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The Validity and Reliability of School-Based Professional Learning Inventory

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ABSTRACT

The purpose of this article is to report the development, validity and reliability of School-based professional learning inventory (SPLI) that has been used to evaluate secondary teachers` perception toward school-based professional learning. The first phase of the study has been carried out through Exploratory Factor Analysis by using data from 124 trained teachers from 4 secondary schools in Petaling Perdana District, Selangor. The Exploratory Factor Analysis through orthogonal rotation varimax method has shown four SPLI factors from seven proposed factors have been developed. The Cronbach Alpha of the overall items is .924.

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INTRODUCTION

Teaching is creative, complex and requires high skills. Hence, teachers must constantly deepen their knowledge and skills to remain effective throughout their careers. Teachers` knowledge and skills can be enhanced through the effective school-based professional learning. Teachers who stop learning after the pre-service training will fail to fulfill their roles effectively and become `prisoners of their own experiences` (Omar Abdull Kareem, 2010). Therefore, continuous professional learning is a must for every teachers.

Teachers` knowledge and skills can be enhanced through effective school-based professional learning. According to previous literature (Guskey,2000; Bredeson,2003; Zepeda,2008) effective professional learning has the following elements; continuous, school-based and job-embedded, includes multiple modalities of learning, implement and evaluate professional practices as well as involves teachers and principals in identification and design of learning experiences to meet individual and collective needs. Thus, teachers will be more effective if professional learning activities have been planned and implemented in school effectively.

This aspect became more important when Ministry of Education (MOE) of Malaysia through its master plan `Konsep Pengoperasian Latihan Peningkatan Profesionalisme Bidang Pengajaran dan Pembelajaran Bagi Pegawai Perkhidmatan Pendidikan`, has implemented school-based professional learning to all teachers. This plan emphasis on site-based professional learning and let manager manage concept which has been governed by respective school administrators (Ministry of Education.,2008). By instilling this plan, it showed how serious the MOE in enhancing teachers knowledge and skills nationwide. Furthermore, school-based or site-based design hold the promise of greater relevance because their content and procedures are determined by the individuals whom such efforts affect most directly which is school-level educator (Guskey,2000). Whereby, according to previous literature (Guskey,2000), the decisions about professional learning goals, content, models and evaluation that are made at school level, is more likely to be contextually relevant.

The study carried by previous researcher (Muhammad Kamarul Kabilan & Abdul Rashid Mohamed, 2009) found that professional learning opportunities were limited especially at the schools level or in the context. According to them, school administrators should give serious attention to the teachers` commitment to improve their knowledge and skills throughout their careers. Furthermore, if various professional learning activities were held at the schools, it will give a better impact on teachers`

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practices. Thus, an effective school-based professional learning models which fit the Malaysian context should be identified so that teachers` will not have to work as well as learn in isolation. Previously, in Malaysia teachers professional learning models were predominantly ad hoc where one-off workshops were conducted (Ministry of Education, 2008). There was a lack of congruence between teachers` needs about professional learning and practices and inconsistency in terms of planning, purposes, activities and teacher involvement (Amin Senin,2005). Hence, schools have been enforced by MOE to implement school-based professional learning to increase teacher involvement and continuously to improve their professionalism (Malaysian Education Blueprint 2013-2025, 2012).

However, there is still not many suitable instrument to measure secondary school teachers` perception toward school-based professional learning model. Most of the previous studies have been carried in Western countries such as Persico (2000) and the measurement is not really suitable with Malaysian context as well as less has been reviewed by researcher such as Amin Senin (2005).Secondly, is the use of suitable statistical procedure in developing and validating items. The use of EFA and content validity as well as internal consistency are more suitable in developing and validating items (Ang & Huan, 2006; Mahaliza Mansor, Norlia Mat Norwani & Shahril @ Charil Marzuki, 2011). Therefore, the purpose of this paper is to discuss the development, validity and reliability of SPLI that has been used to evaluate secondary teachers` perception toward school-based professional learning.

Inventory Development:

This section reviews the literature to identify the relevant practices comprising school-based professional learning models and teachers` practice in developing school-based professional learning inventory (SPLI).

Professional learning is defined as the processes design to enhance teachers` knowledge, skills and attitudes either individually or collaboratively for the purpose of improving students` learning (Sparks,&Loucks-Horsley,1989; Drago-Severson, 2004). Furthermore, according to previous study (Drago-Severson, 2004), professional learning is a planning and design of learning which embodies a set of assumptions about where knowledge about teaching practices come from and how the teacher acquire or extend their knowledge. Studies conducted by previous researchers (Guskey,1986 ; Blank,Alas & Smith, 2008; OECD,2010 ;TALIS, 2008) regarding teachers` perspective showed that the usage of various professional learning models has important impact toward teachers` development.

Therefore, this study highlighted seven currently practiced professional learning models that have different features and functions to view teachers` perception about school-based professional learning in Malaysia. Five are from Model of Staff Development by Sparks and Loucks-Horsley (Sparks & Loucks-Horsley,1989) and two models are from the Professional Learning Model by Roberts and Pruitt (Roberts & Pruitt, 2009]. The models are individually-guided learning, collaborative problem solving, teaching observation and assessment, training, action research, study groups and professional portfolios. The models are:-

2.1. Individually-Guided Learning (SD):

Individually-Guided learning is learning designed by the teachers themselves and it is not necessarily occur in a formal settings. Teachers determine their own learning goals and choose activities they believed can achieve these goals, such as reading and writing professional academic journals or academic material. The model is based on the assumption that individuals can judge their own learning needs and are capable of self-direction and self-initiated learning. Another assumption are the individuals are more motivated to learn when they initiate and plan their own learning activities.

2.2. Collaborative problem solving (CPS):

Collaborative problem solving focused on a combination of learning styles as the result of the teacher involvement in systematic school improvement processes. For examples, curriculum planning, research on effective teaching and group problem-solving strategies. These activities can also be achieved through discussion, observation, training as well as trial and error method. The process is that teachers not only increase their specific knowledge and skills but also enhance their ability to work collaboratively and share in decision making. The model is based on the assumption that teachers learn effectively when they have problem to solve, moreover the problems are related to the jobs as well as they can acquire knowledge and skills through their involvement in the process.

2.3. Teaching Observation and Assessment (TOA):

Teaching can be monitored and analyzed objectively, this model relied primarily in pairs and is focused specifically on observations in each other`s classroom. The aim is to provide teachers with feedback on their performance. Moreover, collegial observations will enhance reflection and performance. The activities involve such as peer coaching, clinical supervision and teacher evaluation. It helps to decrease the isolation of teaching by having colleagues work together on shared improvement goals. The model is based on the assumption that reflection and analysis from the observation and assessment are the core competencies of professional growth.

2.4. Training (TR):

Training is workshop-type sessions in which the presenter is the expert who established the course content based on a set of clear learning objectives through various group activities. This activities involved lectures, demonstrations, role playing, simulations and micro teaching. Effective training involved the exploration of theory, demonstration of skills, stimulating practice, feedback on performance and coaching in the workplace. It provides teachers with a shared knowledge base. The model is based on the assumption that there are behaviors and techniques that are worth of replication as well as teachers can change their behaviors and learn to replicate good practice of others in their classroom that are not previously practice.

2.5. Action Research (AR):

Action research is an activity of how teachers conduct mini-experiments to improved students` achievements and the findings of the experiments are shared among friends. Teachers learned the basic techniques of research in the classroom, formulate research questions, collect and analyze data and use the findings to improve teaching practices. It can be conducted individually or collaboratively in the school settings. The model is based on the assumption that teachers` ability to formulate valid questions about their own practice and to pursue objective answers to those questions as well as change their practice.

2.6 Study groups (SG):

Study groups is a gathering of teachers who meet on a regular scheduled basis to discuss instructional issues that the group members have agreed to study. Learning outcomes of this group will be used as teaching strategies in the classroom. This activity will develop culture of collaboration among teachers, reflective discussion, sharing personal and teamwork practices that can improve teachers' commitment to the shared school vision and values. The model is based on the assumption that teachers who participate in collegial groups have a structured process, which can reduces isolation as well as increase encouragement and support in a community of learners.

2.7 Professional Portfolios (PP):

Professional portfolio is a thoughtful document demonstrating a teacher's approach to teaching. It shows teacher's practice over time and reflection about it. The contents of the portfolio are the goal or purposes targeted by teachers and it might consist of written documentation such as lesson plans. Portfolio is a powerful tool for reflection on practice which helped teachers evaluated the decisions and actions taken. The model is based on the assumption that self-assessment and reflection are the most important functions of a portfolio in terms of an educator`s professional growth. Either doing alone or collaboratively, serious consideration to the portfolio artifacts helps teachers in reflecting on their practice in relation to their beliefs. Reflecting may cause them to reconsider or change some practices as well as may lead to new understandings

According to the above literature, all these recently used professional learning models are included in our model. Moreover, these models can be used individually or collaboratively for teachers` professional learning.

Questionnaire Design:

The questionnaire is composed of seven professional learning models (PLM). The questionnaire items were answered using a four-point scale anchoring at 1, 2, 3,and 4 (strongly disagree, disagree, agree, strongly agree)(Mahaliza Mansor,2013). According to the literature (Babbie,2007) this scale is suitable to measures teachers` attitudes as well as opinions. Detailed definitions of the dimensions are described below:

3.1 Professional Learning Models.

The instrument used has been adopted from previous researchers (Persico,2001; Amin Senin,2005; Roberts & Pruitt,2009; Murphy & Lick,2005). Based on the literature review (Sparks & Loucks-Horsley,1989; Guskey,1986; Zepeda, 2008; Roberts & Pruitt,2009] seven most frequently used teachers` professional learning models are extracted and considered in this study, namely individually-guided, observation and assessment, involvement in improvement process, training, action research, professional portfolios and study groups.

Analysis and Result:

4.1 Sampling:

The data used in this research consists of 2 batch of questionnaires responses from participants in 4 regular secondary schools (Sekolah Menengah Harian) in Selangor, Malaysia. There are two phase of data collections. First set of data was obtained from 4 regular secondary schools in Petaling Perdana district in Selangor. This set of data were used in preliminary study as to perform exploratory factor analysis. 40 sets of questionnaires was distributed to each of these 4 regular secondary schools. A total of 160 survey forms were circulated, of which 128 surveys were return and 124 were valid for analysis (Mahaliza Mansor & Norlia Mat Norwani,2010).

4.2 Reliability and Validity Test:

The Cronbach Alpha coefficients were used to measures the internal consistency of these scales (Nunnally & Bernstein,1994). In this study, the constructs which had Cronbach Alpha coefficients greater than .70 have been retained for further analysis (Hair, Black, Babin, Anderson & Tatham, 2010; Hancock & Muller, 2010). Furthermore, measures with item-to-total correlation larger than

.30 are considered to have criterion validity (Hair, Black, Babin, Anderson & Tatham, 2010). The item-to-total correlation of each measures was more than .30, we consider the criterion validity of each scale to be satisfactory.

The original questionnaire was translated into Malay language twice by experts using the `back technique`. The items are reviewed by a panel of Sultan Idris Education University lecturers to ensure the translation of meaning and terminology met the theoretical background as the technique was recommended by previous study [Sireci, Yang, Harter & Ehrlich,2006). The panel consist of an assessment and measurement expert and two human resource development experts (Mahaliza Mansor & Norlia Mat Norwani,2010).

Then, the questionnaires have been administered to six trained teachers to identify if there were any confusion regarding the items and record it in the space provided for improvements or been dropped out (Johnson & Christensen, 2008; Flowers,2006). The purpose was to improve the items and to ensure it was suitable for Malaysian context. Furthermore, it was important to get feedback on quality of the questionnaire as it was easy to understand and used the appropriate language (Mahaliza Mansor, Norlia Mat Norwani & Jamal @ Nordin Yunus,2011). The samples were asked to evaluate about the clarity of each items by using the scale given (Flowers,2006). A scale of 1 to 10 is used to determine the validity coefficient for each item. According to Tuckman and Waheed (1981) in previous literature (Sidek Mohd Noah & Jamaludin Ahmad,2005) if the total of the score obtained from the experts is 70% or above, it means that the item has a high score for the content validity aspect. Otherwise the item will be dropped from the questionnaires (Mahaliza Mansor, Norlia Mat Norwani & Shahril @ Charil Marzuki,2011). The results of content validity are presented in Table 1 below.

Table 1: Content validity scores.

Panel	Panel 1	Panel 2	Panel 3	Panel 4	Panel 5	Panel 6	Cum. Score
(%)	100	100	77.88	78.46	80.00	100.00	89.39

Meanwhile, to ensure the instrument has reasonable construct validity, both exploratory and confirmatory factor analyses were used. The exploratory factor analysis (EFA) through orthogonal rotation with varimax method had been used. The EFA applied the following rules as suggested by literature (Hair, Black, Babin, Anderson & Tatham, 2010; Tabachnick & Fidell,2007):

i. Bartlett's Test of Sphericity had to be significant ($p < .05$); 0.000
ii. Kaiser-Meyer-Olkin measure of sampling index $\geq .5$; .861
iii. Eigenvalue > 1;
iv. Items with the factor loading > .5 were retained;
iv. Factors building were based on school based professional learning theory and previous studies.

However, for SPLI only four factors retained: individually-guided, training, professional portfolios and study groups. While, three factors which are collaborative problem solving, observation and assessment, as well as research study have been excluded. The results of exploratory factor analysis are presented in Table 2.

Table 2: Exploratory factor analysis values for the questionnaires.

Construct	Number of Factor	Number of item per construct	Factor loading
PLM	4	19	.41-.86
Professional Portfolio		6	.77-.86
Study Group		4	.74-.80
Individually-Guided Learning		4	.41-.86
Training		5	.44-.66

Table 3:

Construct	Percentage of variance	Cumulative percentage	Cronbach's α
PLM		54.32	.89
Professional Portfolio	16.83		.92
Study Group	14.62		.84
Individually-Guided Learning	12.03		.74
Training	10.84		.71

The comparison of internal consistency values between studies for four factors, namely professional portfolio, study group, individually-guided learning, and training has been done. Overall, the internal consistency values for these constructs in Persico (2000), Amin (2005) and Mahaliza [2013] are in Table 4. The internal consistency values for these constructs are better compared to the previous studied after been reviewed.

Discussion and Conclusion:

The purpose of this study is to develop and validate school-based professional learning inventory (SPLI) used to measure secondary teachers`

perception in Malaysian setting. This study is based on school-based professional leaning theory and used statistical approach to identify 19 items in developing SPLI. The original questionnaires which consist of 52 items have been analyzed through content validity as well as exploratory factor analyses. The results of content validity scores is 89.39%, which shown the item has a good content validity. The Eigenvalue shows that the items fall into 4 factors which the cumulative percentage is 54.32%. Only 19 items has been accepted and pooled to form the final version of SPLI. These 19 items have been group into four factors. The four factors are individually-guided, training, professional portfolios and study groups. Meanwhile, three factors which are collaborative problem solving, observation and assessment, as well as research study have been excluded. Results from this study suggested that SPLI and its constructs shown the good internal consistency values to measure teachers` perception toward school-based professional learning model. The overall internal consistency value is .890 meanwhile the values of each constructs range from .710 to .920. and even better compared to the previous studies. Therefore, these items are suitable to use in general research (Nunnally & Bernstein, 1994).

Table 4: Comparison of internal consistency values between studies.

Construct	Cronbach`s α			
	Persico (2000)	Amin (2005)	Mahaliza (2013)	Phase 1 Study
Training	.602	.613	.744	.710
Individually-guided learning	.630	.610	.630	.740
Study group	-	-	.920	.840
Professional portfolio	-	-	.840	.920

This study has a few weakness, such as the comparison of the values of internal consistency among the studies cannot be done because less of reviewed inventory. Secondly, the sample only consisted of secondary school, therefore the next study should be extended to primary school teachers. Further study also should be explore on the perception of the teachers on the existence of other professional learning models as well as perform another phase of study by using confirmatory factor analysis. However, hopefully the findings are valuable for the researchers, school-based professional learning developers` and teacher educators references, who are interested more in exploring school-based professional learning.

REFERENCES

Amin Senin, 2005. Hubungan pengurusan pembangunan profesional sekolah dengan model pembangunan profesional serta pengaruhnya terhadap pengajaran guru di sekolah-sekolah menengah negeri sabah. Unpublished Ph.D Thesis. Kota Kinabalu: Universiti Malaysia Sabah.

Arbuckle, J.L., 2009. Amos 18 user`s guide. Chicago: SPSS Inc.

Babbie, E., 2007. Practice of social research. United States: Cengage Learning.

Blank, R.K., de las Alas & C. Smith, 2008. Does teacher professional development have effect on teaching and learning? Analysis of evaluation findings from programs for mathematics and science teachers in 14 states. Washington, D.C.: Council of Chief State School Officers. Retrieved from<http:www.ccsso.org/projects/improving_evaluation_ of professional _development>

Bredeson, P.V., 2003. Designs for learning. Thousand Oaks: Corwin Press.

Byrne, B.M., 2010. Structural equation modeling with AMOS: Basic concepts, applications and programming. New York: Routledge.

Cohen, L., L. Manion, K. Morrison, 2007. Research methods in education. New York: Routledge.

Drago-Severson, E., 2004. Helping Teachers Learn: Principal Leadership for Adult Growth and Development. Thousand Oaks: Corwin Press.

Flowers, C., 2006. Confirmatory factor analysis of scores on the clinical experience rubric: A measure of dispositions for pre service teachers. Educational and Psychological Measurement, 66(3): 478-488.

Guskey, T.R., 1986. Staff development and the process of teacher change. Educational Researcher, 15(5): 5-12.

Guskey, T.R., 2000. Evaluating professional development. Thousand Oaks: Corwin Press.

Guskey, T.R., 2005. Take a second look at accountability. Journal of Staff Development, 26(1) 9-18.

Hancock, G.R., R.O. Muller, 2010. The reviewer's guide to quantitative methods in the social sciences. New York: Routledge

Hair, J.F., W.C. Black, B.J. Babin, R.E. Anderson, R.L. Tatham, 2010. Multivariate data analysis. New Jersey: Pearson Prentice Hall.

Hu, L., P.M. Bentler, 1999. Cutoff criteria for fit indices in covariance structural analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6: 1-55.

Icobucchi, D., 2010. Structural equation modeling: Fit indices, sample size and advance topics. Journal of Consumer Psychology, 20(2010) 90-98.

Johnson, R.B., L.B. Christensen, 2008. Educational research: Quantitative, qualitative, and

mixed approaches. Thousand Oaks: Sage Publications.

Killion, J., 1999. What Works in the Middle: Results-Based Staff Development. Oxford: National Staff Development.

Mahaliza Mansor, 2013. Pembinaan model pemeblajaran professional berasaskan sekolah di sekolah menengah harian di Malaysia. Unpublished Ph.D Thesis. Tanjong Malim: Universiti Pendidikan Sultan Idris.

Mahaliza Mansor, Norlia Mat Norwani, 2010. Pembangunan profesional berasaskan sekolah: Satu tinjauan awal. In International Management Education Conference 2010 (iMEC 2010), Melaka: Universiti Pendidikan Sultan Idris.

Mahaliza Mansor, Norlia Mat Norwani, Jamal @ Nordin Yunus, 2010. Kesahan dan kebolehpercayaan alat ukur pentadbir sebagai pemimpin pembangunan profesional berasaskan sekolah (PPPS). In Seminar Sehari Penyelidikan 2010, Tanjong Malim: Fakulti Pengurusan dan Ekonomi, Universiti Pendidikan SultanIdris.

Mahaliza Mansor, Norlia Mat Norwani, Jamal @ Nordin Yunus, 2011. Inventori pembelajaran profesional: Pembinaan inventori, analisis faktor, kebolehpercayaan dan kesahan. In Seminar Majlis Dekan-Dekan Fakulti Pendidikan IPTA 2011, Serdang: Fakulti Pendidikan, Universiti Putra Malaysia.

Mahaliza Mansor, Norlia Mat Norwani & Shahril @ Charil Marzuki,2011. Validity and reliability of the school-based professional development leader roles inventory. Management Research Journal, 1(1): 73-83.

Mahaliza Mansor, Masri Baharom, 2014. Accessing school-based professional learning model in Malaysian context (Part II). International Journal of Innovation and Research, Vol.2-10, 107-120.

Ministry of Education, 2008a. Garis panduan pengoperasian latihan dalam perkhidmatan. Putrajaya: Kementerian Pelajaran Malaysia.

Ministry of Education, 2008b. Laporan Tahunan Jemaah Nazir dan Jaminan Kualiti 2008. Putrajaya: KPM.

Ministry of Education, 2012. Malaysian Education Blueprint 2013-2025.Putrajaya KPM.

Muhammad Kamarul Kabilan & Abdul Rashid Mohamed,2009. Malaysian english teachers' satisfaction level of their professional development. In Seminar Jawatankuasa Penyelarasan Pendidikan Guru 2009, Ipoh: Universiti Pendidikan Sultan Idris.

Murphy, C.U., D.W. Lick, 2005. Whole-faculty study groups creating professional learning communities that target student learning. Thousand Oaks: Corwin Press.

Nunnally, J.C., I.H. Bernstein, 1994. Psychometric theory. New York: McGraw-Hill.

OECD, 2010. TALIS 2008 Technical Report . Retrieved from http://www.oecd.org/dataoecd/16/14/44978960.pdf .

Omar Abdull Kareem, 2010. Teacher capacity building in teaching and learning: The changing role of school leadership. In International Management Education Conference (iMEC 2010), Melaka: Universiti Pendidikan Sultan Idris.

Omar Abdull Kareem & Khuan Wai Bing, 2005. Perkembangan Profesional Guru Secara-berterusan: Perspektif Pembangunan Sumber Manusia. Jurnal Masalah Pendidikan. Retrieved from http://myais.fsktm.um.edu.my/4991/

Persico, M., 2001. Exploring the relationship between the perceived leadership style of secondary principals and the professional development practices of their teachers. Unpublished PhD Thesis. Bethlehm: Lehigh University

Roberts, S.M., E.Z. Pruitt, 2009. Schools as professional learning communities: Collaborative activities and strategies for professional development. Thousand Oaks: Corwin Press.

Schumacker, R.E., R.G. Lomax, 2004. A beginner`s guide to structural equation modeling. New Jersey: Lawrence Erlbaum Associates Publishers.

Sidek Mohd Noah, Jamaludin Ahmad, 2005. Pembinaan modul: Bagaimana membina modul latihan dan modul akademik. Serdang: Penerbit UPM.

Sireci, S.G., Y. Yang, J. Harter, E.J. Ehrlich, 2006. Evaluating guidelines for test adaptations: A methodological analysis of translation quality. Journal of Cross-Cultural Psychology, 37(5): 557-567. doi:10.1177/0022022106290478

Sparks, D., S. Loucks-Horsley, 1989. Five models of staff development for teachers. Journal of Staff Development, 10(4): 40-57.

Tabachnick, B., L. Fidell, 2007. Using multivariate statistic. Boston: Allyn and Bacon.

Wei, R.C., L. Darling-Hammond, A. Andree, N. Richardson, S. Orphanos, 2009. Professional learning in the learning profession: A status report on teacher development in the United States and abroad. Dallas, TX: National Staff Development Council.

Zepeda, S.J., 2008. Professional development. New York: Eye on Education.

Zainudin Awang, 2012. Structural equation modeling using amos graphic. Shah Alam: Universiti Teknologi Mara.