
Title	Pre-service teachers' engagement in action research during teaching practicum
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PRE-SERVICE TEACHERS' ENGAGEMENT IN ACTION RESEARCH DURING TEACHING PRACTICUM

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ABSTRACT

The advent of the Knowledge Age has brought many challenges to countries around the world in every aspect of life, including learning in teacher education. With regards to this, there is widespread agreement on the promotion of educational themes such as higher order skills, teaching for understanding, constructivism, authentic problem solving, and lifelong learning. In the same vein, there is increasing recognition for teachers to teach in ways that are appropriate to prepare students for the Knowledge Age, and thus the need to re-evaluate the learning structures for pre-service teachers. This paper summarises an inductive research study of four final-year pre-service teachers (Diploma in Education) to look at how engagement in an action research project during the teaching practicum influences their pedagogical practice and beliefs towards professional learning.

Introduction

Although action research is not entirely new in the Singapore teacher education scene not much has been published locally regarding it, and especially in relation to how it could be used as a strategy for teachers, or pre-service teachers, to professionalise their work (Ponte, 2002). The call towards greater autonomy and diversity by the Ministry of Education (MOE) is an indication towards new forms of learning and practice in Singapore education. The above reasons, coupled with the belief that action research has much potential in promoting professional autonomy and discretion in order to be effective and responsive to in the period of change (Potter, 2001), have motivated the first author, to embark on the research study. Throughout the course of the study the authors were interested to find out how the properties or structures of action research influence pre-service teachers' pedagogical practice and beliefs towards professional learning.

Method

The research study stretched from March to October 2003. Prior to the research study, the first author made an open invitation to 33 pre-service teachers whom he had tutored before. In total 10 pre-service teachers decided to participate in a project entitled 'Practicum Action Learning' (PAL Project) after having attended a half-hour talk with regards to the project. However, after the teaching practicum experience 4, who are the second, third, fourth and fifth authors, eventually proceeded on with the research study as they had engaged in both the reflection and research components. The PAL Project sought to provide participants with the conceptual grasp, and foretaste, of the basic action research cycle through their teaching practicum experiences starting from the notion of 'plan-do-review' cycle (*Diagram 1*). The first author's choice to use 'action learning' as opposed to 'action research' is to focus participants to learning rather than researching, and in order not to frighten off participants.

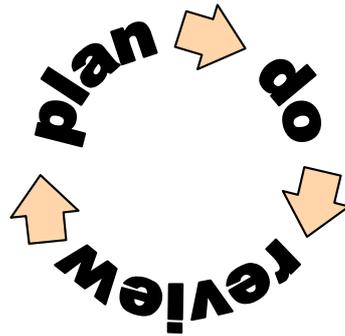


Diagram 1: Plan-Do-Review Cycle

Central to the action research cycle is the notion of reflection – espousing Schon’s theory of reflection-in-action and reflection-on-action (1983). While the former is a process that helps to reshape what we are working on, while we are working on it, the latter is about “*thinking back on what we have done in order to discover how our knowing-in-action may have contributed to an unexpected outcome*” (Schon, 1983, p. 26).

The project provided the structure for reflection, in the form of a set of questions, for participants to reflect during the review phase of the action research cycle (Appendix A). The set of questions sought to engage participants in reflection concerning the taught lessons at both the individual and collective levels. They engaged in dialogue either within the individual (self-conversations) or between individuals (conversations between individuals). Conversations between individuals could be between one pre-service teacher and another, or more than one, or between one pre-service teacher and his or her Co-operating Teacher (CT). These reflections serve to probe into possible explanations for gaps that exist between planned lesson objectives and actual lesson outcomes. Here participants – individually and collectively – generate hypotheses based on what actually had taken place in class. This is the ‘induction’ aspect of the project (Diagram 2). The generation of hypotheses would then act as an advocate or adviser in the lesson planning of the next subsequent lesson. Participants’ individual or collective hypotheses would then be ‘put to the test’ during the next lesson delivery. This is the ‘deduction’ aspect. After the next lesson, individual and collective reflections would either generate new hypotheses or re-construct previous hypotheses (*induction*). They would then serve to influence the next subsequent lesson, which would serve to put to test new or reconstructed hypotheses (*deduction*). Besides generating or re-constructing hypotheses through individual and collective reflections, research tools such as observations, interviews, questionnaires and document or data analyses could be used to aid in the induction and deduction processes. This could be carried out as an individual or group effort.

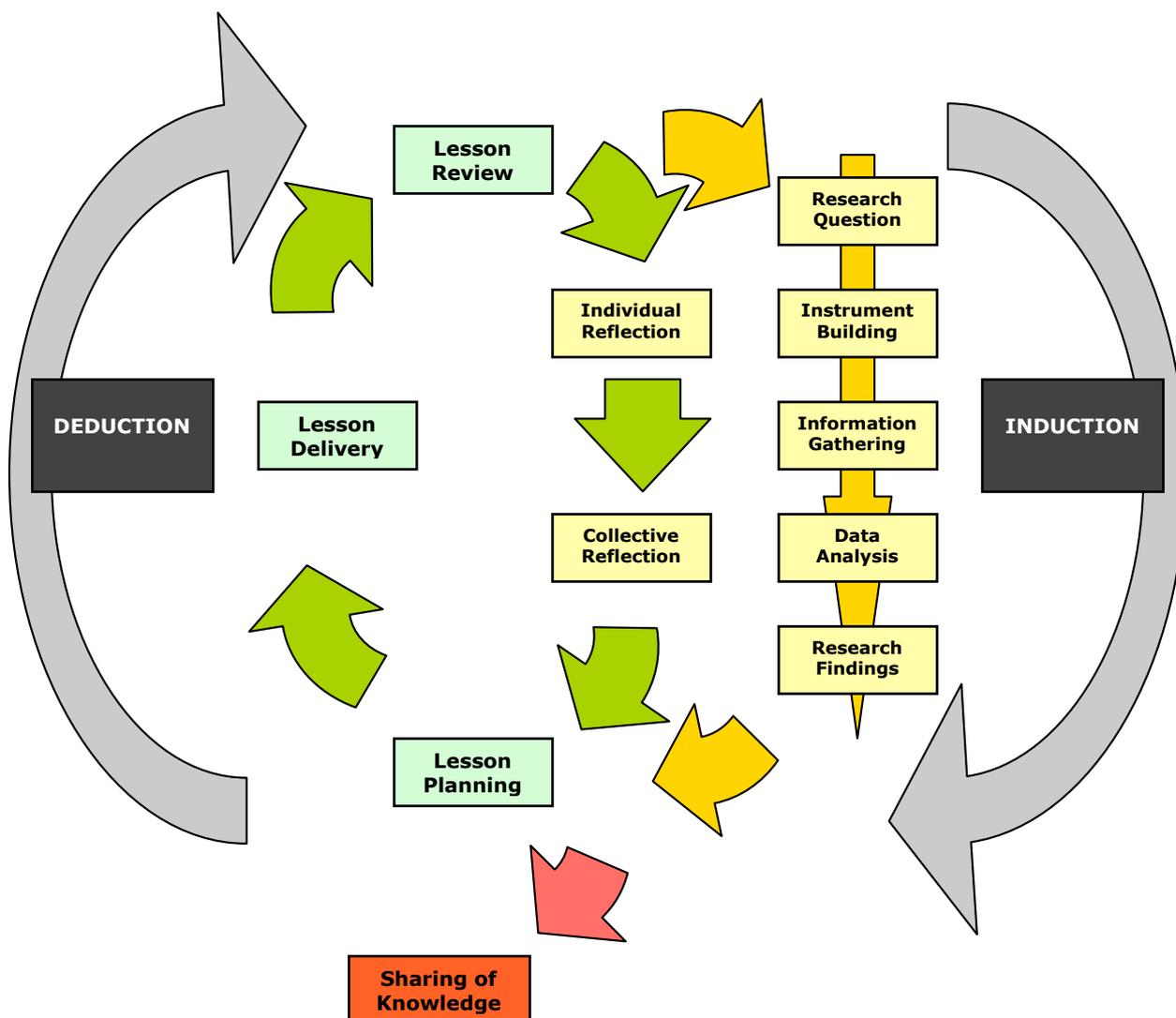


Diagram 2: PAL Conceptual Framework of Action Research Cycle

At the end of a given period of time, the knowledge gained from the action research cycles could be shared to the school's community through written or verbal means. Examples of the latter could include departmental meetings and contact time. The action research cycles thus serve to broaden and deepen the professional knowledge base of not only the individual pre-service teachers, but also the stakeholders of the teaching profession.

In practice, the PAL Project constituted three parts. Each part has different time-slot requirements within the practicum period.

PART I	Daily Reflections (Individual or Collective)	Term 1 Week 8 to 9 Term 2 Week 1 to 3
PART II	Research Work (Individual or Collective)	Term 1 Week 10 Term 2 Week 4
PART III	Sharing of PAL Project (Individual or Collective)	Term 2 Week 5

For **PAL Project Part I**, pre-service teachers engaged in the following action research cycle

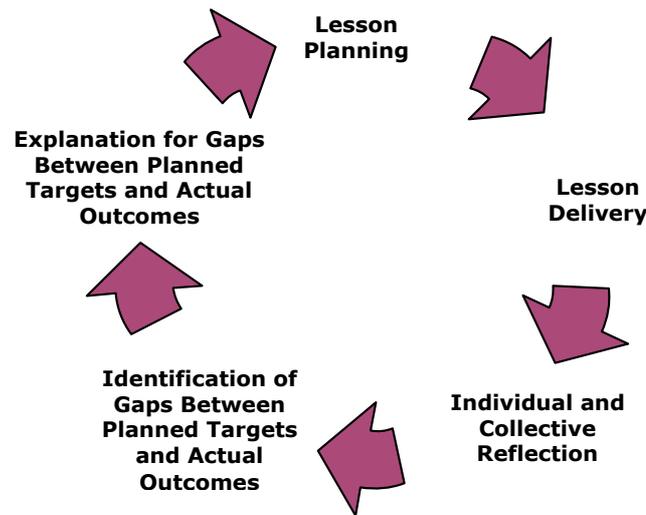


Diagram 3: PAL Practical Framework of Action Research Cycle

For **PAL Project Part II**, pre-service teachers engaged research activities covering the following procedures -

1. **Set the research question (What do you want to know?)**
2. **Set the research tools (What will be used to answer the question and why, and how will the tools be used?)**
3. **Gather the information in a systematic manner**
4. **Analyse the information that had been gathered**
5. **Draw conclusions from the analysis of the information**

For **PAL Project Part III**, participants were to present their summative findings gathered from their reflections and research analysis to the school’s stakeholders either in written or verbal form, or both. This part of the study, which would involve 75 per cent of the facilitator’s work in the form of written report, was not carried out because of time shortage. All in all, Table 1 summarises the PAL Project time-frame.

PART	Term 1 Week 8	Term 1 Week 9	Term 1 Week 10	Term 2 Week 1	Term 2 Week 2	Term 2 Week 3	Term 2 Week 4	Term 2 Week 5
I								
II								
III								

Table 1: The PAL Project Time Frame

Throughout the study, the first author acted as the facilitator who adopted a supportive role for participants. His role was mainly to provide explanations to queries, reminders and

updates via emails and SMS, monitoring of progress and research skills support. The degree of support varied in accordance to the phase of the study. In Phase I, the facilitator’s role was substantially minimal. The facilitator helped participants to consider the research question, construct the research tools and analyse the results (Appendix B). In Phase II, the facilitator contributed to half the work, which essentially constituted a dialogical process (Diagram 4).

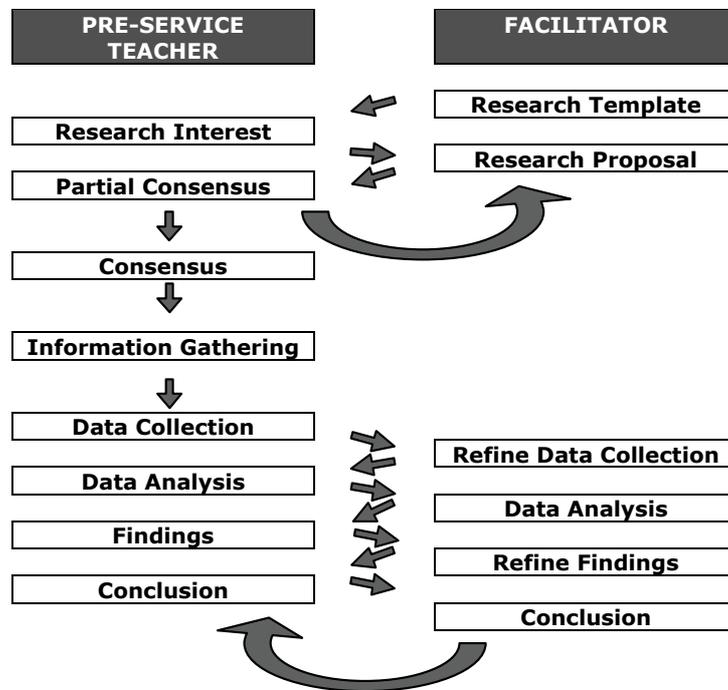


Diagram 4: Dialogical Research Process

One main principle that the facilitator had used was that although the research study was collaborative in nature, participants eventually have the final say in setting his or her own path in the research project. In addition, the collaboration between the facilitator and pre-service teachers has a strong flexibility component. Pre-service teachers were given the decision to choose the class and subject for the reflection and research components, although they were strongly advised to stick to a single class and subject throughout the project. They were also given the choice to do any number of Daily Reflections and research projects taking into account of different contextual needs of the class and school. All in all, Table 2 summarises each pre-service teacher’s completed reflection and research activities.

In terms of research design, the research study adopted a critical research design where collective action as a result of the investigation is a crucial component (Merriam, 2002). For this study, participatory action research is employed as it focuses on the political empowerment of people through participants’ involvement in the design and implementation of a research study, besides fulfilling the main research question – that is, how action research structures, specifically reflection and research, influence pedagogical practice and beliefs towards professional practice of pre-service teachers during their teaching practicum experience. The strategies that were adopted to promote validity and reliability, in a qualitative research paradigm, include that of triangulation, member checks and peer-review (Merriam, 2002).

The research tools employed comprised of dialogical reflective narratives, document analysis, focused-group interviews and individual critical incidents. For the dialogical reflective narratives, the themes that were explored comprised of 'satisfaction', 'motivation' and 'PAL tools' (reflection, research and facilitation). Questions were posed to individual pre-service teachers via email. Upon receiving the reflective narratives, the first author posed questions to clarify ambiguities or elaborate on a critical point. The pre-service teacher would then email a final response. The document analysis comprised of Daily Reflections materials. The critical incidents consisted of transcribed texts of individual interviews.

JANAKI [Primary 3 Mathematics]	
Reflection Component (Key weakness observed after a lesson)	Research Component (Research question/s)
<ol style="list-style-type: none"> 1. Teacher felt nervous and anxious. 2. Teacher was not confident. 3. Students faced some confusion when they played Division Bingo and multiplication magic squares. 4. Students had difficulties in doing worksheets. 5. Students became restless as they completed their work early. 6. Students had a problem in the board game. 	<p><u>Questionnaire</u></p> <ol style="list-style-type: none"> a) How well and far does teacher's teaching reach students? b) What are pupils' opinions on teacher's teaching methods?
PADMAWATHY [Primary 5 English Language]	
Reflection Component (Key weakness observed after a lesson)	Research Component (Research question/s)
<ol style="list-style-type: none"> 1. Pupils were too excited and started talking when the lesson was going on. 2. Pupils found it difficult to understand the passage and started talking. 3. The talk requires a lot of time and attention. 4. Lesson was disrupted due to fire-drill. 5. Not interested in task because they were not confident in using the skills. 6. Pupils had things to complete, so they did not talk unnecessarily. 7. I was not in the mood, and pupils were hyperactive. 8. The pupils gained more information through the use of newspaper articles. 	<p><u>Interview</u></p> <p>What are pupils' views of my teaching style and in the delivery of my lesson?</p> <p><u>Observation</u></p> <p>Confirmation of results from the interview.</p>
NACHAMMAI [Primary 4 Mathematics]	
Reflection Component (Key weakness observed after a lesson)	Research Component (Research question/s)
<ol style="list-style-type: none"> 1. Shorter time for activity, and unable to find out pupils' understanding of the lesson. 2. Unable to finish the lesson closure. I did a very brief lesson closure. 3. My pace was slightly faster and some of the pupils were unable to catch up. 4. (Partial reflection) 5. Insufficient time for pupils to finish group work. 6. (Partial reflection) 7. Generally, it was a good lesson but pupils were excited and made noise during the quiz. 8. Pupils were very excited during the tuning-in and noisy during the group work. 9. (Partial reflection) 	<p><u>Section A, B, D (Questionnaire)</u> <u>Section C (Interviews)</u></p> <ol style="list-style-type: none"> a) What are pupils' views on teacher's style of relationship with pupils? b) What are pupils' opinions of the incentives/praise provided by the teacher? c) What are pupils' opinions of learning aids like charts, pictures, concrete materials, worksheets and workbook assignments? d) Do pupils think if their interest or liking for a specific subject affects the way they study the subject?
NUR ASHIKIN [Primary 5 English Language]	
Reflection Component (Key weakness observed after a lesson)	Research Component (Research question/s)
<ol style="list-style-type: none"> 1. Lesson overloaded with information. 2. Pupils were very restless and fidgety. 3. Students were bored with the lesson. 	<p><u>Questionnaire</u></p> <ol style="list-style-type: none"> a) Why and how did pupils feel left out or ignored in class? b) What are ways to help pupils learn more actively and successfully?

Table 2: Summary of Completed Reflection and Research Activities

Findings

Based on the composite analyses of information gathered from the reflective narratives, document analysis, individual critical incidents and focused group interviews, the authors have identified seven key points pertaining to how the PAL Project – engagement in reflection and research – had influenced the pre-service teachers in their pedagogical practice and beliefs relating to professional learning. This, along with people involved in the reflection and research components, can be expressed in the diagram below (Diagram 5).

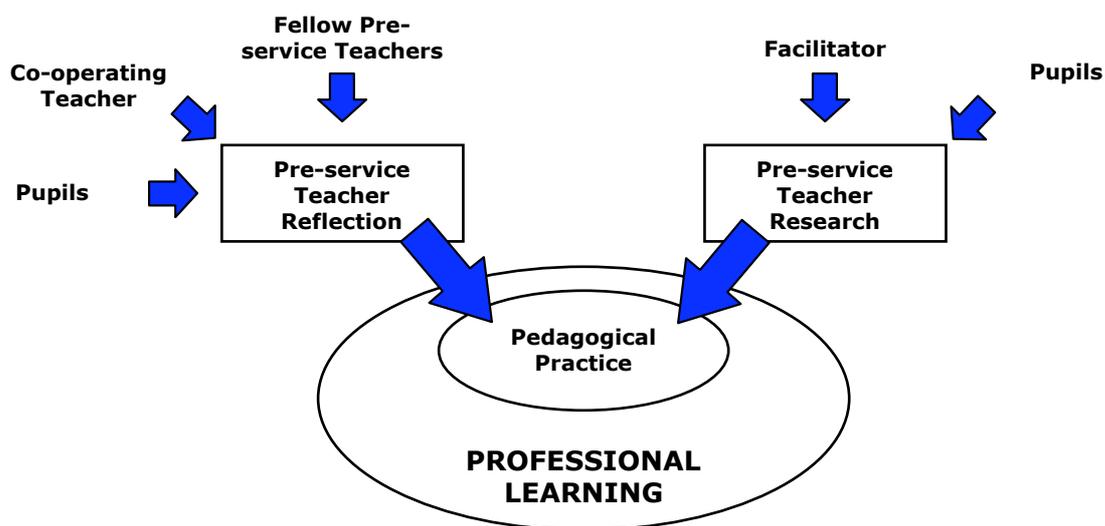


Diagram 5: Influence of Reflection and Research on Pedagogical Practice and Professional Learning

The presentation of the following key points will integrate together pedagogical practice with beliefs relating to professional learning as the structures of reflection and research are inter-dependent on each other.

- 1. Authentic Learning.** The authors found that having a grasp of a conceptual concept requires not only theoretical, but also experiential understanding of it. It is only after putting into action the conceptual model of the PAL Project that pre-service teachers fully understand and appreciate the concepts of ‘reflection’ and ‘research’. The authors observed that the benefits of reflection and research in this project have been fully maximised as they fit within an authentic situation – a teaching practicum environment, which reside within a real life school environment. The authors also agree with Ponte (2002) that a gradual mastery of new skills and new actions at the same time is inevitable, but necessary.
- 2. ‘Empowered’ Learning.** The ability to reflect and act at the same time is empowering as it came from within as opposed to being imposed by an outsider such as the CTs or NSCs (NIE Supervision Co-ordinators). This is related to the notion of ‘praxis’ where activities of human beings consist of both reflection and action in order to transform the world. Moreover, the iterative element of the reflection and research inter-dependent components provided a focus for gradual sustained improvements. The engagement of reflection and research had inadvertently energised pre-service moral purpose of teaching (Fullan, 1993) where they see the importance – or commitment – of being able to teach

effectively in order to meet the learning needs of their pupils. This was evident throughout the reflective narratives, Daily Reflections documents, individual critical incidents and focused group interviews where pupils' learning is the bottom-line.

“... I actually thought about their comments (during an interview session) and felt that maybe it will be easy to win over pupils if we realise what they really want. Therefore, interview is indeed a useful tool that could be used by the teachers to analyse their pupils and the strategies to cater to the needs of their pupils.” (Nachammai)

“... So I kind of set too high expectation and I didn't go down to their level – when this happened I felt disappointed and upset ... I feel guilty after that (during reflection).” (Nur Ashikin)

“PAL Project was useful as I got to use different forms of getting feedback. For me there is no one particular process that was satisfactory. All the processes that I had used helped me to gather useful information regarding my teaching and what my students feel about my teaching. Individual and peer reflections got me information about my teaching style and I was able to critique my lesson. I felt good whenever I did my reflection. I had a sense of control and clear mind after reflecting and discussing with my peer because I knew my errors and felt confident because I knew how to solve and avoid the problem arising again.” (Janaki)

Empowered learning also embraces collaborative learning. The authors found that learning from each other is more satisfying and powerful than individual learning. The network of people provided not only a source of differing intellectual view points, but also social-psychological support. In this regard, the facilitator's role had been most poignant. The conceptual, theoretical, psychological and administrative support provided by the facilitator had been said to be important from the initial stage to the completed stage. With regards to the knowledge society, Hargreaves (2003) suggested that teachers must work and learn in collegial teams in order to build a new professionalism. The authors argue that the notion of social constructivism must go beyond the cognitive domain and embrace the idea that learning requires commitment to meaningful social relationships.

- 3. Critical Learning.** Both the engagement in reflection and research activities had brought about several 'realisation' or 'enlightening' experiences that basically question their assumptions on successful teaching and learning. The availability of different forms of inquiry and from different sources of people (Diagram 5) had nurtured a sense of self-critique to their pedagogical assumptions. All in all, the engagement in reflection and research in the project had helped pre-service teachers to be more acceptable and positive to criticism of others.

“... I realised that getting informal feedback and work performance from students were insufficient to convince me about my weaknesses. It was only when I went through the questionnaire and got the final results that I realised the impact and effect of my teaching that I have done to the class.” (Nur Ashikin)

“... Even now I could recollect some of the things that they told me because I really found that some of their comments were very different from what I perceived myself to be as a teacher.” (Nachammai)

“... I’ve got a lot to learn you know ... What I have learnt in NIE is not enough – still have to sit down and ... I have to keep on researching and learning.” (Janaki)

“... Through the interview, I actually knew that time was not enough. When I saw that the children were struggling towards the last ten minutes, I knew that the resources were too hard to use ... Then I realised that the children said that it was too difficult to use ...” (Padma)

- 4. Understanding of Pupils.** At the end of the project, all pre-service teachers converges to the idea that successful teaching and learning requires a deeper or growing understanding of their pupils. During a focused group interview, Padmawathy expressed that prior to the PAL project she used to believe that effective teaching and learning is dependent on effective planning and delivery. However, her engagement in interviews with pupils convinced her that her classroom observation is clearly insufficient and maybe misleading, and that conversations with pupils had proven that feedback from pupils is significant. For the case of Janaki, the analysis of questionnaire results had confirmed and convinced that her pupils are more motivated to learn through games.

“... There might be several reasons (for pupils’ reluctance to response to the teacher’s questions), but the first reason might be, they lack confidence. Secondly, they might be too smart, and they feel egoistic to ask questions, especially in EM1 class ... So that’s why I realised after this interview, this is a major problem, we don’t think it’s a problem, because it’s so common, but I think it is ...” (Nachammai)

In Nachammai’s case, her interviews with pupils had not only created a belief in the need and commitment to understanding her pupils, but also an understanding of social reality. This situation echoes that of Freire’s notion of ‘conscientization’ (1972) where a person begins to question social conditions so as to transform them.

- 5. Learning and Being.** Through the research project, the authors had begun to see that being a professional and learning to be a professional is one of the same thing, and that being an expert teacher is never a finished project. The reflection and research activities had convinced pre-service teachers that reflecting and researching are beneficial and necessary tools for learning.

“I view PAL as a platform to reflective teaching and in turn professional development. It engenders a positive attitude towards reflective practice in teaching and clearly exhibits the importance of the teacher’s role as a researcher. It has also helped me to see teaching as a continuous lifelong learning process. Moreover, practitioner’s research ... revitalized the sense of inquiry in me. Most importantly, PAL Project has added significance to my teaching profession and manifested itself to become meaningful to my teaching career. It has provided me with the framework, research tools and techniques to enhance my reflective teaching process.” (Nachammai)

The pursuit for lifelong learning is also acknowledged by Day (1999) as in order to keep pace with change and to review and renew their own knowledge, skills and visions for good teaching in the knowledge society.

Conclusion

Although the findings and discussion thus far had touched on converging concerns, there were indications that suggest variability in the pre-service teacher's engagement in the PAL Project. This the authors suspect to be caused by differences in personality, school and class setting, interaction level with facilitator, and the quality of reflection and research. However, the authors suspect that the personality of pre-service teachers might be the most significant factor in influencing the pathways of learning. As indicative examples – Padmawathy was seen to be motivated to learn because of her need to be productive in pedagogy; Janaki was perceived to value learning and pedagogy on equal terms; Nur Ashikin was observed to be motivated to learn within a pedagogical domain in order to improve herself as a person; and Nachammai was observed to have a need to find meaning in her learning and teaching.

In closure, the authors saw that the PAL Project had provided the structures to influence pre-service teachers' pedagogical practice, and more importantly their beliefs pertaining to professional learning. For the latter, Padmawathy stated that the lesson she had learnt about not assuming pupils' understanding using her own observation has influenced her current practice as a full-time teacher. This critical incident had caused her to stringently monitor pupils understanding during lesson time and at the end of the lesson, and plan to provide for opportunities for pupils to give critical feedback to her at the end of year. In the same vein, Nachammai had reported an incident where she questioned a feedback given by a pupil who responded negatively concerning the ENABLE programme, and conversed with the pupil at length to have a better understanding on the pupils' brief comment in the questionnaire.

In conclusion, although the findings are at best 'transferable' (Lincoln and Guba, 1985), the authors are in agreement with Deng (in press) who emphasised that pre-service teachers need to become well-informed and morally-sensitive professionals, and that teacher preparation needs to embrace a broader vision of teacher preparation in order to transform the beliefs and perspectives of pre-service teachers.

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Project PAL

practicum action learning

Name: _____

School: _____

Class: _____

Subject: _____



Practical Action Learning Project (PAL)

DAILY REFLECTIONS

Date: _____ Subject: _____

A. INDIVIDUAL REFLECTION

1. To what extent has your lesson been successful to meet the specific instructional objectives? (*Circle your response*)

**Very
Unsuccessful**

Unsuccessful

Successful

**Very
Successful**

2. How did you fare for the various components of your lesson?
(*Shade your response*)

LESSON COMPONENTS	VERY POOR	POOR	GOOD	VERY GOOD
PLANNING				
DEVELOPING THE LESSON				
COMMUNICATING				
MANAGING				
EVALUATING				

3. Identify one key weakness of your lesson, and provide possible 'cause and effect' explanations for them. (Example: Appendix A)

CAUSES				EFFECTS		
<input type="text"/>						
<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>	<input type="text"/>
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Level 3

Level 2

Level 1

Level 1

Level 2

Level 3

B. COLLECTIVE REFLECTION

1. Share to your colleague/s about the above 'cause and effect' description, and allow them to agree or disagree with you, or add new 'cause and effect' processes.

Dialogue with _____.

New insights that you have gained from your dialogue with your colleague/s ...

2. Integrate your colleague/s' view and opinion in the above 'cause and effect' description - using a different coloured pen.
(Example: Appendix A)

C. INDIVIDUAL / COLLECTIVE RESOLUTION

Give three recommendations to be integrated into your next lesson plan.

1. _____

2. _____

3. _____



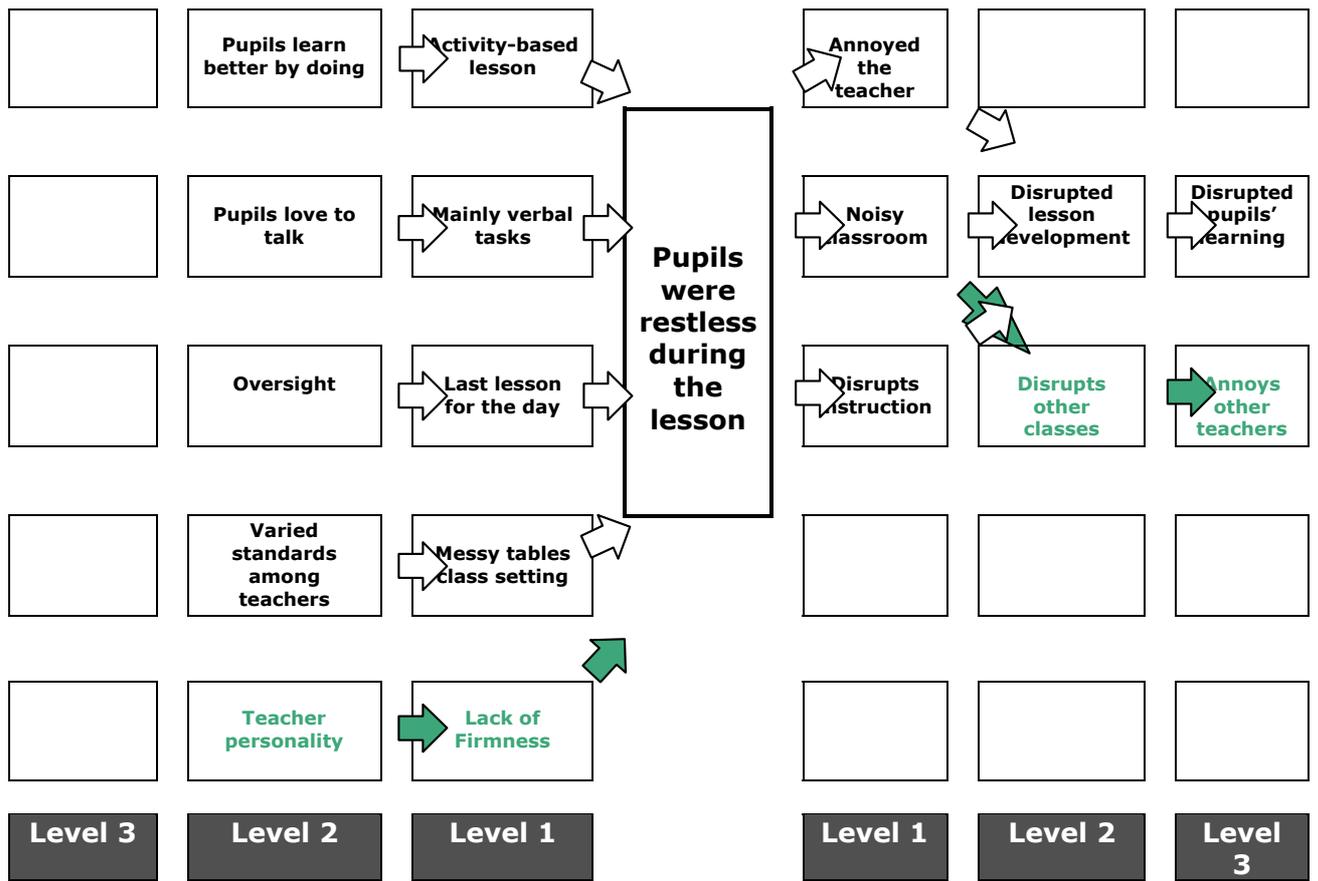
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CAUSES



EFFECTS





Practical Action Learning Project (PAL)

RESEARCH PHASE

While Phase I provides practitioners with opportunities to engage in individual and collective reflections within the lesson planning-delivery-review cycle, Phase II provides opportunities to engage in research as a response or 'reflex' to these reflections (*Diagram 1*).

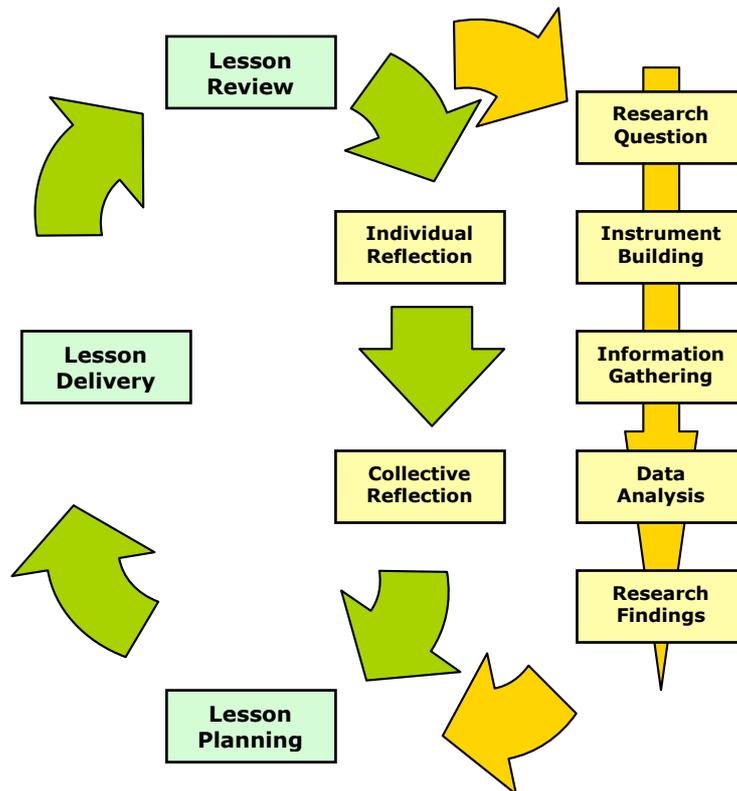


Diagram 1: PAL Conceptual Framework of Action Research Cycle (Phase I and II)

The engagement in research study seeks to provide greater clarification, or simply to know more, into matters or issues that surfaced out of the individual and collective reflections. The following steps are helpful guidelines to undertake a research study –

1. Research question
2. Instrument building
3. Information gathering
4. Data analysis
5. Research findings

As the PAL Project lasts within a relatively short time frame, the proposed research methods have tendency towards being exploratory rather than experimental. In addition, only three main types of tools will be proposed – questionnaire, interview and observation. For Phase II, practitioners will collaborate with the lecturer on a 50-50 basis.

B. INSTRUMENT BUILDING

1. Based on the research question, which research tool do you prefer to use to help you answer your research question? (*Circle ONE only*)

Questionnaire

Interview

Observation



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7 Mar 03

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