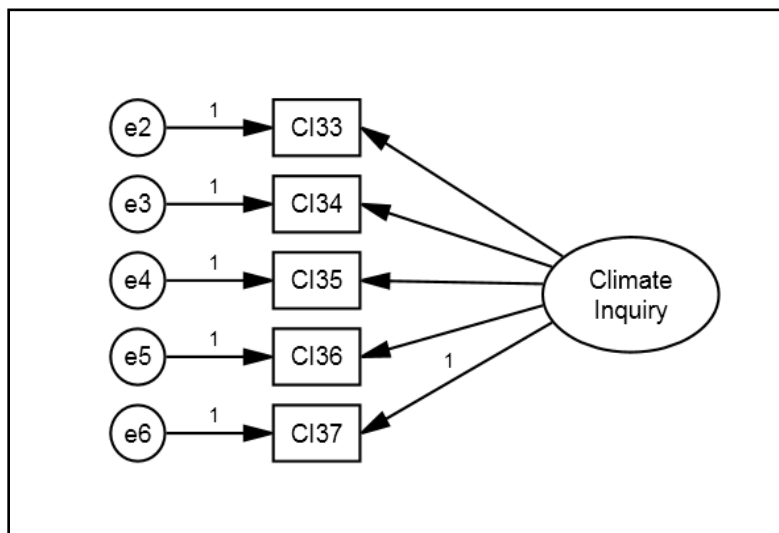


Figure 2 Measurement model for climate of inquiry

Objective 1: To assess for model fit and reliability of CI construct in TLGPI using CFA.

The initial CFA for climate of inquiry (Figure 3) with five items surpassed 0.5 and also met all the criterion values ($TLI=0.99$, $CFI=0.99$, $RMSEA=0.029$ and $Chisq/df=1.304$) as shown in Table 2. There is no need to dropped or correlated any items because the model already indicated satisfactory of fit indices.

Table 2 Fit Indices of the CFA for climate of inquiry

Fit Indices	Index Value	Recommended Value	Results
TLI	1.007	>0.90	Good Fit
CFI	1.000	>0.90	Good Fit
RMSEA	0.000	<0.10	Good Fit
Chisq/df	0.490	<5.00	Good Fit

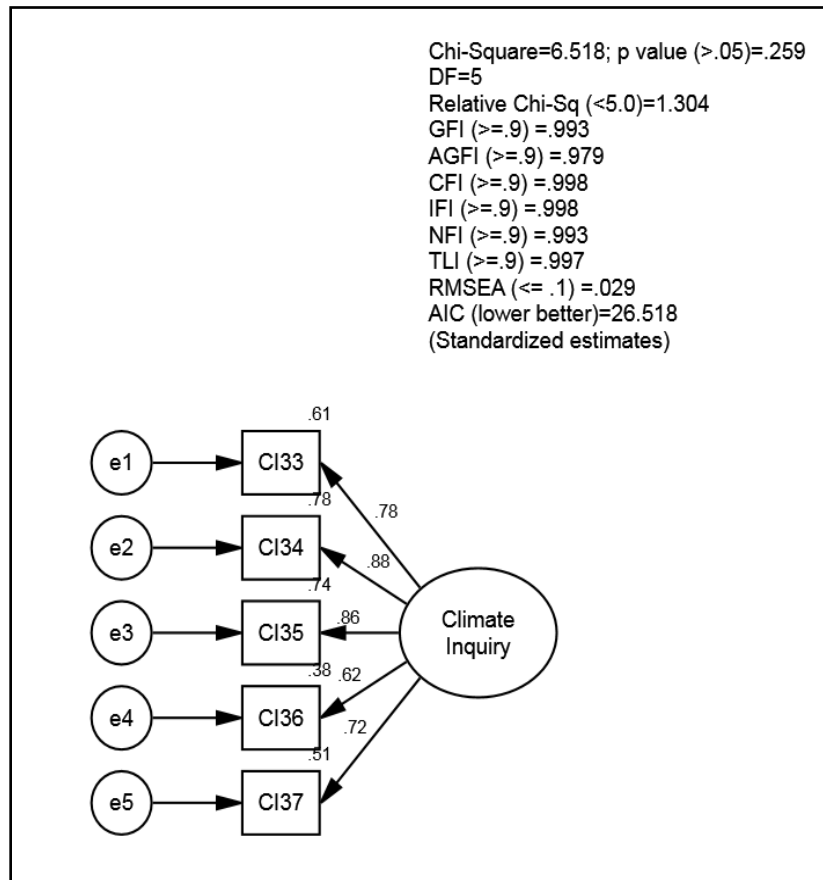


Figure 3 The Initial CFA for Climate of Inquiry

Objective 2: To assess the convergent validity of CI construct in TLGPI using CFA.

Convergent validity is achieved when all items in a measurement model are statistically significant. The convergent validity could be verified by computing the Average Variance Extracted (AVE) for every construct (Awang, 2012). The AVE (0.57), measured was exceeded 0.5 and CR (0.83) larger than 0.6 indicating satisfactory validity and reliability (Fornell & Larcker, 1981; Bryne, 2013). Furthermore, all items of CI construct achieved high factor loadings which above ≥ 0.5 (Hair et al., 2010) as showed in Table 3. This is an evidence of convergent validity of the construct indicated that the items could measure the same trait.

The AVE (0.60) measured exceed 0.5 which was indicating convergent validity. In addition, the CR value is 0.91 larger than 0.6 suggested adequate reliability (Table 3). This are an evidence of satisfactory validity and reliability of the construct.

Table 3 Factor Loading, Average Variance Extracted (AVE) and Construct Reliability (CR) of Climate of Inquiry (CI)

Item	Factor Loading	AVE (>0.5)	CR (>0.6)
CI33	0.78	0.60	0.91
CI34	0.88		
CI35	0.86		
CI36	0.62		
CI37	0.72		

Objective 3: To finalise the items obtained in CI construct in TLGPI.

The analysis has yielded five items of Climate of Inquiry (CI) construct. No item deleted and remained all five items in CI construct as shown in Table 4. Goodness of fit indices of CFA specified a good fit of the collected data and the model. This indicates that the CI construct is acceptable as an important element in teaching and learning which is based on the suggestion by Hair (2010).

Table 4 The final items of teaching and learning guiding principles instrument

Item	
CI33	I provide opportunities for students to critically evaluate and contribute to the scholarly discourse. <i>Saya memberi peluang kepada pelajar untuk menilai secara kritikal dan menyumbang terhadap amalan wacana ilmiah.</i>
CI34	I encourage students to challenge my ideas and those of their classmates or other people. <i>Saya menggalakkan pelajar untuk mencabar idea saya, rakan sekelas mereka atau orang lain.</i>
CI35	I encourage students to critically evaluate the work of their peers. <i>Saya menggalakkan pelajar menilai secara kritis kerja rakan-rakan mereka.</i>
CI36	I encourage students to ask questions. <i>Saya menggalakkan pelajar untuk bertanya soalan.</i>
CI37	I encourage students to write critical reviews about of texts read. <i>Saya menggalakkan pelajar menulis ulasan kritikal tentang sesuatu teks bacaan.</i>

Engaging in critical reflection enables practitioners to continue to learn, grow and develop in and through practice (Jarvis, 1992). Teacher educators need to encourage their students to reflect for whatever they learn in class because it can enable individuals to develop greater self-awareness and climate of inquiry among themselves. Therefore, climate of inquiry and critical reflection (CI) construct give an idea with five items like “*I provide opportunities for students to critically evaluate and contribute to the scholarly discourse*” (CI33) and “*I encourage students to critically evaluate the work of their peers*” (CI35).

Eventually, goodness of fit indices of CFA indicated a good fit of the collected data and the model. This specified that the CI construct are acceptable as an important elements in teaching and learning which is based on the requirement (Hair, 2010). Significantly, climate of inquiry and critical reflection elements as part of TLGP cannot be ignored as combined of the substantial elements in teaching and learning. Nevertheless, the results also shown an empirical evidence of the reliability and validity of TLGPI.

6.0 CONCLUSION AND IMPLICATION

This study provides an indication for the evidence of the important of climate of inquiry and critical reflection in teaching and learning and as one of the principle in TLGP that based on continuous improvement on empirical evidence grounded in the context of actual practice. Empirically on the findings, teacher educators might be able to embed climate of inquiry and critical reflection element in their teaching and learning practices and assist educational authorities to prepare teacher educators in education program, particularly by taking into consideration.

Based on the findings, teachers might be able to embed climate of inquiry and critical reflection element in their teaching and learning practices in higher education as a good proposal according to the views of teacher educators in Malaysia. Higher education institutions need to integrate TLGP into teaching whether for student teacher or teacher educator dimension in assisting the process to produce a quality teacher. Practically, it also can provide productive ways and means for teacher educators and policy makers to embed the TLGP in the policies or instructional plan of the courses especially in teacher education programmes in Malaysia. Attend to emphasize the good values, attitudes and behaviours which have greater weights and strength on the developing students’ values, attitudes and behaviours as a

foundation, there are also a guidance for professional development on how to align the curriculum, teaching pedagogies and assessment for learners.

The present study can be extended to different settings and sample in order to achieve a better measurement model. It is expected that by validating the TLGPI, then more upcoming related issues will be conducted in the future in order to facilitate teaching and learning practices. It is also can give an important implication to the various stakeholders in higher education institutions (Masuwai, Tajudin, Saad, 2016). However, by considering triangulation in the current methodology, it gives more support in terms of measurement and evaluation of the element.

Acknowledgement

We extend our gratitude to Ministry of Education Malaysia for providing the funds under the Niche Research Grant Scheme (NRGS): 2014-0001-107-82-2 Sultan Idris Education University for providing the official approval that enables us to do the research. Special thanks to the teacher educator from public universities and teacher training institutions in Malaysia for the involvement in this research.

References

- Awang, Z. (2012). *A handbook on structural equation modeling using AMOS Graphic*. Kota Bharu: Universiti Teknologi Mara Kelantan
- Byrne, B. M. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. London: Routledge
- Caena, F. (2014). Initial Teacher education in Europe: an overview of policy issues. *European Commission. ET2020 Working Group of Schools Policy*. Consultado en http://ec.europa.eu/education/policy/strategic-framework/expert-groups/documents/initial-teacher-education_en.pdf.
- Carroll University. Teacher education program guiding principles. (2014). Retrieved from http://www.carrollu.edu/programs/education/documents/tep_program_guidingprinciples.pdf. Access date: 3 July, 2014
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models With Unobservable Variables And Measurement Error. *Journal of Marketing Research*, 18(1), 39-50
- Fullan, M. G. (1993). Why teachers must become change agents. *Educational Leadership*, 50(6), 12-17
- Griffith University. (2014). Principles to promote excellence in learning and teaching practices at Griffith University. Retrieved from http://www.griffith.edu.au/_data/assets/pdf_file/0006/.../PrinciplesLandT.pdf. Access date: 3 July, 2014
- Grossman, P., Hammerness, K., McDonald, M. (2009). Redefining Teacher: Re-Imagining Teacher Education. *Teachers and Teaching: Theory and Practice*, 15(2), 273-290
- Hair J. F., Anderson R. E., Tatham R. L., Black W. C. (2010). *Multivariate Data Analysis*. Seventh Edition. New Jersey: Prentice Hall.
- Jarvis, P. (1992) Reflective Practice And Nursing. *Nurse Education Today*, 12(3), 174-181.
- Kanuka, H. (2002). Guiding Principles For Facilitating Higher Levels Of Web-Based Distance Teaching And Learning In Post-Secondary Setting. *Distance Education*, 23(2), 163-182.
- Kennedy, M. M. (1997). *Defining an Ideal Teacher Education Program*. Washington, DC: National Council for the Accreditation of Teacher Education
- Masuwai A., Tajudin N. M., Saad N. S. (2016) Evaluating the Face And Content Validity of a Teaching and Learning Guiding Principles Instrument (TLGPI): A Perspective Study of Malaysian Teacher Educators. *Malaysian Journal Society and Space*. 12(3), 11-21.
- Mezirow, J. (1990). How Critical Reflection Triggers Transformative Learning. *Fostering Critical Reflection In Adulthood*. San Francisco: Jossey Bass Publishers, 1-20.
- Ngang, T. K., Fooi S. Y., Pihie Z. A. L. & Samah B. A. (2004). Tahap Pengurusan Kolaboratif Dan Fenomena Pengurusan Di Sekolah Menengah. *Kajian Malaysia*, 22(1), 5-85.
- Ragan, L. C. (1999). Good Teaching Is Good Teaching. An Emerging Set Of Guiding Principles And Practices For The Design And Development Of Distance Education. *Cause/Effect*, 22(1), 20-24
- Ratnavadivel, N., Hoon, C. L., Salih, M., Low, J., Karuppiah, N., Omar, A., Yassin S. M., Dawi A. H., Saad N. S. & Hashim, A. T. M. (2014). Curriculum Framework For Preparing Quality Teachers For The Future: Developing Guiding Principles. *Teacher Education*, 4(2), 32-44
- Reid, L. (2014). *Narrative Exchanges*. London: Routledge
- Tajudin, N., Rahman, N. A., Masuwai, A., & Idris, N. (2014). Comparison between Teaching Practices Based on Teacher Educators' Perception and Learning Experiences Based on Student Teachers' Perception at Higher Education Institution. *Research Journal in Organizational Psychology and Educational Studies (RJOPES)*, 3(6), 437-445.
- University Education Research Laboratory. (2014). *Development of a Teacher Education Model For Preparing Quality Teachers For The Future (2014 – 2018)* 2nd Edition. Unpublished manuscript, Universiti Pendidikan Sultan Idris, Tanjung Malim, Perak.
- University of Hong Kong. Educational aims. (2015) Retrieved from <http://www.als.hku.hk/admission/file/prospectus/286/3yrs.pdf>. Access date: 9 September, 2015
- University of Melbourne, (2007). Nine Principles Guiding Teaching And Learning. Retrieved from http://www.cshe.unimelb.edu.au/resources_teach/framework_teach/docs/9principles.pdf. Access date: 3 July, 2014
- Rodgers, C. (2002). Defining Reflection: Another Look At John Dewey And Reflective Thinking". *The Teachers College Record*, 104(4), 842-866.
- Vygotsky, L. S., & Kozulin, A. (1986). *Thought and language* (Translation newly rev. and edited/ed.). London, England: The MIT Press.
- Wang, C. L., & Ahmed, P. K. (2004). The Development And Validation Of The Organisational Innovativeness Construct Using Confirmatory Factor Analysis. *European Journal Of Innovation Management*, 7(4), 303-313.
- Wichita State University. (2015). Teacher Education Student Handbook. Retrieved from http://webs.wichita.edu/depttools/depttoolsmemberfiles/COEdESS/Handbooks/TeacherEd_handbook.pdf. Access date: 26 September, 2015