International Journal of Education and Practice

2016 Vol. 4, No. 1, pp. 12-20 ISSN(e): 2310-3868 ISSN(p): 2311-6897 DOI: 10.18488/journal.61/2016.4.1/61.1.12.20 © 2016 Conscientia Beam. All Rights Reserved.



THE TRAINING DILEMMA: THREE TEACHERS' VIEWS OF CPD

Ramesh Rao Ramanaidu¹⁺ --- Kuruvilla C.K. Joseph² --- Ravichantiran Arujunan³

'Research and Development Department Institut Pendidikan Guru Kampus Ilmu Khas, Malaysia ²²English Studies Department Institut Pendidikan Guru Kampus Ilmu Khas, Malaysia

ABSTRACT

Continuous professional development (CPD) courses enable teachers to keep up with the latest developments in the field of teaching and learning. However the modus operandi of conducting and delivering CPD courses is constantly questioned. The purpose of this research is to explore the issues related to the conducting and delivery of a CPD course. For the purpose of this study, three teachers who attended a CPD course were chosen. An interview protocol with ten open-ended questions was used to solicit information related to their experience in conducting an in-house course in their respective schools. The responses from the open-ended questions revealed that the teachers were unable to render the same experience to their colleagues due to a variety of reasons such as time factor, priority given by the school administrators and a lack of confidence. The findings suggest that the course organisers should stipulate the amount of time every school should allocate when conducting in-house courses and sufficient time should be allocated to teachers attending CPD to practise what they have learnt before they are asked to conduct an in-house course.

Keywords: Continuous professional development, Training, In-house courses, Thinking maps, Course delivery, Training dilemma.

Received: 3 July 2015/ Revised: 19 August 2015/ Accepted: 1 September 2015/ Published: 9 September 2015

Contribution/Originality

This study is one of very few studies which investigates the challenges faced by teachers who attend Continuous Professional Courses. The study documents the dilemma faced by teachers who had attended a CPD and need to pass on the newly acquired knowledge and skills to their colleagues.

1. INTRODUCTION

The constant change and growth in the landscape of education demands teachers to find appropriate ways to keep current (Joan and JoAnn, 2013). Darling-Hammond and Sykes (1999) refer to teaching as the "learning profession". Being an effective teacher requires the knowledge, skills and sensitivities of a teacher of children and the process by which teachers keep their knowledge base current is often referred to as professional development. Professional development refers to many types of educational experiences related to an individual's work (Mizell, 2010). By participating in professional development, individuals will be able to learn and apply new knowledge and skills that will improve their performance on the job. Continuous professional development (CPD) is the strategy used by schools, district education offices and the Education Ministry to ensure that educators continue to strengthen and consolidate their practices throughout their career (Mizell, 2010). Professional development may be a short-term or long-term action plan for teachers' own development. Two types of continuous professional development are offered and they are either mandatory or optional. The former is determined by the administrators,

while the latter is by choice and done by individuals with the intention of upgrading one's skills i.e. teaching and learning. The impact of teachers who participate in quality professional development can be seen through the achievement of their students (Snow-Renner and Lauer, 2005). Continuous calls to raise the quality of teaching have brought forth the need for teachers to participate regularly in in-service training. CPD is necessary and enables teachers to remain up to date with the latest developments in the field of teaching and learning. There is evidence which shows that CPD leads to improvements in instructional practices and student learning (Borko, 2004). Although teachers are expected to be self-directed learners who are motivated to keep up with the changes in the teaching and learning domain, relevant institutions and responsible bodies take upon themselves to provide the avenue for them to obtain new and current ideas and knowledge. On the same note, when teachers are aware of the positive impact of CPD, they are more likely to engage in professional development courses. Thus, designers of professional development courses must ensure that the content of the courses must be current, useful, engaging and appropriate for teachers. Course designers must take note that teachers prefer professional development courses which are relevant to classroom practices. Effective professional development enables educators to develop the knowledge and skills they need to address students' learning challenges (Mizell, 2010).

Table-1. Principles of high quality Professional Development Courses

- Focus on teachers as central to student learning;
- Focus on individual, collegial, and organizational improvement;
- Respect and nurture the intellectual and leadership capacity of individuals within the school community;
- Reflect best available research and practices in teaching, learning, and leadership;
- · Enable teachers to develop further expertise in subject content, teaching strategies, and technology;
- Promote continuous inquiry and improvement;
- Involve collaborative planning;
- Require substantial time and other resources;
- Driven by a coherent long-term plan;
- · Assessed by its impact on teacher effectiveness and student learning.

Source: U.S. Department of Education Professional Development Team, 1994

Table 1 shows the principles which designers of professional development courses could follow to ensure they are of high quality. For instance, the type and content of the CPD course is often decided and dictated by the administrators. In some cases, the administrators take the initiative in investigating the interest and needs of the teachers.

For professional development courses to be effective and successful, course designers must have a clear working theory of adult learning. Failing to do so could jeopardize the objectives of having professional development courses (Elmore, 2002). Blank and Alas (2009) found that teachers who attended professional development courses display positive change when equal focus was given to the teaching and learning of the content and not only the content itself. In a study to gauge the efficacy of CPD involving fourteen Chemistry teachers in Israel, (Taitelbaum et al., 2008) reported that these teachers benefitted greatly from CPD that was administered to them on a monthly basis. The positive attributes that these teachers developed included being more reflective and aware of their practice and a change in their pedagogical knowledge and content knowledge.

For teachers who attended CPD courses, to apply and try out the new ideas and information obtained requires time. Often professional development courses are delivered to teachers without opportunities for them to try out the new ideas or information gathered. Torgeson (2003) estimated that it takes twenty to forty hours of preparation for teachers to apply what they have learnt. However the challenge for many teachers is finding these hours. In some instances, the number of teachers who utilize the new information is rather discouraging. For example, a study by Birman *et al.* (2009) found that only 4 out of 10 teachers who attended professional development courses tried out what they acquired. On the other hand, course designers and organizers face a variety of challenges which include failure to synchronize the career structure and the CPD values and activities, high turnover of CPD facilitators,

time constraints on teachers as well as their school leaders, CPD programmes lagging behind and the tendency of rushing to cover the course, and inadequacy or the total absence of the minimum resources required to run an effective CPD (Blank and Alas, 2009). A professional development system in the field of education consists of four key elements (See Figure 1).

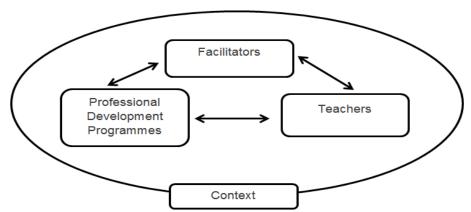


Figure-1. Elements of a professional development system (adapted from Borko (2004))

They are the programme itself, the teachers, who are the participants of the programme, the facilitator, who guides teachers to construct new knowledge and practices; and the context in which the professional development occurs. Over the years, numerous studies on the relationship between these elements have been carried out. Ultimately, the aim is to provide high-quality professional development courses. As with any other profession, there is continuous development in the field of teaching and learning. To meet and cater to this demand, the Ministry of Education of Malaysia (MOE) stipulates that every teacher attends professional development courses for a minimum of seven days in a year. However the mechanism employed in disseminating the information is often questionable, notably in terms of the delivery and effectiveness.

The main challenge in many CPDs conducted is the mode of delivery. A common approach employed by the MOE is the cascade training model. The cascade model involves the delivery of training through layers of trainers until it reaches the final target group (Elder, 1996). Some shortcomings of the use of the cascade model of training is the watering down of the intended information and the delivery being off tangent. The MOE is responsible for designing and implementing CPDs that are based on the needs of improving teaching and learning. As such, the MOE must seek answers to the following question: What are the barriers and challenges facilitators face in delivering CPDs effectively?

The distinct feature of this study lies in the dual role of a teacher in CPD. Referring to Figure 1, on the one hand, the teacher acts as the course participant of a professional development course, and on the other, she acts as the facilitator or the trainer. This dual role has its many challenges, and research and literature in this area is limited and needs to be further explored. Realizing the challenges faced by such teachers who had to play such demanding 'dual roles' (McNeill et al., 2014) embarked on a project in the United Kingdom to promote a collaborative model of professional development compared to the transmission, formal training and 'top-down' model of conducting CPD. This project involved teacher representatives from three schools, a project coordinator and a researcher from a local university and was implemented successfully with very encouraging and positive results.

The aim of this study is to investigate the dilemma faced by teachers who attended a CPD, as participants, and delivering the contents of the same CPD, as facilitators or trainers. The study will attempt to interpret and understand the experiences of three teachers and render explicitly the processes they underwent in delivering the contents through reflective interpretation of experience. Through the teachers' voices, the researchers hope to

understand and explore issues faced in the implementation of CPDs. Ultimately, the researchers hope to identify the barriers that limit teachers' ability to participate in and conduct professional development courses. Developing a better understanding of the existing barriers would certainly help future professional development course designers who must take into account the issues raised in order to enhance its effectiveness.

2. METHODOLOGY

The current literature on CPD relies mostly on surveys and interviews. Literature and research that examines the effectiveness of what is passed on (the contents of the CPD) by course participants to their colleagues is lacking or limited. The method used by the researchers in this study, a case study, allows for the investigating of three teachers' experiences in a CPD. The case study method provides the avenue to explore a single entity, phenomenon or social unit holistically and intensively (Merriam, 1998). In this study, the case study method allows the researchers to capture the teachers' experiences as they occur in context and particular situations (Stake, 2006).

The standard definition of a case study is to understand the particularity of one single case. However, in this study the goal was to understand the experiences of three teachers who participated in a CPD. Hence, instead of one single case study, a multiple case design was used. In other words, the single case in this study refers to the experience of carrying out a CPD, and a collection of cases was used. Stake (2006) used the term 'quintain' to describe this method. He stated that as long as the individual cases are categorically bound together by a common phenomenon, similarities and differences among the collection of cases could be used to answer the research question. Hence, the experiences of three teachers who attended the same CPD course were used in this study. For the purpose of exploring the experience of participating in and conducting a CPD, three secondary school teachers were chosen as subjects. An in-depth analysis of the challenges faced by each teacher in conducting the CPD was done. The following criteria were used in selecting the teachers:

i. Attended the same CPD

The three teachers chosen attended the same CPD. The teachers attended a course conducted by the Curriculum Development Division, Ministry of Education Malaysia. As a follow up, the teachers who attended the course were required to carry out an in-house course, delivering the contents of the course to their colleagues in school (Cascade Model Training). To ensure this is done, the teachers were asked to indicate the date they planned to do so in their respective schools.

ii. Similarity in teacher profile

Table 2 shows the teachers' profiles. For the purpose of confidentiality, the names of the teachers and schools are not revealed.

Teacher Details	Teacher 1English	Teacher 2Science	Teacher 3Mathematics
Gender	Female	Male	Female
Teaching Experience (years)	25	14	9
Subject taught in school	English	Science	Mathematics
Date of course	27 – 30 November 2012		
Number of teachers who attended the in- house CPD course in school	88	76	24
Date in-house training was conducted	31 December 2012	12 January 2013	27 December 2012

Table-2. Profile of teachers interviewed

In order to capture the teachers' experiences of attending and conducting the CPD, individual interviews were conducted with each teacher. The three teachers were informed of the purpose and intent of this study, and they acknowledged their awareness of it. To ensure confidentiality, the names of the teachers were changed to

pseudonyms i.e. Teacher 1English, Teacher 2Science and Teacher 3Mathematics. As an assurance, the teachers were given the option to withdraw from the study if they felt uncomfortable with it. The interviews were conducted within a week after the teachers had conducted the CPD in their respective schools. This was to ensure the 'freshness of thought' is captured before it 'dwindles'. During the interview, a variety of questions were formulated to capture the teachers' experience, feelings, opinions and views about the CPD they had conducted.

An interview protocol with ten open-ended questions was used to solicit data pertaining to the teachers' experiences. The interviews were scheduled with each teacher on separate dates, lasting about 30 minutes. To ensure neutrality and reduce red-tape, the interviews were held outside the teachers' schools. For the sake of clarity and to gain a better understanding, the teachers were given the opportunity to expound on the questions posed. This was permitted in focused interviews as long as it stays within the boundaries of the research and does not dwell into other topics (Yin, 2013) and it was within the scope of the study.

To facilitate data collection, the interviews were recorded with the permission of the interviewes. The interviews were then transcribed by the researchers. The transcriptions were then shown to the teachers for verification to ensure accuracy. Miles and Huberman (1994) analysis process was used in analysing the interviews and the notes prepared by the assistant. They are assigning codes to the interview transcripts, writing the reflections in the margin of the transcripts, identifying similar patterns or emerging themes in the interviews and ascertaining generalization of the interviews.

3. FINDINGS

The teachers who were interviewed were all participants of a four-day course. The aim of the course was to expose teachers to 'Thinking Maps' (TM) and 'Higher Order Thinking Skills' (HOTs). Based on the feedback obtained from the participants, the duration of the course was sufficient for them to grasp the contents of the course – TM and HOTs. The course was conducted by an experienced and certified master trainer who used a multitude of interesting and exciting activities to further enhance their understanding of the contents – TM and HOTs. However, the three teachers who were interviewed admitted that they were unable to replicate the same experience to their teachers. The reasons are as follows:

3.1. Time Factor

Upon returning from the course, Teacher 3Mathematics informed her school principal on the need to conduct an in-house course. She was asked to discuss with the Senior Assistant so that the in-house course can be conducted on a suitable date. As the course was to be held during the school holidays, her Senior Assistant suggested that she use the academic meeting which will be held at the end of the year (before the next academic year begins). The senior assistant agreed to allocate two hours for this purpose to Teacher 3Mathematics. In reality however, on the day of her session she only had about an hour to carry out the training because the earlier session ended an hour later. The limited time available forced her to water down the contents of the course. She equated her experience to watching a movie, and narrating the story in less than a minute.

On the other hand, Teacher 1English's experience was contrary to Teacher 3Mathematics's experience. This is what Teacher 1English shared: "Actually I was only allocated 1 hour but it went on to 2 hours, eating up the time allocated for the following session. There were so many questions and before we realised it, we had taken up an hour of the following session. My senior assistant intervened and instructed me to discuss with her about conducting the course on a different day."

This difference in time allocated caused the teachers to adapt the contents of the course – what to cover and how much to cover. For instance, Teacher 3Mathematics decided to introduce only TM, leaving out the HOTs component to a later date. Though she realised this could jeopardize the effectiveness of the TM, she had no other alternative. When asked why she decided to do so, she replied: "something is better than nothing." Teacher 2Science had more hours and managed to introduce all the maps there are in TM (Note: There are 8 maps in TM) in greater

detail. However, Teacher 1English only managed to introduce 6 maps. She planned to introduce the remaining 2 maps on a later date. The six maps she introduced were:

- i. circle map
- ii. bubble map
- iii. double bubble map
- iv. tree map
- v. multi-flow map
- vi. bridge map

Teacher 1English's choice of the maps to be covered during the training session was based on her judgement: "It took two whole days for the master trainer to introduce the 8 maps, and I only had two hours. Therefore I chose the maps which I think my teachers would find most useful. My plan was to let them try these maps first."

3.2. Priority

Throughout the years, teachers have attended many CPDs. It is a norm in many schools for teachers who have attended CPDs to conduct in-house training. Unlike Teacher 1English and Teacher 3Mathematics, Teacher 2Science's principal attended the course with him. As such, the principal understood the necessity and importance of conducting the in-house training. Teacher 2Science was given a full day i.e. 5 hours to conduct the in-house training. In comparison, Teacher 1English and Teacher 3Mathematics had limited time and had to compete with the other teachers in conducting the course.

Teacher 2Science conducted a 'needs analyses before introducing TM and HOTs. During the introduction session, he probed his teachers' awareness on TM and HOTs. Teacher 2Science summarized his findings as "out of 76 teachers only 8 had heard of it, while 4 felt they have read about it in the newspapers" (Note: According to them, there was a write up in the newspapers about TM).

Teacher 2Science had an interesting experience. Before starting his session, some teachers in his school subtly warned him of introducing 'new things and putting ideas to the principal, for they feared that the introduction of TM would increase their current workload. Some of the teachers who attended the session were under the impression that the much talked about TM had been called off. So, they were surprised when Teacher 2Science mentioned that he would be introducing TM during the in-house course. As a result, some were surprised and disappointed that TM had made its way back! Such 'negative' feelings towards TM made his session even more difficult and challenging. On the question of how he knew of this, Teacher 2Science said: "it was written all over their faces", but he refused to divulge more information.

Nevertheless, he thinks he managed to turn the tide, for many during the session showed interest and wanted to incorporate TM in their lessons. He did this by unpacking their existing beliefs on TM, and this took about 20 minutes. On the question of 'how unpacking of beliefs' was done in the course that he had attended, his reply was "no such thing, but the trainer used a four quadrant approach which is similar to the 'JOHARI Window." Teacher 2Science was not satisfied with the number of teachers he managed to convince about the benefits of using TM in the classroom. This was reflected by his statement, "if I was given more time, I believe I could have convinced more teachers."

Teacher 1English suggested an alternative way of introducing TM. Instead of conducting an in-house course for all the teachers, she felt it would have been more effective if the session was attended only by the heads of department and selected teachers. In her school there are 4 departments i.e. Languages, Social Sciences, Science and Technology. In this way, she would have a smaller group to train, enabling her to focus more on each participant. As she is a language teacher, most of the examples given during the training were more towards language. Hence, non-language teachers found it a little more difficult to relate to the examples given and this to a certain extent affected their participation and understanding.

However, when questioned on why the other teachers (Note: Every school was represented by four teachers) who attended the course did not assist her, her response was 'you know, I am the unlucky one. Being the most senior teacher I had to conduct the course. The rest just helped to distribute papers etc".

3.3. Confidence

All the teachers interviewed in this study have the necessary academic and professional qualification. An essential component of teacher education is exposing teachers to Bloom's Taxonomy. Hence HOTs which is a spin-off of Bloom's Taxonomy should not be alien to teachers in Malaysia. Unfortunately, in reality, most teachers do not utilise and apply all the components of Bloom's Taxonomy in their classroom, and over time it is forgotten. The teachers in this study admitted that during the course they realised HOTs is not exactly a new thing. Teacher 2Science aptly described it as a process of "putting old wine in a new bottle".

Pointing out the gap between the time they attended the course and conducted the course, the teachers were of the opinion that it would have been better if they had more time to experiment and prepare for the course. As the course was held at the end of the academic year i.e. November 2012, and the in-house was in December 2012, there were no opportunities for the teachers to try out what they had learnt from the course (TM and HOTs) with the students. This lack of hands-on experience emerged during the in-house session when Teacher 1English stated 'when a teacher asked me to give an example on the usage of multi flow map, it took me some time to.... this reflected my lack of experience."

Teacher 3Mathematics's situation was different than Teacher 1English's. As she was a mathematics teacher, most of the examples she gave involved numbers, but she had her fellow teachers who attended the course together to chip in and help out. These teachers cited examples that the master trainer gave during the course. "My cotrainers, occasionally helped by giving examples... but the examples were those given during the course by the Master Trainer. At times I felt they were not appropriate for the teachers in this school. I can't blame her for this, for I did the same." When asked why she did it, her response was "There is no chance for me to try out TM and I don't want to give examples which could be wrong." Teacher 3Mathematics pointed out that this would not be the case if the in-house training was held at a later date, giving ample time for teachers to try out TM and HOTs with their respective students.

4. RECOMMENDATIONS

Based on the findings of the study, the researchers would like to propose a few recommendations that need to be taken into account when conducting CPDs.

4.1. Stipulating the Time and Content of CPD

Course developers and organisers, in this case the MOE, should stipulate the amount of time every school should spend when conducting in-house courses. The MOE should clearly define and specify how the in-house courses should be done. According to Cohen *et al.* (2003) a good CPD programme has content, activities and instructional materials which are clear and easily implemented. At present, the MOE only encourages CPD, without stipulating the time and the content it should cover. However, merely stipulating the quantity is not sufficient. The MOE should instead provide the resources too. Resources such as financial allocation for schools to conduct in-house courses would result in CPD courses which are better organised and more structured. For example, instead of carrying out the in-house courses in their own schools, they could use other venues with better facilities outside the school. A good venue would be the district teacher activity centres known as 'Pusat Kegiatan Guru - PKG'. At the moment these PKG are managed by the Education Technology Division. By allowing these centres to be used by schools, teachers would be more receptive to in-house courses. A change of environment would be good for teachers too.

4.2. Putting into Practice What's Learnt in CPD

Desimone et al. (2002) reported that teachers who attended CPD display greater changes in their instructional practices when they participate and engage actively in what they have newly learnt. This engagement refers to practising what they have learnt or observing other teachers utilizing this new knowledge. As such, it would be better if teachers who attended a CPD are given ample time to practise or engage in what they have learnt before they are asked to conduct the training. While they are doing this, their peers would have the opportunity to observe them and this could arouse their interest in learning the 'new' practices and knowledge too. The value of such learning for teachers who attended CPDs are greater (Blank and Alas, 2009) and the chances of these good practices rubbing onto other teachers are higher.

4.3. Converting Teachers to Facilitators

The role of a facilitator is crucial to the success of a programme. As such, expecting teachers to perform as well as the facilitators of a CPD is being grossly unfair to them for teaching and training require different sets of skills. Teachers who are expected to conduct in-house courses must be trained to adopt and adapt the curriculum of the course that they had attended. Among the factors (Remillard and Geist, 2002) suggested are understanding of the course participants and achieving the goals of the course. Therefore, the organisers of CPDs and the MOE should include a special session in every course where the intricacies of implementing and running the course are thoroughly discussed and planned. This move will certainly boost the confidence of the participants as well as the facilitators.

4.4. Developing a Collaborative Approach to Enhance the Professional Development

Using the Cascade Model of conducting CPD has given rise to a host of problems that seem to have no end. The MOE has to seriously start looking at other more effective approaches to enhance the delivery of CPD and ensure its success. Schools which have teachers who face similar issues can be grouped together and a collaborative approach similar to that proposed by McNeill *et al.* (2014) can be designed and adopted to cater to the needs of the teachers concerned. This collaborative approach which has received positive reactions has been shown to provide opportunities for teachers to work with their colleagues and 'experts' from outside on a number of platforms for the benefit of the schools as well as the students.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

REFERENCES

Birman, B.F., A. Boyle, K.C. LeFloch, A. Elledge, D. Holtzman and M. Song, 2009. State and local implementation of the no child left behind act —teacher quality under NCLB. Washington, DC: Office of Planning, Evaluation, and Policy Development, U.S. Department of Education.

Blank, R.K. and N.D.l. Alas, 2009. Effects of teacher professional development on gains in student achievement: How metaanalysis provides scientific evidence useful to education leaders. Washington, DC: Council of Chief State School Officers.

Borko, H., 2004. Professional development and teacher learning: Mapping the terrain. Educational Researcher, 33(8): 3-15.

Cohen, D.K., S.W. Raudenbush and D.L. Ball, 2003. Resources, instruction, and research. Educational Evaluation and Policy Analysis, 25(2): 119-142.

Darling-Hammond, L. and G. Sykes, 1999. Teaching as the learning profession: Handbook of policy and practice. San Francisco, CA: Jossey-Bass Inc.

- Desimone, L.M., A.C. Porter, M.S. Garet, K.S. Yoon and B.F. Birman, 2002. Effects of professional development on teachers instruction: Results from a three-year longitudinal study. Educational Evaluation and Policy Analysis, 24(2): 81-112.
- Elder, H., 1996. The cascade model of training: Its place in the pacific. Directions. Journal of Educational Studies, 5(1): 13-15.
- Elmore, R., 2002. Research on the role of quality professional development in raising student achievement. Paper Presented at the National Press Club. Albert Shanker Institute, Washington, D.C.
- Joan, S. and C. JoAnn, 2013. Teaching young learners engish. 1st Edn., Boston, USA: Cengage Learning, Inc.
- McNeill, J., G. Butt and A. Armstrong, 2014. Developing collaborative approaches to enhance the professional development of primary mathematics teachers. International Journal of Primary, Elementary and Early Years Education, 3(13): 1-16.
- Merriam, S.B., 1998. Qualitative research and case study applications in education. San Francisco, CA: Jossey-Bass.
- Miles, M.B. and A.M. Huberman, 1994. Qualitative data analysis: An expanded sourcebook. 2nd Edn., Thousand Oaks: Sage.
- Mizell, H., 2010. Why professional development matters. Learning forward. Oxford: United States of America.
- Remillard, J.T. and P. Geist, 2002. Supporting teachers professional learning through navigating openings in the curriculum. Journal of Mathematics Teacher Education, 5(7): 7-34.
- Snow-Renner, R. and P. Lauer, 2005. Professional development analysis. Denver, CO: Mid-Continent Research for Education and Learning.
- Stake, R.E., 2006. Multiple case study analysis. New York: The Guilford Press.
- Taitelbaum, D., R. Mamlok-Naaman, M. Carmeli and A. Hofstein, 2008. Evidence for teachers change while participating in a continuous professional development programme and implementing the inquiry approach in the chemsitry laboratory. International Journal of Science Eucation, 30(5): 593-617.
- Torgeson, J.K., 2003. New expectations for outcomes from effective reading interventions with younger and older children: Lessons from research. Paper Presented at the International Dyslexia Association, San Diego, CA.
- Yin, R., 2013. Case study research: Design and methods. 5th Edn., Thousand Oaks, California: Sage Publishing.

Views and opinions expressed in this article are the views and opinions of the author(s), International Journal of Education and Practice shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.