REFLECTIVE PRACTICES IN LESSON PLANNING: AN ENDEAVOUR FOR PRE- SERVICE TEACHERS' PROFESSIONAL DEVELOPMENT

Ashu Threja[1] & Jasneet Kaur[2]

[1]University of Delhi (India), [2]Jamia Millia Islamia (India)

threja_ashu@yahoo.co.in, kaurjasniit@gmail.com

Lesson planning is the most important component for the pedagogical practices that helps to form a link between theory and practice. This paper reports an innovative collaborative effort of teacher educators and pre service teachers in preparing modified lesson plans. This study was encouraged by 'lesson study' approach followed by Japan teachers to improve the quality of their teaching and enriching students' learning experience. It was observed that the pre service teachers involved in the study experienced the need of collaborative reflections with research based inputs for the improvement of their teaching learning experiences. The study reveals that development and evaluation of lesson plans is a reflective, rigorous, collaborative and continuous effort to improve upon the quality of teaching learning practices.

Keywords: lesson planning, reflections, lesson study, pre-service teachers

INTRODUCTION

Lesson Planning is an integral component of pre- service professional development programme all over the world. Preparation of Lesson plans is usually an individual task with a discussion with the supervisor or observer. Lesson plan is prepared during the internship period. Before executing the lesson plan, it is expected to discuss with supervisor. A number of studies (Hart, Alston & Murata, 2011) consider lesson plans as a concrete scaffold in order to learn about specific content area. Recent researches focus on collaborative lesson planning which has further scope for improvement and implementation in in-service teachers (Fernandez, 2005; Kumar & Subramanium, 2012; Meyer & Wilkerson, 2011). These studies mainly derived from lesson study approach followed in Japan. Research studies on prospective teachers also indicate that lesson study approach appears to be effective way to connect theory and practice and develop their mathematical knowledge for teaching. In Japan, A lesson plan is a three part complex document consist of 1) Introduction to the lesson plan comprising basic description about lesson, background information about students, their current state of knowledge etc., 2) information about the unit i.e. provide information about the concept to be dealt and 3) information about the lesson i.e. together information about reaction of students' for the lesson plan executed (Fernandez & Yoshida, 2004). This preliminary lesson plan is further put the process of refinement using lesson study approach. Importance of Reflections and collaborative planning has been given important place while adopting this approach for perspective teachers. E.g. Fernandez and Zillox (2011) explored peer collaboration as most important way to develop understanding of teaching. In India, Lesson planning in B.El.Ed programme is envisioned as a reflective rigours process. Lesson planning starts from III year and continues till their internship in fourth year of the programme. These plans are usually prepared individually followed by discussion with supervisor, prior to going to the field for classroom teaching of that specific concept or content. It is followed by writing of reflections based upon their classroom experiences.

However, there is no such practice where student- teachers can incorporate their reflections for the improvement of the previous executed lessons.

THE STUDY

The present study was conducted during pre- service primary school internship of B.El.Ed. student-teachers. Writing of Reflections is a crucial exercise done by pre-service teachers in each year of the programme. In the fourth year during internship, interns are supposed to write reflections of their teaching done in the schools. These reflections obviously help the student-teachers to improve upon their teaching practices. But there is hardly any effort made to take inputs from these reflections in order to improve upon their previous lesson. In this study, Authors attempted to use collaborative reflections with research based inputs in modifying lesson plans on the topics that intern faced difficulties to teach.

Research Goals

1. Collaborative reflections and follow up discussion on the challenges faced by the interns in the execution of the lesson plans
2. Preparation of modified lesson plans based on collaborative reflections.

This paper is only focussing on the reflections and modifications suggested by two pairs of interns on the topic of multiplication.

METHODOLOGY

The study was conducted on final year (4^{th} year) prospective teachers of Elementary education programme. During this period, interns are provided with the opportunity to put into practice and expand their understanding of what they were learning during course of study. Beside this, they are supposed to do assignment given by their teacher related to field experiences. We decided to give an assignment which was envisioned to appreciate collaborative efforts by intern for improving their teaching. We categorized the work into five phases.

Phase 1 Orientation about the Lesson Study Approach

In the first session of the lesson planning, pre-service teachers were provided with the readings related to lesson study approach taken from the book 'Teaching Gap'. We focussed our discussion on how collaborative efforts and use of reflections help in improving quality of teaching as well as providing them a model for improving their teaching when they are in service. They were given guidelines about the upcoming assignment. Interns were teamed according to the grades and topics they were supposed to teach during internship, each group consisting of 2-3 interns.

Phase 2 Preparations of Lesson Plans

During the third year of their studies they study the Practicum titled Material Development. This practicum prepares the students for the Fourth Year Internship by involving them in following varied tasks viz. *Classroom observations* followed by reflective analysis of the observed classes on basis of the pedagogical practices implemented by the In service Teachers; *Content Analysis* i.e. analyzing the development of the content on different themes in the Primary Curriculum from books published by government agencies ;private publication and NGOS/Alternative Schools and do the comparative analysis across different publications; *Unit planning and lesson planning-* preparing unit and lesson plans in order to teach in pairs to those classes which they observed (referred as block teaching). The students acquaint

themselves with an intensive in depth knowledge about the components of *unit* and *lesson* Plan. This process is followed by reflective evaluation of the planned unit and lessons. Hence in forth year, there is not much orientation required for writing of lesson plans. As preparation of lesson plans is an individual task, they are supposed to meet every week to their supervisor allotted for the discussion of the lessons they are preparing to teach.

Phase 3 Execution of the Lesson Plans designed for Mathematical Units

The interns executed the Lesson Plans designed in Phase 2 for varied Mathematics Units individually in the Primary schools in the respective grades allotted to them. One or two lessons were also observed by their partner apart from observations done by their supervisor.

Phase 4 Reflections and Discussions on Executed Units

The interns in 9 pairs, the pairs who have taught the same unit and to the same grade in different schools had in depth discussion with their supervisors (Authors) on basis of reflecting upon their classroom experiences with respect to the Lesson Plans executed. They reflected how far they have been successful in implementation of tenets of NCF 2005 and theoretical perspectives of teaching and learning mathematics. They carried the reflective analysis for the individual tasks laid in the Lesson Plans and on basis of this detailed analysis categorically laid down the problems and challenges faced in execution of the plans to facilitate the development of the concepts with respect to varied pedagogical considerations.

Phase 5 Preparation of Modified Lesson Plans

The interns on basis of reflective analysis prepared modified unit plan and corresponding Lesson Plans.

RESULT AND DISCUSSION

Lesson plans prepared by interns were basically dealing with revisiting place value, introducing multiplication as repeated addition, multiplication in different contexts, connecting place value with multiplication algorithm by introducing lattice method.The interns did reflective analysis of all the executed tasks on basis of execution of task by them; learner's involvement and learners' responses to assess if the learning objectives of the designed tasks are fulfilled else the need of modifications to be explored. Description of the tasks in which interns faced challenges is given below:

Task: Sankhaya Banao (Make Number)

On account of revisiting the concept of place value prior teaching Lattice Method the interns executed task "Sankhya banao". The task required learners to make number corresponding to the bundles of sticks and loose sticks given and vice versa provide the requisite number of bundles and loose sticks for a number cited. The responses revealed that learners are not able to recapitulate the representations via use of concrete material (sticks) and relations as many learners visualized the bundle of tens also as a 1 (ones)…when asked to give 52 sticks most of grade 4 learners were not able to give five bundles of ten sticks each with two loose sticks…..

During discussion, it was realized that the modification in form of the need of context alongside use of concrete material is required to enable learners revisit the concept of Place value. The context can be provided in form of story as of "*Lakad wala*" and use of sticks to represent the logs of wood he has piled.

Task: Ganit me Jaadu

This task was prepared to introduce multiplication as repeated addition and similar task was also done in order to appreciate commutative property in multiplication. In this task, students were divided in group of 5 and an egg tray was given in each group. Each group was asked to put pebbles like 8 pebbles, 2 in each row; 9 pebbles 3 in each row followed by probing questions like how many marbles are there in 5 rows, if 3 marbles are put in each row.

Reflections reveal that this activity was not successfully executed.

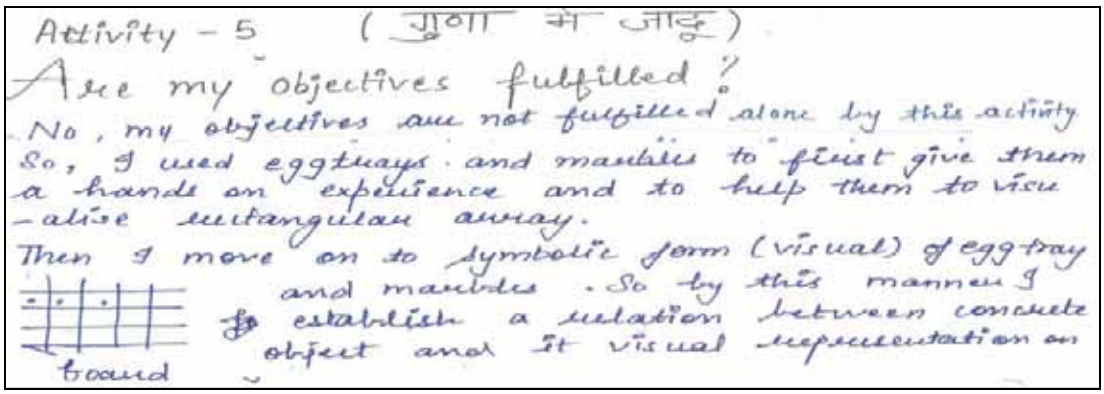


Figure 1: Reflections on the activity

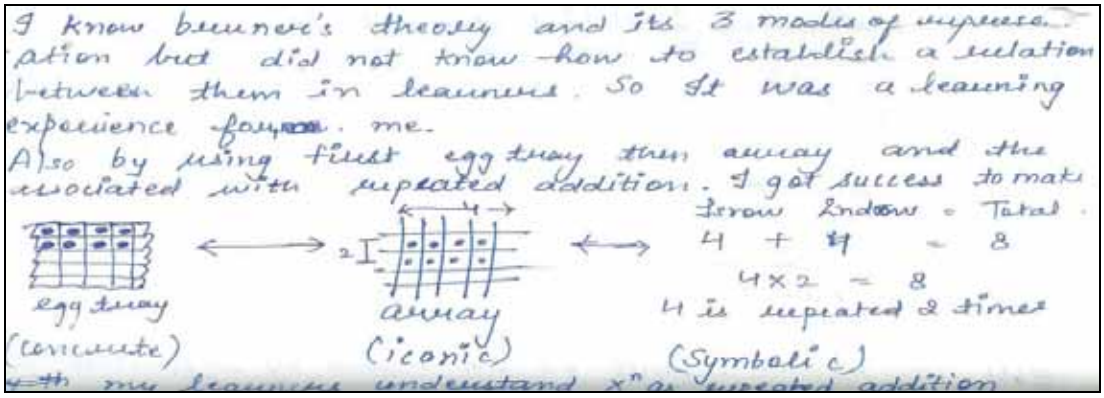


Figure 2: Reflections on the activity

Task: Make situations

The learners were given the worksheet required to write word stories for the given multiplication facts after they have been taught regarding the varied contextual situations related with multiplication namely rate; multiplying factor and Cartesian product. This was to assess if learners are capable of appreciating the meaning of multiplication. The observed responses revealed that most of the learners are not able to create the situations and so need of an intervening task was reflected upon.

The learners analyzed that if visuals can be provided; say; five baskets each with four apples and learners asked to write multiplication fact for the visuals as

4+4+4+4+4 5 times 4 5*4

prior giving the facts ; the learners may make an effort to visualize and create their own stories.

There was **another task** 'The Junk seller' to introduce lattice method with a context was not successful. Reflections of the task revealed that prior knowledge of the procedure of the standard algorithm restrict their thinking. During discussion, it came out that using money in context may help children to realize place value in lattice method. This was tried out and intern observed that it was working.

Problems and Challenges Faced with Respect to Following Aspects Related with Pedagogy and Classroom Experiences

I) Problems due to learner's previous knowledge: Interns asserted that they encountered two types of problems:

Problems due to Pre conceived Knowledge: "The learners of our class knew formal algorithm of multiplication and memorized the multiplication tables as learnt in grade 3. it led to problems to encourage learners to construct the meaning of multiplication"

For example: In the words of intern "*When I gave them the problem: There are 40 students in each class of a school .How many students are there in 8 classes?" It was observed that most of them employed the formal algorithm for multiplication but when asked:*

a) *Why have you employed multiplication?*

b) *Can we employ any other mathematical operation? ...*

The learners were not able to respond.

Problems due to lack of Pre requisite Knowledge: In words of interns *"I also faced problems due to lack of pre requisite knowledge of Place Value Learners of my class did not possess the conceptual knowledge of place value due to which I faced problems in teaching them the Lattice Method. For example while finding 36 * 5 by Lattice method when learners were asked to express 36 in expanded form with respect to place value, they were not able to do so..."*

II) Problems due to different cognitive level of learners in same grade

The interns observed the need of plans catering to needs of individual learners as one plan for the entire class was not suitable for class with learners at varied cognitive levels. For example they observed whilst teaching multiplication to grade 4 learners:

In a class there are students:

- who are skilled in informal strategies to find the sum of two or three addends;
- who know counting but do not appreciate the number sense;
- who do not know the concept of place value;

They reflected that owing to multi grade classrooms it is not feasible to teach employing a single lesson plan.

III) Problems due to previous pedagogy employed in classroom

Interns observed the classes being taken by the regular school mathematics teacher prior to their Internship emphasize more on formal algorithm of varied operations as compared to construction of meaning in varied contexts related with the operations;

For example as asserted by interns:

a) "*In our classes when we asked learners to create their own stories corresponding to given multiplication facts say 15*5;most of them initially responded 75 instead of creating situations….learners are in habituated to have mechanical questions and find answers to these mechanical questions….*"

b) Interns also observed that the learners are used to problems as:

2*5=……; 3*7=…….; but not appreciated solving and creating meaning for the problems of the type:
……*5=20;
……*……=45

IV) Problems with respect to Pedagogical considerations implemented by interns:
The interns further have classified the problems and challenges associated with above as:

Establishing the relationship between different modes of representation namely concrete; visual and written symbolic form. The interns asserted that they observed if the use of concrete material/manipulative for the development of the concept is not translated with appropriate visual and symbolic forms the learners are not able to appreciate the mathematical concept and make appropriate linkages.

For example whilst doing Lattice Method with help of match sticks; they were able to revisit the concept of place value and find the product by representing numbers in tens and ones using the bundle of matchsticks and individual sticks; however when the same multiplication is posed with only numbers and to be represented as say for 25*5 in the following array:

25	20	5
5	20*5=100	5*5=25
	100+25=125	

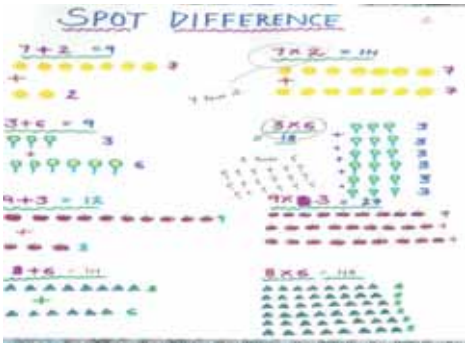
Table 1: Array

It was observed that learners were not able to appreciate the written form unless and until they are not scaffold for the linkages in these representations alongside the use of concrete manipulative. The interns reflected upon the emphasis on the interlink ages between different modes of representation to develop the concept.

Besides these, interns also faced problems related to time management for a particular activity, their lesson plans not promoting maths talk lively and assessment tasks designed by them was merely assessing the final response of the learners and not determine the thinking and associated strategy employed by them.

REVISED TASKS

This task was designed to spot difference between addition and multiplication sign significantly followed by discussion questions.



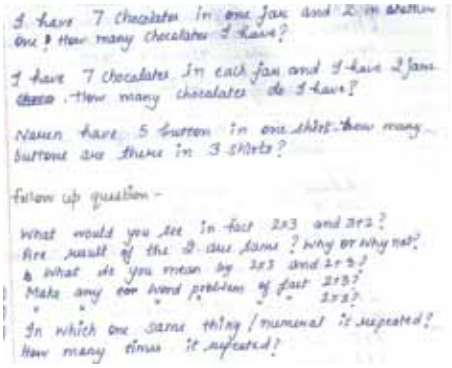


Figure 3: Spot differences in'+' &'×' Figure 4: Contextual problems to spot differences

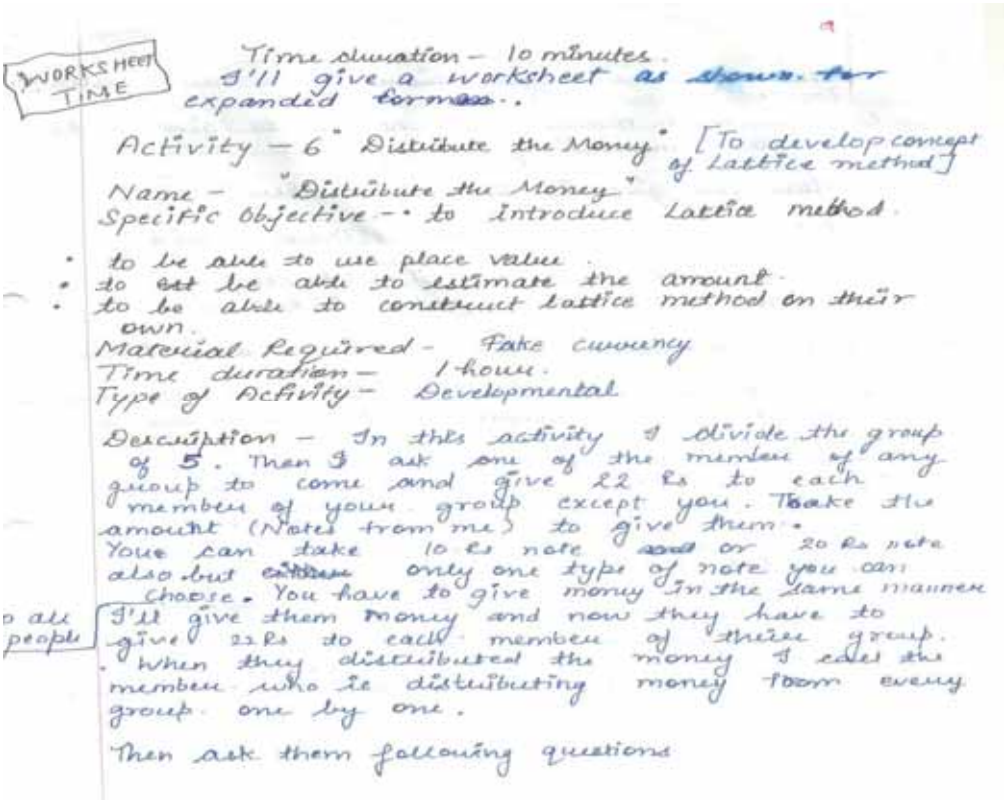


Figure 5: Task to introduce lattice method by using context of money

CONCLUSION

The Assignment led to

- Involvement of fellow pre service interns in a constructive reflective discussion emphasizing upon varied dimensions of teaching and learning mathematics and empowering them for critical discourse during In-service Teaching;

- Broaden their understanding of theoretical pedagogical considerations for teaching and learning mathematics and the development of the mathematical concepts through their implementation via lesson planning;
- An opportunity for participatory involvement of pair/group of teachers reflecting upon their teaching practices on basis of detailed discussions, reflections of the tasks planned and executed and make participatory efforts to prepare model lesson plans always with a scope of further reflection and improvization;
- Pre Service teachers professionally being prepared to form community of learners based on their field experiences motivating them for efforts to continue with these practices as In-service teachers;
- Development of an attitude of rigour and research amongst the Pre Service Teachers.

Acknowledgements

Authors are thankful to 4th year interns for intensively involving into the study and preparing the assignment.

References

Fernandez, C., & Yoshida, M. (2004). *Lesson study: A Japanese approach to improving mathematics teaching and learning.* USA: Lawrence Erlbaum

Fernandez, M. L., & Zilliox, J. (2011). Investigating approaches to lesson study in prospective mathematics teacher education. In L.C. Hart, A. Alston & A. Murata (Eds.), *Lesson study research and practice in mathematics education: Learning together.* New York, NY: Springer.

Fernandez, C. (2005). Lesson study: A means for elementary teachers to develop the knowledge of mathematics needed for reform minded teaching? *Mathematical Thinking and Learning, 7*(4), 265-289.

Hart, L. C., Alston, A., & Murata, A. (Eds.). (2011). *Lesson study research and practice in mathematics education: Learning together.* NY: Springer.

Kumar, R. S., & Subramaniam, K. (2012). Understanding teachers' concerns and negotiating goals for teaching: insights from collaborative lesson planning. In *Proceedings of 12th International Congress of Mathematical Education* (pp.5157-5166). Seoul, Korea: ICME.

Meyer, R. D., & Wilkerson, T. L. (2011). Lesson Study: The impact on teachers' knowledge for teaching mathematics. In L. C. Hart, A. Alston & A. Murata (Eds.), *Lesson study research and practice in mathematics education: Learning together.* NY: Springer.

NCERT (2006). *National focus group on teaching of mathematics report*. New Delhi: NCERT.

NCERT (2005). *National Curriculum Framework*. New Delhi: NCERT.