

THE RELATIONSHIP BETWEEN MODELS OF TEACHERS PROFESSIONAL DEVELOPMENT AND TEACHERS' INSTRUCTIONAL PRACTICES IN THE CLASSROOMS IN THE PRIMARY SCHOOLS IN THE STATE OF SELANGOR, MALAYSIA

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Accepted date: 29 July 2017 **Published date:** 2 October 2017

To cite this document:

Rauf, P. A., Ali, S. K. S., & Noor, N.A. M. (2017). The Relationship Between Models Of Teachers Professional Development And Teachers' Instructional Practices In The Classrooms In The Primary Schools In The State Of Selangor, Malaysia. *International Journal of Education, Psychology and Counseling*, 2(5), 120-132.

Abstract: Teachers` instructional practices in the classroom can be enhanced through increasing their knowledge and skills an effective school-based professional development. Hence, teachers must constantly deepen their knowledge and skills to remain effective throughout their careers. The purpose of this research is to investigate the relationship between school-based professional learning models and teachers` instructional practices. The sample consists of 1180 teachers from sixty-three daily primary school in the state of Selangor in Malaysia who are chosen through stratified sampling. This quantitative research used descriptive-correlational survey method to answer the research questions. A set of questionnaire used in this research has been developed and refined by Amin (2005) and Guskey (2000) for teachers` instructional practices. Descriptive statistical analysis such as mean, standard deviation and inferential statistic such as correlation and multiple regression have been carried out to answer the research questions. Overall, the findings show that there is a positive significant relationship ($r = .645$, $p < .05$) between school-based professional development models and teachers` instructional practices. Furthermore, the findings also show that training model ($\beta = .0554$, $t = 11.378$, $p < .05$) is the main predictor of professional learning models against teachers` instructional practices.

Keywords: Teachers' Professional Learning, Models of Teachers' Professional Development, Teachers' Instructional Practices in The Classroom

Introduction

Malaysia allocates a large amount of its budget for education. These include provisions for teachers' education of primary school and kindergarten. Almost 25 per cent of Malaysia's annual budget is allocated for teachers' education representing almost 50 per cent of the total allocation (Budget 2015). For example, the budget in 2013 amounted to RM500 million allocated for professional development training on core subject teachers. However, will the enormous allocation for training for teachers in schools helps the improvement of teachers' teaching in the classroom. Report from the Teaching and Learning International Survey (TALIS, 2013) shows that Malaysia is the second country that uses great deal of time to manage the classroom rather than carry out teaching and learning activities. Specifically, in Malaysia 25 per cent of teachers reported that they use 60 to 70 per cent of the time for teaching and learning activities. While another 25 per cent reported they used 70 to 80 per cent for teaching and learning activities. This figure is compared with Latvia where teachers spend between 80 and 95 per cent for teaching and learning activities. It should be noted that the large amount of allocation in professional development of teachers translates into substantial and more promising teaching and learning activities. Furthermore, the achievement of Malaysian students internationally through the Program for International Student Assessment (PISA) test is still markedly behind compared to other ASEAN countries such as Singapore and Vietnam. PISA test results (2012), Malaysia ranks 39 out of 44 countries for problem solving tests. These figures clearly show that there is a large amount of allocation for teacher training is not well-translated in the classroom.

Problem statement

One of the crucial aspect in teachers' professional development is models used (Darling-Hammond et al., 2017). An effective professional development for teachers' that utilizes models of effective practice has proven successful at promoting teacher learning and supporting student achievement (Darling-Hammond et al., 2017). Heller et al. (2012) conducted a randomized experimental design of three intervention groups and one control group to study the effects of PD on elementary students' learning in science. The PD focused on pedagogical science content knowledge for elementary teachers, utilizing three different interventions, all of which proved successful in improving student achievement. Therefore, the diversity models of teachers' professional development can bring a meaningful changes in the classroom.

From the problem statement above, this study aims to:

- i. What is the relationship between professional development models (a) self-directed learning model, b) observation-assessment model, c) development-improvement models, d) model of training, and e) inquiry model) with teachers instructional practices in primary schools in the state of Selangor?
- ii. Which of the 5 models can be the predictor factor of teachers' instructional practices in the classroom?

Literature Review

This study involves two main variables: Teachers' Professional Development Model and Teaching Instructional Practices in the classroom. The conceptual framework for this study is as follows:

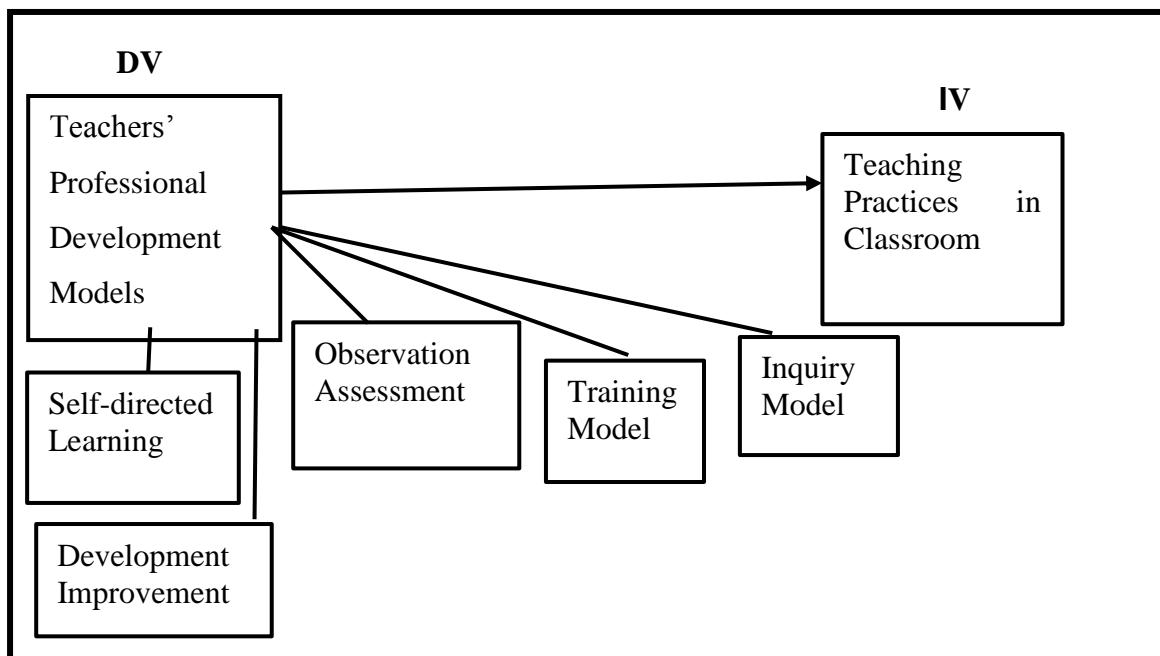


Figure 1: Research Concept Framework

Figure 1 shows the relationship between two variables ie independent variables (IV) namely teachers' professional development models (TPDMs) and teaching Instructional Practices in classroom (TIP). Next, this study will see between the 5 TPDMs which can be the predictor factor for teaching practices in the classroom.

Based on the conceptual framework above the focus of this literature is on professional development models, teaching practices in the classroom and previous studies on the relationship of these two variables.

Professional development models

This study uses the concept of teacher learning models by Sparks & Loucks-Horsley (1989) and revised by Amin (2005) and Parwazalam et al. (2014). There are 5 types of teachers' professional development model will be use in this study, namely; (i) self-directed learning model, (ii) observation-assessment model, (iii) development-improvement model, (iv) training model, and (v) inquiry model.

i. Self-Directed learning model

The most fundamental definition of self-directed learning comes from Knowles who described it as a process in which individuals take the initiative, without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, Implement appropriate learning strategies, and evaluating learning outcomes. (*Knowles, 1975, p. 18 as cited by Saks and Leijen, 2014*)

In a nutshell the self-directed learning is knowing what you need to learn, how to learn it, and being able to judge if you've learned it (Neelan, M. and Kirschner, 2017). This shows that the self-directed learning model is an internal aspect of an educator towards improving their knowledge and skills in various aspects either through academic improvement or through their pedagogical knowledge.

ii. Observation-Assessment model

The second model is observation-assessment model. This model is based on the feedback the teacher receives from the other teacher's observations such as through clinical observation or co-guidance. This model is based on the assumption that reflection after the direct observation of the teacher either by one or both parties will benefit the professional development of the teacher.

“Observation/assessment is another model of PD that involves colleagues who provide feedback based on observations about the performance of fellow educators. Both the observers and the observed learn from the process.” (Mohammad Nabi Karimi, 2011)

iii. Development-Improvement model

This third model can only happen if the teachers' is directly involved in schools' development programme as such curriculum planning, drafting the programme, and systematically involved in the process of school improvement. This model is based on the assumption that attitude change and skills will occur either individually or collectively if they work together to solve common problems (Amin, 2005 and Parwazalam, 2014).

iv. Training model

This model can be described as a session conducted by an expert who will present the content and teaching objectives assuming the teacher can learn the teaching behaviour from others and translate it in the classroom. As cited in Mohammad Nabi Karimi:

“Training may come through several formats like workshops, colloquia, demonstrations, role-playing, and simulations. It is considered a cost-effective model since large groups of educators are reached at once. The same knowledge base is shared with all participants.” (Mohammad Nabi Karimi, 2011)

v. ***Inquiry model***

Inquiry model is also known as the action-research model. In this model the teacher either alone or in the group conducts a less formal study on an issue related to teaching and learning. This model is based on the assumption that teachers will develop new ideas and strategies in teaching if they are given the opportunity to ask questions and answer the questions based on the data they collected in their classroom (Amin, 2005 and Parwazalam, 2015).

Teaching Instructional Practices (TIP)

TIP in the classroom in this study refers to three levels as proposed by Guskey (2003) and reviewed by Amin (2005) and Parwazalam (2015), i.e.; (i) attentive level (ii) level of usage and (iii) different level of practices.

Previous studies of relationship TPDM with TIP

Most studies have shown that there are positive relationships between these two variables (Amin 2005, Mahaliza, 2013, Parwazalam 2011, 2014 and 2015). Significant difference is in the aspect of the predictor factor to this relationship. Amin (2005) found that the training model was the strongest predictor factor for this relationship. His studies are carried out at Primary Schools in Sabah. While, the study in Daily Schools in Selangor by Parwazalam (2011) found that the self-directed model was a predictor of this relationship. While, the study by Mahaliza (2014) shows the action study model is the strongest factor in deciding the relationship with TIP. The study was conducted in Malaysia's day primary schools. Therefore, a study on how the role of this model influences teachers' teaching practices in the classroom should be implemented to fill the study gap.

Perhaps the most recent research on the relationship between model of professional development and teachers' instructional practices done by Darling-Hammond et al. (2017). After reviewing 35 studies on the relationship between this two variables, Darling-Hammond et al. (2017) concluded that students of teachers who participated in any of PD opportunities had significantly greater learning gains.

Methodology

This study is a descriptive-correlation survey using a questionnaire to collect data.

Population and sample

The population of the study consists of trained teachers in 63 primary schools in Selangor. The total population is 32,639 from 633 daily schools in Selangor (KPM, 2017). Researchers make sampling using stratified sampling methods. Cohen et al. (2007) states that if the study aims to make generalization then the stratified sampling should be used. Stratified sampling means

... is the process in which certain subgroups, or stratified, are selected from the sample in the same proportion as they exist in the population.

(Fraenkel and Wallen, 2015, p.96)

In this case, researchers use stratified sampling to enable all schools in various districts in Selangor to have representative. This is because if we are using simple random sampling, the districts with fewer schools such as the Sepang District with only 38 primary schools will not have any representative in the population. The population of the study covered teachers at 633 daily schools in Selangor. However, to meet the needs of the study, only the following schools will be chosen randomly:

- i. 633 schools in Selangor. This involves 32,639 teachers;
- ii. The sample to be used is 10 per cent of the total number of primary schools in the whole state of Selangor, amounting of 633 schools. This involves 32,639 teachers. However, for this study, 1260 respondents were selected as respondents;
- iii. Determining the number of schools to be used as a proportionate based sample i.e. percentage of the number of schools according to the District Education Office (PPD) based on the total number of primary schools in Selangor. For example, the number of daily primary schools in PPD Klang is 65. It represents 10.3 per cent of the number of Selangor's daily primary schools. This means that the sample of schools selected from PPD Klang is 7 schools (10.3 percent of the 63 selected schools). Selection of school samples is done randomly. In addition, the selected school is also based on location. This is to enable selected teachers not only represented the district but also represented the location;
 - a. After the school being used as the sample of the study has been identified, the researchers went to the school to meet with the school administrator. The researcher asked for a list of teachers in the school. For a list of teachers' names, researchers ask the school to give the name of the teacher who has undergone in-service training for at least seven days per year
 - b. Then, the list of teachers' names will be randomly selected as respondents for this study. Based on these four procedures it is explained in more detail in Table 3.1 for the state of Selangor.

Table 3.1 Population dan Research Sample for Selangor State

District	No. of Day Primary Schools	Sample (proportionate %)	Total No. of Teachers
Klang	65	7	140
Kuala Selangor	72	7	140
Hulu Selangor	51	5	100
Hulu Langat	88	9	180
Kuala Langat	56	5	100
Sabak Bernam	54	5	100
Gombak	68	6	120
Petaling Utama	59	5	100
Petaling Perdana	82	8	160
Sepang	38	6	120
Total	633	63	1260

Thus, a total of 1260 teachers were selected using multiple stratum sampling from the total population (Gay, Mills & Air, 2009). Instruments to measure teacher's view of professional learning models and teacher's instructional practices in the classroom have been adapted by researchers based on instruments of the previous researcher. The previous study was the study by Sparks & Loucks-Horsley (1989) and Amin (2005) for professional learning models. In addition, instruments for teachers' instructional practices were adapted from Guskey (2000). Researchers hand over all the instruments to the panel of experts comprising teachers and lecturers to determine the content validity. Comments provided by the expert panel have been used to modify the items in the instrument. A pilot study was conducted to ensure the face validity and determine the reliability of the instrument.

Instruments

The main measuring instrument for this study is the questionnaire. There are two questionnaires that being used. First questionnaire is for professional development model and second questionnaires for teacher instructional practices. The Teacher Professional Development Model (TPDM) contains 40 items divided into the following five models; Self-Teaching Learning Model (8 items), Modeling-Assessment Model (8 items), Development-Improvement Model (8 items), Training Model (8 items), and Inquiry Model (8 items). All items in this TPDM component are adapted from the Measurement Tools of the Model Development Staff (MSDS) used by Persico (2001) for purposes of data collection. This instrument was then refined by Amin (2005). The MSDS is built by Persico based on five professional development models of teachers submitted by Sparks and Loucks-Horsley (1989; 1990). The Teacher Instructional Practice Component (TIP) contains 15 items and is divided into the following three categories; Concerns (5 items), Applications (5 items), and New Practices (5 items). All 15 items were constructed by Amin (2005) based on the Professional Development Evaluation Model proposed by Guskey (Guskey, 1999, 2000).

Validity

All the items in the Component of Professional Development Model for Teachers (TPDM) are adapted from the Measurement Tools of the Model Development Staff (MSDS) used by Persico (2001) for data collection purposes. The MSDS is built by Persico based on five professional development models of teachers submitted by Sparks and Loucks-Horsley (1989; 1990). Persico (2001) specifies the validity of MSDS through the review of three experts in the field of professional development. Two of the experts are Dennis Sparks and Susan Loucks-Horsely, a figure who introduced five professional development models. The TPDM instrument was subsequently used by Amin (2005) using the Malay language.

The Teachings Component (TC) was constructed by Amin (2005) based on the Professional Development Evaluation Model proposed by Guskey (Guskey, 1999; 2000). In addition to using the proposed question given by Guskey, Amin (2005) also uses several questions based on the Questionnaire Based Adoption Model (CBAM) questionnaire (Hall & Hord, 1987; 2001). CBAM is a widely used measurement tool for understanding and assisting the process of change in organizations and areas of education. According to Salvin (1984), a measurement may be reliable but does not necessarily mean that measurements measure what should be measured. Therefore, to ensure that both of the above measurements meet the needs and purpose of this study, all the measuring tools constructed by Amin (2005) have been revised in its contents by four review panels. According to Amin (2005) the suggestions and comments

provided by the panels have been able to improve the quality in terms of suitability, accuracy and the meaning of the items of measurement tools concerned. Based on comments and panel suggestions, Amin (2005) has modified the items and the measuring tools of the study. In this case researcher uses a measurement tool that has been verified by the respective panels.

Instruments reliability

The reliability of the instrument in the analysis uses analysis using alpha Cronbach. In Table 3.2 comparisons were made with the reliability of Persico's (2001) measurement tools. Reliability in Amin Pilot Test (2005) for all categories except the Category of Self-Directed Learning overriding Persico's reliability. Overall, the reliability of the Teacher Professional Development component has an alpha value of 0.712 run by Persico and 0.933 by Amin. In addition, the latest study by Mahaliza et al. (2014) also performed a pilot study on this instrument with cronbach alpha value of 0.86. The researchers conducted the pilot test in two primary schools in Shah Alam which involved 40 respondents. Overall, Cronbach's alpha value obtained by the researcher was higher than that of Amin for the Self-Directed Learning and Training constructs, while for Observations, Development-Improvements and Inquiries were lower than Amin. Overall the Cronbach alpha value of the researcher is 0.918.

Table 3.2 Credibility Item of Teachers Professional Development Model

Category Item	Pilot Test by Amin (2005)		No. of Modified Items	Instruments by Persico (2000)		Pilot Test by Mahaliza et al. (2014)		Pilot Test by Researcher	
	N	alpha		N	alpha	N	alpha	N	alpha
Self Directed	25	0.628	-	25	0.634			40	0.732
Observation-Assessment	25	0.872	-	25	0.626			40	0.827
Development-Improvement	25	0.771	-	24	0.608			40	0.717
Training	25	0.613	-	24	0.602			40	0.649
Inquiry	25	0.786	-	24	0.632			40	0.724
Total	26	0.933	-	25	0.712	30	0.86	40	0.918

While Table 3.3 shows the reliability of the category of teacher teaching items, the ratio between the alpha Cronbach value run by Amin and the researcher. Found alpha Cronbach researchers slightly lower but they exceed the value of 0.6. Overall teachings items have alpha values of 0.915. However by using the same instrument Mahaliza et al. (2014) found alpha cronbach value is 0.89.

Based on the above reliability test analysis, all items either overall or by category, are acceptable for their reliability based on the criteria used in this study, the alpha Cronbach value exceeding 0.60.

Table 3.3 Credibility Item of Teachings Practices

Category Item	Pilot Test by Amin (2005)		Number of Modified Item	Pilot Test by Mahaliza et al. (2014)		Pilot Test by Researcher (2015)	
	N	alpha		N	alpha	N	alpha
Concerns	25	0.848	-			40	0.763
Application	25	0.857	-			40	0.788
New Practices	25	0.843	-			40	0.788
Total	25	0.933	-	30	0.89	40	0.857

Data analysis

In this study only completed questionnaires were analysed. The data were analysed using the SPSS Version 22.0 software. The analyses used are Pearson Correlation and Multiple Regression Analysis.

Findings

Respondents demography

The researchers distributed 1260 questionnaires to all respondents involved in teachers in primary schools in various districts of Selangor. Overall, the researchers received this questionnaire for 1180, after being rejected. The return of the questionnaire was 92.3 percent.

Relationship between TPDM and TIP

To achieve the first objective of the researcher using the Pearson correlation analysis. The findings based on Table 4.1 show a significant positive relationship between TPDM and TIP.

From Table 4.1 below it is clear that both variables have correlations or relationships with each other. Pearson coefficient value of 0.645 indicates that TPDM contributes 36 per cent of the relationship with TIP.

Table 4.1 Correlation between TPDM variable and TIP

Variables	Professional Development Model (MPP)		Teachings Practices (TIP)
	(N = 1180)	(N = 1180)	
Professional Development Model (MPP)	Pearson Correlation	1	0.645**
Teachings Practices (TIP)	Pearson Correlation	0.645**	1

** Correlation at 0.01 significance (2 tails)

Linear Equation Model between Teachers' Professional Development Models, Self-Directed, Observations, Development-Improvement, Training and Inquiry with Teachers' Teachings

The analysis used to answer second question is Multiple Regression Analysis. This test was made with the teaching of teachers included in the linear regression equation as dependent variables, and the school professional development model i.e. self-directed learnings, observations, improvements, training and inquiry as independent variables. Based on Table 4.2 it clearly shows that there are only two models that really affect the teaching of the teacher i.e. the training model and the inquiry. The modified R^2 value is 0.461 indicates the overall contribution of independent variables i.e. the school professional development model towards teacher teaching is 47.3 per cent. Only two models of professional development of the school contribute to teachers' teachings namely training and self-directed models. The training model was the main factor ($\beta = 0.554$, $p = 0.001$) which accounted for 46 per cent. The self-directed learning as a second factor ($\beta = 0.167$, $p = 0.001$) which contributed 4.71 per cent.

**Table 4.2 Multiple Regression Analysis of Professional Development Models of Teachers with Teachings.
(N = 1180)**

Variable	B	Beta (β)	t Value	p	R^2	ΔR^2
Independent						
Training	0.564	0.554	11.378	0.001**	0.461 ^a	0.460
Self-Directed	0.164	0.167	3.425	0.001**	0.473 ^b	0.0471
Constant	1.046		7.633	0.001*		

Conclusions and Suggestions

The objective of this study is to examine the relationship between TPDM (IV) and TIP (DV) variables. It is found that there is a positive relationship between TPDM and TIP. This finding supported with the previous finding by Parwazalam et al (2015).

The second objective of the study was to identify teachers' professional development models that could be a predictor of TIP. The results of multiple regression analysis showed that two out of five teachers' professional development models could be a predictor factor in TIP with an overall contribution of 47.3 per cent.

Based on the above findings it is clear that both variables have positive relationships. Therefore, policy-makers such as the Ministry of Education Malaysia (MOE) especially Teacher Education Division (TED) and the Malaysian Teachers Education Institute (ITCM) need to re-evaluate the implementation of professional development of teachers in schools.

The suggestion for future study is to look in-depth on the implementation of teachers' professional development in schools. The improvement in teaching practices in the classroom will stimulate the ability of students in the classroom. This will further increase student engagement in the classroom and improve student academic, social and emotional achievement performance as well.

References

- Amin Senin. (2005). *Hubungan pengurusan pembangunan profesional sekolah dengan model pembangunan profesional serta pengaruhnya terhadap pengajaran guru di sekolah-sekolah menengah negeri Sabah*. Tesis. Ph.D not published. Kota Kinabalu: Universiti Malaysia Sabah.
- Darling-Hammond, L., Hyler, M. E., Gardner, M. (2017). *Effective Teacher Professional Development*. Palo Alto, CA: Learning Policy Institute.
- Drago-Severson, E. (2004). *Helping Teachers Learn: Principal Leadership for Adult Growth and Development*. Thousand Oaks: Corwin Press.
- Fraenkel, J. R. & Wallen, N. E. (2015). *How to Design and Evaluate Research in Education*, ed. 9. Avenue of Americas, New York: Mc Graw Hill Companie, Inc.
- Guskey, T. R. (2003). How classroom assessments can improve learning. *Educational Leadership*, 60(5), 7-11.
- Guskey, T. R. (1999). *New Perspectives on Evaluating Professional Development*. Kertas kerja Annual Meeting of American Educational Research Association, Montreal, Canada.
- Guskey, T.R. (2000). *Evaluating professional development*. Thousand Oaks: Corwin Press.
- Hall, G. E., & Hord, S. M. (1987). *Change in Schools: Facilitating the Process*. Albany, NY: State University of New York Press.
- Hall, G. E., & Hord, S. M. (2001). *Implementing Change: Patterns, Principles and Potholes*. Allyn and bacon: Massachusetts.
- Heller, J. I., Daehler, K. R., Wong, N., Shinohara, M., & Miratrix, L. W. (2012). Differential effects of three professional development models on teacher knowledge and student achievement in elementary science. *Journal of Research in Science Teaching*, 49(3), 333–362
- Knowles, M. (1975). *Self-Directed Learning*. Chicago: Follet.

- Mahaliza Mansor, Norlia Mat Norwani & Jamal @ Nordin Yunus (2011b). From isolation to intergrated approach: Building a school-based professional learning model. Dalam *Asia Pacific Conference of Management and Leadership 2011*, Kuala Lumpur: Fakulti Pengurusan dan Ekonomi, Universiti Pendidikan Sultan Idris.
- Mohammad Nabi Karimi.(2011). The Effects of Professional Development Initiatives on EFL Teachers' Degree of Self Efficacy. *Australian Journal of Teacher Education* 36(6).
- Murphy, C. U., & Lick, D. W. (2005). *Whole-faculty study groups creating professional learning communities that target student learning*. Thousand Oaks: Corwin Press.
- Neelan, J. and Kirschner, A.P. (May, 2017). How to support self-directed learning in a learning organization.<https://www.td.org/Publications/Blogs/Science-of-Learning-Blog/2017/04/How-to-Support-Self-Directed-Learning-in-a-Learning-Organization>. Retrieved on September 14th, 2017
- OECD. (2013). *TALIS 2013 Technical Report*. Retrieved from <http://www.oecd.org>.
- Parwazalam Abdul Rauf (2011). *Pembangunan profesional guru berdasarkan sekolah di sekolah-sekolah menengah negeri Selangor*. Tesis Ph.D yang tidak diterbitkan. Kuala Lumpur: Universiti Malaya.
- Parwazalam Abdul Rauf, Syed Kamaruzaman Syed Ali, Aliza Aluwi, Nor Afizah Mohd Noor. (2014). The effect of school culture on the management of professional development in secondary schools in Malaysia. *The Malaysian Online Journal of Educational Science*, 2(3).
- Parwazalam Abdul Rauf, Mohd On Ahmad and Nor Afizah Mohd Noor. (2015). Hubungan model-model profesional guru dengan amalan pengajaran guru di bilik darjahdi sekolah-sekolah harian negeri Selangor. *Jurnal Pendidikan Serantau*. Retrieved from file:///C:/Users/Administrator/Downloads/JURNAL%20PEND%20SERANTAU_ung gah.pdf.
- Persico, M. (2001) . *Exploring the Relationship between the Perceived Leadership Style of Secondary Principals and the Professional Development Practices of Their Teachers*. Thesis Doctor of Education, Lehigh University, Bethlehem, PA. (Tidak diterbitkan).
- Putnam, R. & Borko, H. (1997). Teacher learning: Implications of new views of cognition. In B. J. Biddle, T. L. Good, & I. F. Goodson (Eds.), *the international handbook of teachers and teaching* (pp. 1223-1296). Dordrecht, the Netherlands: Kluwer.
- Roberts, S.M., & Pruitt, E.Z. (2009). *Schools as professional learning communities: Collaborative activities and strategies for professional development*. Thousand Oaks: Corwin Press.
- Robin Sabai. (2005). *Supervisory practices and professional development in secondary school in Betong Division, Sarawak*. Tesis sarjana yang tidak diterbitkan. Kuala Lumpur: Universiti Malaya.
- Saks, K., & Leijen, A., (2014). Distinguishing self-directed and self-regulated learning and measuring them in the e-learning context. *Procedia – Social and Behavioral Sciences*, 112, 190-198.
- Slavin, R. (1984). Students motivating students to excel: Cooperative incentives, cooperative tasks, and student achievement. *The Elementary School Journal*, 85(1), 53--63.
- Sparks, D., & Loucks-Horsley, S. (1989). Five models of staff development for teachers. *Journal of Staff Development*, 10(4), 40-57.
- Tallerico, M. (2005). *Supporting and sustaining teachers' professional development*. Thousand Oaks: Corwin Press.
- Yoon, K. S., Garet, M., Birman, B., & Jacobson, R. (2006). *The effects of mathematics and science professional development on teachers' instructional practice: Using*

professional development activity log. Washington, DC: Council of Chief State School Officers.

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