

## **FLIPPED ESL TEACHER PROFESSIONAL DEVELOPMENT: EMBRACING CHANGE TO REMAIN RELEVANT**

by **Rafiza Abdul Razak, Dalwinder Kaur, Siti Hajar Halili and Zahri Ramlan**

University of Malaya, 50603, Kuala Lumpur

rafiza @ um.edu.my, siti\_hajar @ um.edu.my,

zahriramlan @ gmail.com

### **Abstract**

Many traditional professional development programs that are initiated to equip ESL teachers with knowledge and skills have been futile for numerous reasons. This paper addresses a gap in the recent research of ESL teachers' professional development. Literature has revealed many shortcomings of the traditional and online professional development programs that are widely conducted; thus, an implementation framework of flipped professional development program is proposed in this paper, based on Malaysian educational practices. Integrated theories of Zone Proximal Teacher Development (ZPTD) and revised Bloom's Taxonomy are adapted in designing the Flipped Teacher Professional Development (Fit-PD). The implementation of the Fit-PD program is conducted in the four Train-to-Learn (TL) stages; remembering and understanding (TL-1) conducted in face-to face mode, applying and analysis (TL-2) conducted via online, evaluation (TL-3) conducted in face-to-face mode and finally creating (TL-4) conducted via online. Thus, the paper recommends an implementation framework of flipped teacher professional development. The recommendations assist educational policymakers to strategize better planning and organize flipped professional teacher professional development (Fit-PD) for ESL teachers.

**Keywords:** ESL teacher; professional development; flipped learning

### **1. Introduction**

Hazri, Nordin, Reena & Abdul Rashid (2011) pointed out that professional development, which was previously thought of as a short-term process, has now improved by leaps and bounds and is deemed as a long-term and ongoing process that promotes growth and development of the teaching profession. In line with this, a special committee set up in 1995 by the Ministry of Education of Malaysia has been assigned to look into the professional development of teachers, and one of the recommendations made was to encourage teachers to attend in-service courses (Mohd. Sofi Ali, 2002). Recently, Education Director General of Malaysia said that to realize the country's aspirations, initiatives manifested to train and improve the skills of teachers through continuous professional development are needed (cited in *New Straits Time Online*, 2014). Among the significant aspects that maintain teacher

professional development in Malaysia are continuous professional development and in-service training (In-Set) (Hazri et al., 2011).

All Malaysian teachers are required to fulfill and document 42 hours (7 days) of professional development programs per year so that their content knowledge, pedagogical skills and soft skills can be improved (Ministry of Education, 2009). The Ministry of Education (MOE) claims that the 42 hours of professional development which may include workshops, conferences, trainings, and seminars are school-based (Kabilan & Kasthuri, 2013). However, studies have shown that the professional development programs in Malaysia are mostly cascade-type (top-down approach), and they do not bring benefit to the teachers; thus, the teachers are dissatisfied (Kabilan, 2004; Kabilan, Vethamani & Chee, 2008). Teachers need to attend any professional development program that is dictated by the MOE (Kabilan & Kasthuri, 2013). Another study conducted in the local setting also shows that besides shortage of time, unsupportive working environment holds teachers back from learning and attempting new pedagogies in their classrooms (Thang et al., 2009). ESL teachers in Malaysia express their frustration over lack of opportunities in voicing out their needs for professional development programs that are relevant to their field and interests (Kabilan and Kasthuri, 2013; Mukundan and Khandehroo, 2009; Khandehroo, Mukundan and Alavi, 2011).

Indisputably, professional development for ESL teachers can take many forms. Birman, Desimone, Porter and Garet (2000) stated that professional development falls under two basic categories: (i) traditional professional development and (ii) reform-type professional development. The traditional professional development uses 'one-shot' workshops as a medium to equip teachers with the knowledge and skills they need; workshops, which are undeniably the most common type of professional development, receive most criticisms among all (Garet, Porter, Desimone, Birman, & Kwang, 2001). Guskey (1986) elaborated that this type of professional development which was introduced during the post-depression era implied a gap in teacher skills and knowledge. Several researchers have shown evidence on the failure of such 'one-shot' workshops (Fullan & Stiegelbauer, 1991; Johnson, 1989; Lovitt & Clarke, 1988).

Apart from workshops, other forms of traditional professional development that share the same features as workshops include institutes, courses and conferences (Garet et al., 2001; Little, 1993) as well as district training, out-of-district training and post-graduate courses (Desimone, Porter, Garet, Yoon & Birman, 2002). These traditional forms of professional development are usually conducted by leaders with expertise in their respective fields (Garet

et al., 2001). However, Boyle, While and Boyle (2004) pointed out to the fact that teachers learn about topics that are irrelevant to them by passively listening to these experts. These traditional forms are also criticized for failing to spur a change in teachers' competence and teaching practice (Boyle et al., 2004; Day & Sachs, 2004; Desimone, 2011; Hawley & Valli, 1999; Kwakman, 2003; Loucks-Horsley, Hewson, Love, & Stiles, 1998). The ineffectiveness of these traditional forms of professional development has brought out the drive for more research on professional development (Clarke & Hollingsworth, 2002). As a consequence, an alternative to the traditional form is the 'reform' form of professional development which includes programs such as mentoring and coaching (Garet et al., 2001).

## **2. Malaysian ESL teachers and professional development**

ESL teachers in Malaysia have insisted upon professional development programs that are designed according to their needs (Kabilan et al., 2008). There are so many changes and variation made to policies that require ESL teachers in Malaysia to constantly improve or change their methodologies and teaching practice that, without embracing a professional change, they may suffer a burnout (Mukun & Khandehroo, 2009). Thus, professional development programs should be parallel with the changes that are made to the educational aims and policies for ESL in Malaysia (Khandehroo, Mukundan, & Zhinoos, 2011). Kabilan (2007) reported that issues related to policies of ESL have always been discussed by various stakeholders in Malaysia, which include politicians. Kabilan and Kasthuri (2013) also mentioned that the flip-flopping in teaching and learning policies in Malaysia has further aggravated matters related to teacher development. In their paper, they also expressed concerns about the new English curriculum that was introduced in 2002, known as English Language Curriculum for Primary Schools (KSSR). According to the authors, the curriculum may not be successfully implemented in schools if teachers' needs on their professional development are neglected. Therefore, as mentioned by previous studies, the ESL teachers in Malaysia call for professional development programs that are relevant to them and programs that are constantly reviewed for their effectiveness (Mukun & Khandehroo, 2009; Khandehroo, Mukundan, & Zhinoos, 2011).

In fact, Kabilan and Kasthuri (2013) who conducted a nationwide study of the process of identifying the professional development needs of ESL teachers in Malaysia have come up with a model that has 3 stages of professional development programs: (1) planning and development, (2) implementing professional development and engaging teachers, and (3) evaluating and enriching teachers' experiences and professional growth. Despite agreeing that

professional development programs should be voluntary, the ESL teachers apparently did not express concerns on 'self-initiated' or 'self-directed' professional development. Nevertheless, researchers asserted that ESL teachers should engage in self-initiated or self-directed professional development by collaborating with other teachers as it could fulfill the needs of their students as well as the school (Kohl, 2005; Kabilan and Kasthuri, 2013).

### **3. Issues and challenges in ESL teacher professional development**

Many traditional (face-to-face) professional development programs that are initiated to equip teachers with knowledge and skills have been futile for numerous reasons (Fullan, 2001; Gordon, 2004; Tinoca, 2005; Wangsopawiro, 2012). Only mere 12 to 27 percent teachers have seen an improvement in their teaching after attending such professional development activities. Researchers stated that ESL teachers are not voluntarily participating, but are often mandated and obliged to attend the workshops where the programs are characterized by the 'one size fits all' approach, topics are totally unrelated and are too broad to be applied in classroom settings (Tinoca, 2005). They are unmotivated to participate as they are not equipped with platform or opportunities to express their needs and interests as well as the problems they face in the classroom (O'Brien, 1992, Wangsopawiro, 2012). Thus, they feel disconnected from the learning experience planned for them (O'Brien, 1992). The designers fail to fit in ESL teachers' practical knowledge in the process of developing the programs (Van Driel et al., 2001; Haney, Czerniak & Lumpe, 1996; Klinger, 2000; Wangsopawiro, 2012). Hence, professional development programs which emphasize on the lecturing strategy are very common and reflect a choice of methodology which is poor and not innovative (Gersten & Santoro, 2010; Radford 1998). Lynch (1997) advocated the ineffectiveness of traditional professional development programs since the ideas and strategies suggested during the programs are not implementable in reality.

The new reforms and ideas may sound innovative and interesting, but they can hardly be implemented in a real classroom setting, and this happens owing to lack of opportunities provided to teachers in experimenting the new reform themselves. Furthermore, Hayes (1997) and Hopkins (1986) identified time constraint and lack of incentives as major reasons preventing teachers from attending traditional professional development programs. However, Guskey and Kwang (2009) described the workshops as a waste of time and money as there is seldom a follow-up event to provide sustained support or to get feedback from teachers. They added that most of these workshops are poorly organized and tend to focus on unproven ideas. Bredeson (2002) pointed out that lack of time, money, and appropriate structure contributes to

the failure of a continuous learning opportunity for teachers to refine their knowledge and practice.

Nevertheless, similarly to traditional professional development, research conducted has shown that online teacher professional development (OTPD) presents a number of shortcomings and barriers (Dede et al., 2009; Ginsberg, Gray & Levin, 2004). Bransford et al. (2000) claimed that while training teachers, facilitators and researchers should move beyond the traditional professional development programs by finding new pedagogies that are offered by the implementation of Information and Communication Technologies. With the availability of a wide range of technological devices, OTPD programs have been proliferating (Brown & Green, 2003; Dede, 2006; Mandinach, 2005; O'Dwyer, Carey, & Kleiman, 2007; Reeves & Pedulla, 2011). Researchers asserted that a few of these OTPD courses have brought upon a remarkable progress in teacher knowledge as well as the quality of teaching and learning (Chitanana, 2012; Masters, DeKramer, O'Dwyer, Dash, & Russell, 2010). Taking into account the myriad of benefits OTPD offers (Brown & Green, 2003; Carter, 2004), OTPD was introduced to eliminate the barriers that were caused by traditional professional development programs (Jackson, 1999; Reeves & Pedulla, 2011). Roskos, Jarosewich, Lenhart, and Collins (2007) highlighted that OTPD has the potential of transforming professional development programs from 'now and then' to more frequent, consistent and continuous programs.

Capitalizing on the Internet as the prime vehicle and with emerging technologies, OTPD is a promising platform that is known to be convenient with an advantage of "anywhere anytime" access (Carter, 2004; Harlen & Doubler, 2004; Swenson & Curtis, 2003; Vrasidas & Zembylas, 2004). The Internet has revolutionized education by providing opportunities to access information (Glassman & Kang, 2012), and it has also provided a social platform for people to engage with one another (Boyd & Ellison, 2008). Thus, OTPD encompasses courses and learning opportunities via online interactions with other teachers or facilitators (Treacy, Kleiman, & Peterson, 2002); it is also a platform that supports collaboration among teachers in the virtual community (Chapman, Ramondt, & Smiley, 2005; Park, Oliver, Johnson, Graham & Oppong, 2007). Also, OTPD offers flexibility and support by helping teachers learn at their own convenience to the extent that they can even access resources that may not be locally available (Dede, Ketelhut, Whitehouse, & McCloskey (2009). In brief, Fishman et al. (2013) stated that OTPD offers professional development opportunities to teachers in rural and isolated areas by having courses at respective locations. To add on, a study conducted by Reeves and Li (2012) found that ESL teachers participating in OTPD have shown a favorable attitude towards online-mediated professional development

programs. The same study reported that teachers are amply prepared for online-mediated professional development.

Despite the exponential growth of emerging technologies and the Internet, studies have shown that ESL teachers have used them to a limited extent (Rolando, Salvador, Souza & Luz, 2014). The analysis of collaborative activities on blogs has shown very little interest by teachers (Carvalho, 2011). Owing to the fact that technology such as the Internet is a huge part responsible for the delivery of online professional development programs, the computer skills of the trainers and teachers are of concern (Reeves & Li, 2012; Roskos et al., 2007); such concerns regarding the computer competency of teachers also exist in the literature of general online learning (Muilenberg & Berge; Tallent-Runnels et al., 2006). Rolando et al. (2014) cautioned that in spite of the exposure provided by researchers on the prospects of a social platform for educational benefits (Martin et al., 2011), it has failed to highlight the ways ESL teachers can make use of these social tools to find support in the professional development of their peers. Besides computer competence of participants, access to a computer with reliable Internet connection also provides a challenge towards implementing online professional development programs (Treacy, Kleaman & Peterson, 2002). Treacy et al. (2002) added that the primary benefit of online professional development which is to provide an ‘anytime, anywhere’ access to learning will be futile without reliable Internet connection.

#### **4. Flipped learning in teacher professional development**

*“If we are to remain relevant, we must embrace change”* (Slomanson, 2014).

The rationale of employing flipped learning in teacher professional development stems from flipped learning research in education programs. This is parallel with the features of effective professional development. Flipped learning, which is also referred as blended learning and hybrid learning, shifts direct instruction from a group learning space to an individual learning space (Bergmann & Sams, 2014; Mok, 2014; Slomanson, 2014). However, regardless of the fact that the video component is used in online, flipped, and blended learning, there is a clear distinction among them. Online learning is conducted virtually without the face-to-face component; blended learning, on the other hand, has the online component, but it is conducted during class time alongside face-to-face instruction (Allen, Seaman, & Garrett, 2007).

In flipped learning, however, instruction that is traditionally conducted inside the classroom is flipped with whatever that used to be done outside the classroom (Baker, 2000), and this is also referred as “inverted classroom” (Lage & Platt, 2000). Traditional classrooms are not always successful as it is challenging to cater for diverse needs and abilities of the

students. Thus, in flipped learning, instructional videos are pre-recorded before class and uploaded for students to download whenever and wherever convenient for them (Jiang & Zhou, 2014; Mok, 2014). The aim of flipping the classroom is to maximize face-to-face time with students and instructional materials, be it videos, podcasts, or screen casts. This can be beneficial in increasing students' knowledge and understanding before class. For improved comprehension on a particular topic or module, they can watch the videos multiple times at their own pace (Bull, Fester, & Kjellstrom, 2012). Bergmann and Sams (2014) argued that it is not feasible to deliver instruction to a large group through a face-to-face meeting, and the best setup is the one in which the face-to-face time is used to help students understand the content. This is how students are able to reach higher levels of Bloom's Taxonomy (Gilboy, Heinerichs & Pazzaglia, 2015) as they are provided with opportunities to apply, analyze, synthesize, and evaluate knowledge they developed before class into their group learning environment (Jiang & Zhou, 2014). Through active engagement in learning, students eventually develop learner autonomy.

Since flipped learning has been proven to be advantageous in addressing diverse needs and promoting active learning, it is justifiable to try it in the teacher professional development programs. Nevertheless, blended professional development programs have been nascent recently. Belland et al. (2015) conducted a blended professional development to help teachers learn to provide one-to-one scaffolding during a problem-based learning unit. Their study incorporated three seminars which allocated for one hour and a half, one 8 hour workshop, and 4 weeks of online education activities.

Professional development programs that are based only on face-to-face activities lack sustainability (Dede et al., 2008; Holmes, Polhemus & Jennings, 2005). Alternatively, Owston, Wideman, Murphy, and Lupshenyuk (2008) pointed out that it is difficult to organize and maintain a virtual community through OTPD programs, and this is largely because participants lack trust, support and a sense of belonging in their virtual community of learning (Charalambos, Michalinos, & Chamberlain, 2004). Thus, experiencing the face-to-face component is no doubt significant in strengthening the bond among participants in a learning community, which calls for a blended professional development that would integrate both the face-to-face and the online component (Owston et al., 2008).

Literature supports the integration of both online and face-to-face components in teacher professional development; researchers and developers of the program can decide whether to flip it, blend it or even mix it. An effective professional development program is said to be coherent, has a content focus, is conducted in a longer duration, and promotes

active learning and collaboration (Desimone, 2009; Garet et al., 2001). A blended approach in a teacher professional program fits best the design of an effective teacher professional development (Owston et al., 2008). Owston et al. (2008) explained that blended professional development can be conducted in a longer duration as teachers do not have to leave their classrooms or schools to participate. It can fit into teachers' busy schedules by providing opportunities to go through the content at their own pace. Besides, by utilizing the online component, teachers can experience stronger social cohesion in their communities of practice (Dede et al., 2008; Lock, 2006). Owston et al. (2008) elaborated that there are many opportunities for collaboration as teachers can be involved in face-to-face sessions by applying their knowledge through 'hands-on' activities and later share feedback, thoughts and experience through the online component.

## **5. Theoretical framework**

Vygotsky's Zone of Proximal Development approach has been advanced by Warford (2011) to educate teachers within the Zone of Proximal Teacher Development (ZPTD). Warford (2011) explained ZPTD as "the distance between what teacher trainees are able to do on their own and a proximal level that they are capable of attaining with the guidance and strategic mediation of an expert in the field" (p.253).

Amer (2006) explained that taking into consideration the current developments in the educational and psychological literature where students are more knowledgeable of and responsible for their own learning and thinking, the Revised Taxonomy (RT) was developed. In brief, there are two reasons behind the revision of OT (Anderson et al., 2001); besides the intention, it is also revised to attract the educators' attention back to it and at the same time to emphasize the value of the OT for being a taxonomy that can still be applicable in the recent days (Rohwer & Sloane, 1994).

Warford (2011) stressed that teacher education curriculum based on Vygotskian approach should promote mediation between teachers' prior teaching experiences, their pedagogical knowledge and observation as well as their tacit beliefs about pedagogy. Having said this, instead of cramming teaching candidates with facts, trainees create their own meaning by utilizing the cultural tools espoused by Vygotsky's theory.

Bloom's Educational Objectives; remembering, understanding, applying, analyzing, evaluating and creating are well integrated with ZPTD in designing in-service teachers programs (Rolando, Salvador, Souza, Luz, 2014). As shown in Table 1, ZPTD starts with teachers' reflection (self-assistance) on their prior experiences and beliefs, and moves toward

experts' assistance (Tayebeh & Farid, 2011). Each stage progresses sequentially complying to Bloom's Educational Objectives.

Table 1. Adaptation of ZPTD and Bloom's Taxonomy into in-service teacher programs

ZPTD	Bloom's Taxonomy	Sample Interventionist Dynamic Assessments	Sample Interactionist Dynamic Assessments
I. Self-assistance [Stage II in ZPD (Gallimore & Tharp, 1990)]	-Remembering -Understanding	Preparing learning autobiographies, Responding to prompts about prior experiences	Discussion, sharing autobiographies, follow-up questions
II. Expert other assistance [Stage I in ZPD (Gallimore & Tharp, 1990)]	-Applying -Analyzing	Analysis of teaching practices (demonstrations, videos, field observation) Role-taking/playing Forced choice quizzes (written) WebQuests Cubing exercises	Leading questions and follow-up discussion Processing role plays Oral quizzes
III. Internalization	-Evaluating	Journaling Micro-teaching Candidate statement of teaching philosophy	Discussion, dialogic partners
IV. Recursion	-Creating	Journaling Clinical reflective reports: collecting information and making warranted claims for change On-line forum Role taking/playing	Discussion, sharing autobiographies, follow-up questions, post-observation conferencing. Processing role-plays

## 6. Implications and recommendations

Hinging on the concept of the classroom flip and using the theory of Bloom's Revised Taxonomy and ZPTD as the framework, this paper proposes the flipping concept in the professional development programs, thus introducing a Flipped Teacher Professional Development for ESL teachers (see Figure 1).

Daniels (2014) revealed that traditional professional development only provides pedagogical ideas and resources to teachers while leaving no time for design and implementation; thus, a flipped professional development idea was developed in Stillwater, Minnesota to emphasize on the design and development as well as the implementation of the curriculum via technology integration. Daniels further added that the flipped professional development can be conducted in a workshop setting provided that the coaching element is added to it. In this approach, the ESL teachers will watch the video tutorials to learn new

methodologies, get inspirations and ideas, and later discuss with the experts on developing those ideas; also, the experts facilitate the teachers; coach, scaffold, and provide guidance until the teachers manage to develop and implement the resources (Flanigan, 2013). The crux of this paper concerns supporting a flipped professional development program for ESL teachers.

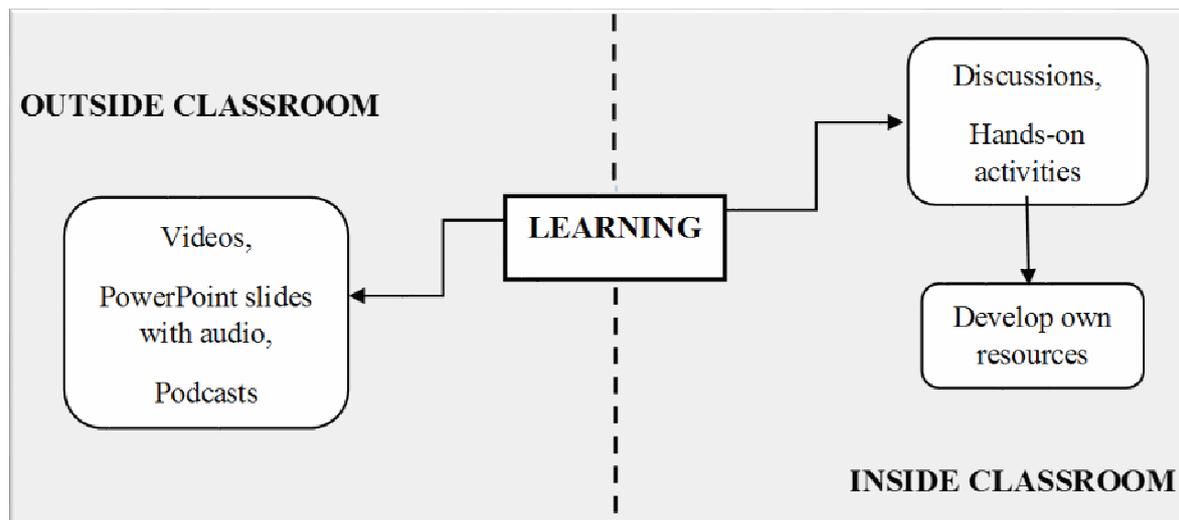


Figure 1. Flipped Teacher Professional Development (Fit-PD)

The proposed instructional plan as presented in Table 2 has been implemented in five selected primary schools. The online component is facilitated online whereas the face-to-face (F2F) component is planned to be conducted in the respective schools. The participants for this implementation phase are ESL teachers of the respective schools who are involved in a one-month training program.

The FiT-PD training begins with a face-to-face meeting with the teacher participants and this stage is basically trainer regulated. The two cognitive processes involved in this stage are remembering and understanding; participants recall their prior experiences and share their learning autobiographies.

Subsequently, they move to the online component where small, bite-sized chunks of online activities are utilized through trainer facilitation. At this stage, they apply and analyze teaching practices based on the proposed module. As the participants' confidence increases, they internalize their learning in a face-to-face meeting with other participants in which they go through the evaluation cognitive process.

Finally, the training ends with an online session where participants collaborate and share with one another through online learning platforms, and simultaneously, work together to create their own innovative methodologies.

Table 2. Proposed instructional strategy for FiT-PD

Implementation	Phases	Cognitive Processes	Proposed Activities
<b>TL 1 (Face to face)</b>	Self Assistance	- Remembering - Understanding	- Responding to prompts about prior experiences - Preparing and sharing learning autobiographies - Discussions
<b>TL 2 (Online)</b>	Expert Assistance	- Applying - Analyzing	- Analysis of teaching practices based on the FiT-PD module - Leading questions and follow up - WebQuests
<b>TL 3 (Face to face)</b>	Internalization	- Evaluating	- Microteaching - Journaling - Statement of teaching philosophy
<b>TL 4 (Online)</b>	Recursion	- Creating	- Online forums - Journaling

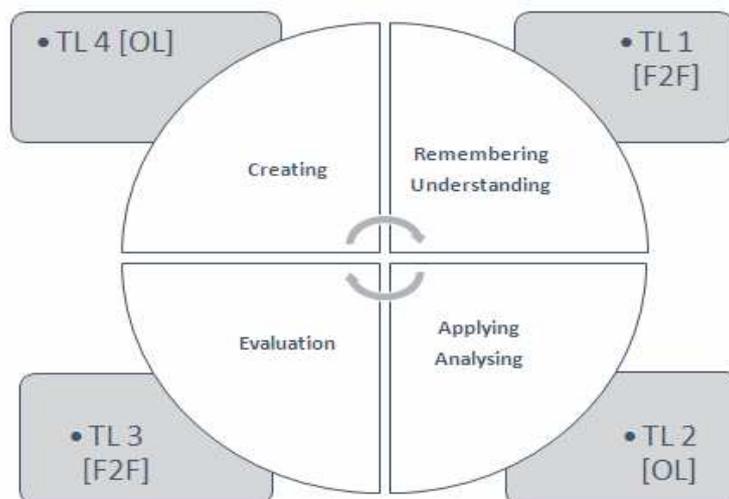


Figure 2 Implementation framework of FiT-PD

## 7. Conclusions

The implementation of the Flipped Teacher Professional Development (FiT-PD) program is conducted in four Train-to-Learn (TL) stages (Figure 2); remembering and understanding (TL-1) conducted in a face-to face mode, applying and analysis (TL-2) conducted online, evaluation (TL-3) conducted in a face-to-face mode and finally creating (TL-4) conducted online. Literature has revealed many shortcomings of the traditional and online professional

development programs that are widely conducted; thus, a flipped professional development program proposed in this study can be a viable solution.

Professional development programs are essential in maintaining teacher professionalism, and the approach of the program must constantly fit the demands of educational reforms. It is fundamental that ESL teachers are kept abreast with the ever-changing teaching pedagogies that are brought by the integration of Information and Communication Technologies in education. ESL teachers have to adopt a different approach as it is the age of the young learners that makes it unfitting for the teaching of formal concepts. Thus, it is widely recognized that teachers' knowledge, skills, and practices are decisive in the success of any teaching career. Khandehroo et al. (2011) stated that there are very few descriptive research designs about the specific instructional skills that ESL teachers need professional development for. It is hoped that this paper will help educational policymakers to better plan and organize flipped professional teacher professional development (Fit-PD) for ESL teachers.

#### **Acknowledgement**

This work was supported by the Fundamental Research Grant Scheme (FRGS) Grant No. FP017-2014B from Malaysia Ministry of Education and also supported partly by COMSTECH-TWAS Joint Research Grants Programme. The administration and financial operation of TWAS is undertaken by UNESCO (UNESCO FR: 3240283415).

#### **References**

- Abell, S. K. (2008). PCK twenty years later: Does it remain a useful idea? *International Journal of Science Education*, 30, 1405-1416.
- Allen, I. E., Seaman, J., & Garrett, R. (2007). *Blending. The Extent and Promise of Blended Education in the United States*. Needham, MA: The Sloan Consortium. Retrieved 25 May 2014 from [http://www.sloan-c.org/publications/survey/pdf/Blending\\_In.pdf](http://www.sloan-c.org/publications/survey/pdf/Blending_In.pdf)
- Aly Amer (2006). Reflections on Bloom's Revised Taxonomy. *Electronic Journal of Research in Educational Psychology*, 8(4), 213-230.
- Ball, D., & Cohen, D. (1999). Developing practice, developing practitioners. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the Learning Profession: Handbook of Policy and Practice* (pp. 3-32). San Francisco: Jossey-Bass Publishers.
- Belland, B. R., Burdo, R., & Gu, J. J. (2015). A blended professional development program to help a teacher learn to provide one-to-one scaffolding. *Journal of Science Teacher Education*, 26, 263-289.
- Bergmann, J., & Sams, A. (2014, May). Flipped learning: Gateway to student engagement: There's more to flipped learning than just asking students to watch videos at home and complete worksheets in class.

- Find out how to use the flipped model to take your teaching—and your students—to new places. *Learning & Leading with Technology*, 41(7), 18-23.
- Beyea, S., & Nicholl, L. (1998). Writing an integrative review. *AORN Journal*, 67(4), 877-80.
- Birman, B. F., Desimone, L., Porter, A. C., & Garet, M. S. (2000). Designing professional development that works. *Educational Leadership*, May 2000, 28-33.
- Borko, H. (2004) *Professional Development and Teacher Learning: Mapping the Terrain*. Retrieved 25 May 2014 from <http://edr.sagepub.com/content/33/8/3.full.pdf>.
- Boyle, Boyd, D. M., & Boyle, B., While, D., & Boyle, T. (2004). A longitudinal study of teacher change: What makes professional development effective? *Curriculum Journal*, 15(1), 45-68.
- Bredeson, P. V. (2002). The architecture of professional development: Materials, messages and meaning. *International Journal of Educational Research*, 37(8), 661-675.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). How people learn: Brain, mind, experience, and school (Expanded E., p. 384). *Educational Researcher*, 33(8), pp. 3-15.
- Bull, G., Ferster, B., & Kjellstrom, W. (2012, August). Inventing the flipped classroom. *Learning & Leading with Technology*, 40(1), 10-11.
- Carvalho, J. D. S. (2011). *Networks and Communities: Teaching and Learning over the Internet*. Sao Paulo: Editora e Livraria Instituto Paulo Freire.
- Chapman, C., Ramondt, L., & Smiley, G. (2005). Strong community, deep learning: Exploring the link. *Innovations in Education and Teaching International*, 42(3), 217-230.
- Charalambos, V., Michalinos, Z., & Chamberlain, R. (2004). The design of online learning communities: Critical issues. *Educational Media International*, 41(2), 135-143.
- Chitanana, L. (2012). A constructivist approach to the design and delivery of an online professional development course: A case of the iLEARN online course. *International Journal of Instruction*, 5(1), 23-48.
- Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, 53(4), 445-459.
- Clarke, D. J., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*, 18(8), 947-967.
- Comber, C. (2009). *Survey of the Use of Learning Platforms/Virtual Learning Environments in Initial Teacher Education Institutions, Interim Report, March 2009*. School of Education, University of Leicester: ITTE. Retrieved 25 May 2014 from [http://dera.ioe.ac.uk/1773/1/Becta\\_LS\\_Report\\_August\\_2009\\_Final.docx](http://dera.ioe.ac.uk/1773/1/Becta_LS_Report_August_2009_Final.docx).
- Day, C., Elliot, B., & Kingston, A. (2005). Reform, standards and teacher identity: Challenges of sustaining commitment. *Teaching and Teacher Education*. 21(5), 563-577.
- Daniels, K. (2014, April 18). The flip side of professional development. *Ed Surge*. Retrieved 25 May 2014 from <https://www.edsurge.com/n/2014-04-18-the-flip-side-of-professional-development>.
- Dean, J. (1991). *Professional Development in School*. Buckingham: Open University Press.
- Dede, C. (Ed.). (2006). *Online Professional Development for Teachers: Emerging Models and Methods*. Cambridge, MA: Harvard Education Press.
- Dede, C., Ketelhut, D. J., Whitehouse, P., & McCloskey, E. (2009). A research agenda for online teacher professional development. *Journal of Teacher Education*, 60(1), 8-19.

- Desimone, L., Porter, A. C., Garet, M. S., Yoon, K. S., & Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Education Evaluation and Policy Analysis*, 24(2), 81-112.
- Desimone, L. (2009). Improving impact studies of teacher professional development: Toward better conceptualisations and measures. *Educational Researcher*, 38(3), 181-199.
- Desimone, L. (2011). A primer on effective professional development. *Phi Delta Kappan*, 92, 68-71.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers' College Record*, 103(6), 1013-1055.
- Ellison, N. B. (2008). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230.
- Flanigan, R. L. (2013, June 11). 'Flipped PD' initiative boosts teachers' tech skills. *Education Week*, 33(1), 4.
- Fleet, A., & Patterson, C. (2001). Professional growth reconceptualized: Early childhood staff searching for meaning. *Early Childhood Research and Practice*, 3(2). Retrieved 25 May 2014 from <http://ecrp.uiuc.edu/v3n2/fleet.html>.
- Fisher, J. B., Schumaker, J. B., Culbertson, J., & Deshler, D. D. (2010). Effects of a computerized professional development program on teacher and student outcomes. *Journal of Teacher Education*, 61(4), 301-312.
- Fishman, B., Konstantopoulos, S., Kubitskey, B. W., Vath, R., Park, G., Johnson, H., & Edelson, D. C. (2013). Comparing the impact of online professional development in the context of curriculum implementation. *Journal of Teacher Education*. 64(5), 426-438.
- Fullan, M., Hill, P., & Crevola, C. (2006). *Breakthrough*. Thousand Oaks, CA: Corwin Press.
- Fullan, M. (1999). *Change Forces: The Sequel*. Bristol: Farmer Press.
- Fullan, M. & Hargreaves, A. (1996). *What's Worth Fighting for in Your School*. New York: Teachers College Press.
- Fullan, M. (1993). *Change Forces: Probing the Depths of Educational Reform*. Bristol: Farmer Press.
- Fullan, M., & Miles, M. B. (1992). Getting reform right: what works and what doesn't. *Phi Delta Kappan*, 73(10), 745-752.
- Fullan, M. (1991). *The New Meaning of Educational Change*. New York: Teachers College Press.
- Gall, M. D., Renchler, R. S. (1985). Effective staff development for teachers: A research-based model. (ERIC). College of Education, University of Oregon. In S. M. Wilson & J. Berne (1999), Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education*, 24, 173-209.
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915-945.
- Garmston, R. (1991). Staff developers as social architects. *Educational Leadership*, 49(3), 64-65.
- Gersten, R., & Santoro, L. E. (2010). Teacher study group: Impact of the professional development model on reading instruction and student outcomes in first grade classrooms. *American Educational Research Journal*, 47, 694-739.
- Glassman, M., & Kang, M. J. (2012). Intelligence in the internet age: The emergence and evolution of Open Source Intelligence (OSINT). *Computers in Human Behavior*, 28(2), 673-682.

- Gilboy, M., Heinrichs, S., Pazzaglia, G. (2015, January). Enhancing student engagement using the flipped classroom. *Journal of Nutrition Education and Behavior*, 47(1), 109-114.
- Goodall, J., Day, C., Lindsay, G., Muijs, D. & Harris, A. (August 2005). *Evaluating the Impact of Continuing Professional Development (CPD)*. London: DfES.
- Goodson, I. (1997). 'Trendy theory' and teacher professionalism. In A. Hargreaves & R. Evans (Eds.), *Beyond Educational Reform: Bringing Teachers Back in* (pp. 29-43). Buckingham: Open University Press.
- Gordon, S. P. (2004). *Professional Development for School Improvement: Empowering Learning Communities*. Boston, MA: Pearson/ Allyn and Bacon.
- Greeno, J. G., Collins, A. M., & Resnick, L. B. (1996). Cognition and learning. In D. Berliner & R. Calfee (Eds.), *Handbook of Educational Psychology* (pp.15-46). New York: Macmillan.
- Griffin, G.A. (1983). Introduction: The work of staff development. In G.A. Griffin (Ed.), *Staff Development*, 82<sup>nd</sup> Yearbook of the National Society for the Study of Education (pp. 13-15). Chicago: University of Chicago Press.
- Gulati, S. (2008). Compulsory participation in online discussions: is this constructivism or normalization of learning? *Innovations in Education and Teaching International*, 45(2), 183-192.
- Guskey, T. (1986). Staff development and the process of teacher change. *Educational Researcher*, 15(5), 5-12.
- Guskey, T. R. (2000). *Evaluating Professional Development*. Thousand Oaks, CA: Corwin.
- Guskey, T. R. (2002a). Professional development and teacher change. *Teachers and Teaching: Theory and Practice*, 8(3/4), 381-391.
- Hammond, M. (2010). *What the Literature Says about Continuing Professional Development and the Use of Learning Platforms in Schools and in Initial Teacher Education*. BECTA. Retrieved 25 May 2014 from [http://www.itte.org.uk/system/files/LP%2526CPD%20Lit%20Review\(Final\).doc](http://www.itte.org.uk/system/files/LP%2526CPD%20Lit%20Review(Final).doc).
- Haney, J. J., Czerniak, C. M., & Lumpe, A. T. (1996). Teacher beliefs and intentions regarding the belief of science education reform strands. *Journal of Research in Science Teaching*, 33, 971-993.
- Harootunian, B., & Yargar, G. P. (1980). Teachers' conceptions of their own success. Paper presented at the Annual Meeting of the American Educational Research Association. Boston, MA, April.
- Hawley, W. D., & Valli, L. (1999). The essentials of effective professional development. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the Learning Profession: Handbook of Policy and Practice* (pp. 127-150). San Francisco: Jossey-Bass Publishers.
- Hayes, D. (Ed.) (1997). *In-Service Teacher Development: International Perspectives*. London: Prentice Hall.
- Helmer, J., Bartlett, C., Wolgemuth, J. R., & Lea, T. (2011). Coaching (and) commitment: Linking ongoing professional development, quality teaching and student outcomes. *Professional Development in Education*, 37(2), 197-211.
- Henderson, M. (2007). Sustaining online teacher professional development through community design. *Campus-Wide Information Systems*, 24(3), 162-173.
- Holmes, A., Polhemus, L., & Jennings, S. (2005). CATIE: A blended approach to situated professional development. *Journal of Educational Computing Research*, 32(4), 381-394.
- Hopkins, D. (Ed.) (1986). *In-Service Training and Educational Development: An International Survey*. London: Croom Helm.

- Huberman, M. (1995). Professional careers and professional development: Some interactions. In T. R. Guskey & M. Huberman (Eds.), *Professional Development in Education: New Paradigms and Practices* (pp. 122-142). New York: Teachers College Press.
- Jiang, X., Zhou, G. (2014, March). Theoretical research and instructional design of the flipped classroom. *Applied Mechanics and Materials*, 543-547, 4312-4315.
- Kleiman, G. M. (2004). *Meeting the Need for High Quality Teachers: E-Learning Solutions*. Retrieved 25 May 2014 from <http://www.ed.gov/about/offices/list/os/technology/plan/2004/site/documents/KleimaneetingtheNeed.pdf>.
- Klinger, D. (2000). Hierarchical linear modeling of students and school effects on academic achievement. *Canadian Journal of Education*, 25, 41-55.
- Kohl, G. A. (2005). *The Professional Development Needs of K-12 ESL and Foreign Language Teachers: A Descriptive Study*. North Carolina, United States of America: University of North Carolina.
- Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities. *Teaching and Teacher Education*, 19(2), 149-170.
- Lage, M. J., & Platt, G. J. (2000). The internet and the inverted classroom. *Journal of Economic Education*, 31(1), 30-43.
- Laughridge, Virginia J., (2011). *The Relationship between Professional Development and Teacher Change in the Implementation of Instructional Strategies that Support Elementary Students' Science Textbook Reading*. Doctoral Theses, Student Research, and Creative Activity. University of Nebraska - Lincoln. Retrieved 25 May 2014 from <http://digitalcommons.unl.edu/dissertations/AAI3449904>.
- Lave, J. & Wenger, F. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge, UK: Cambridge University Press.
- Lieberman, A. & Miller, L. (2001). Introduction. In A. Lieberman & L. Miller (Eds.) (2001). *Teachers Caught In The Action: Professional Development That Matters* (pp. i-vii). New York: Teachers College Press.
- Lock, J. V. (2006). A new image: Online communities to facilitate teacher professional development. *Journal of Technology and Teacher Education*, 14, 663-678..
- Loucks-Horsley, S. Hewson, P. W., Love, N., & Stiles, K. E. (1998). *Designing Professional Development for Teachers of Science and Mathematics*. Thousand Oaks, CA: Corwin Press.
- Lynch, S. (1997). Novice teachers' encounter with national science education reform: Entanglement or intelligence interconnections. *Journal of Research in Science Teaching*, 34(1), 3-17.
- Martin, S., Diaz, G., Sancristobal, E., Gil, R., Castro, M., & Peire, J. (2011). New technology trends in education: Seven years of forecasts and convergence. *Computers and Education*, 57(3), 1893-1906.
- Masters, J., Magidinckramer, R., O' Dwyer, L. M., Dash, S., & Russell, M. (2010). The effects of online professional development on fourth grade English language arts teachers' knowledge and instructional practices. *Journal of Educational Computing Research*, 43(3), 355-375.
- Means, B., Toyama, Y., Murphy, R. Bakia, M., Jones, K. (2009). *Evaluation of Evidence-Based Practices in Online-Learning: A Meta-Analysis and Review of Online Learning Studies*. Washington DC: U.S. Department of Education.
- Mok, H. (2014). Teaching tip: The flipped classroom. *Journal of Information Systems Education*, 25(1), 7-11.

- Motteram, G. (2006). 'Blended' education and the transformation of teachers: A long term case study in postgraduate UK Higher Education. *British Journal of Educational Technology*, 37(1), 17-30.
- Northrup, P., & Rasmussen, K. (1999). STEPS: Just-in-time EPSS professional development for educators. In B. Collis & R. Oliver (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 1999* (pp. 1644). Chesapeake, VA: AACE.
- O'Brien, T. (1992). Science inservice workshops that work for elementary teachers. *School Science and Mathematics*, 92(8), 422-426.
- O'Dwyer, L. M., Carey, R., & Kleiman, G. M. (2007). A study of the effectiveness of the Louisiana Algebra I online course. *Journal of Research on Technology in Education*, 39(3), 289-306.
- Oliver, R., Herrington, J., & Reeves, T. C. (2006). Creating authentic learning environments through blended learning approaches. In C. J. Bonk & C. R. Graham (Eds.), *The Handbook of Blended Learning: Global Perspectives, Local Designs* (pp. 502–514). San Francisco: Pfeiffer.
- Owston, R., Wideman, H., Murphy, J., & Lupshenyuk, D. (2008). Blended teacher professional development: A synthesis of three program evaluations. *Internet and Higher Education*, 11, 201-210.
- Owston, R. D., Sinclair, M., & Wideman, H. (2008). Blended learning for professional development: An evaluation of a program for middle school mathematics and science teachers. *Teachers College Record*, 110(5), 1033-1064.
- Park, S., Oliver, J. S., Johnson, T. S., Graham, P., & Oppong, N. K. (2007). Colleagues' roles in the professional development of teachers: Results from a research study of National Board certification. *Teaching and Teacher Education*, 23(4), 368-389.
- Powell, D. R., Diamond, K. E., Burchinal, M. R., & Koehler, M. J. (2010). Effects of an early literacy professional development intervention on head start teachers and children. *Journal of Education Psychology*, 102(2), 299-312.
- Radford, D. L. (1998). Transforming theory into practice: A model for professional development for science education reform. *Journal of Research in Science Teaching*, 35(1), 73-88.
- Rolando, L. G. R., Salvador, D. F., Souza, A. H. S., & Luz, M. R. M. P. (2014). Learning with their peers: using a virtual learning community to improve an in-service Biology teacher education program in Brazil. *Teaching and Teacher Education*, 44, 44-55.
- Slomanson, W. (2014, August). Blended learning: A flipped classroom experiment. *Journal of Legal Education*, 63(1), 93-102.
- Sparks, D. (1997). A new vision for staff development. *Principal*, 77(1), 20-22.
- Swenson, P., & Curtis, L. (2003). Hybrid courses plus: Blending F2F, online and handheld computer for effective learning. *Society for Information Technology and Teacher Education International 2003 Conference Proceedings* (pp. 520–523).
- Tayebeh, F., & Farid, G. (2011). Implication of Vygotsky's Zone of Proximal Development (ZPD) in teacher education: ZPTD and self-scaffolding. *International Conference on Education and Educational Psychology (ICEEPSY 2011)*, 29, 1549-1554.
- Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher Professional Learning and Development: Best Evidence Synthesis Iteration (BES)*. Wellington: Ministry of Education.

- Tinoca, L. (2005). *The Process of Teacher Change as a Consequence of Professional Development and its Impact on Student Learning*. Dallas, Texas: National Association for Research in Science Teaching.
- Treacy, B., Kleiman, G., & Peterson, K. (2002). Successful online professional development. *Learning and Leading with Technology*, 30(1), 42-47. Retrieved 25 May 2014 from [http://olms.noinc.com/olms/data/resource/1686/SuccessfulOnlinePD\\_.pdf](http://olms.noinc.com/olms/data/resource/1686/SuccessfulOnlinePD_.pdf).
- Van Driel, J. H., Beijaard, D., & Verloop, N. (2001). Professional development and reform in science education: The role of teachers' practice and knowledge. *Journal of Research in Science Teaching*, 38, 137-158.
- Warford, M. K. (2011). The zone of proximal teacher development. *Teaching and Teacher Education*, 27, 252-258.
- Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education*, 24, 173-210.
- Wongsopawiro, D. (2012). *Examining Science Teachers' Pedagogical Content Knowledge in the Context of a Professional Development Program*. Doctoral dissertation. Leiden: Leiden University.
- Yang, S. J. H., Chen, I. Y. L., Kinshuk, & Chen, N. (2007). Enhancing the quality of e-learning in virtual learning communities by finding quality learning content and trustworthy collaborators. *Educational Technology & Society*, 10(2), 84-95.