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LESSON PLANNING IN TEACHING OF MATHEMATICS: TEACHERS PERCEPTIONS AND CURRENT PRACTICES

Abstract

The present study was conducted to explore the perception of teachers about the importance of lesson planning for teaching of Mathematics at secondary level and to understand the current practices of using lesson planning in public sectors schools in Haripur. It was qualitative study and open ended questionnaire was used as a research tool. Population of the study consisted of total teachers who were teaching mathematics to class 10th students in district Haripur. Only 25 teachers of mathematics were chosen through convenient sampling technique for data collection. Data were personally collected and analyzed through thematic technique. At first raw data were collected then primary themes were identified. In the end secondary themes were identified and present in figurative way. At the end report was written. Mostly teachers were of the view that lesson planning played positive role in the academic achievement of students. Most of the teachers were not planning lessons to teach mathematics to the students of 10th class. It was recommended that teachers may be encouraged to use lesson planning prior to teach mathematics at secondary level.

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Introduction

According to Lynn, Henriksen, Smith and Baker (1997), lesson planning is helpful to avoid frustrating and unpleasant surprises both for the students and teachers. As described by Daniel (2011) lesson planning helps the students in accessing learning material in an orderly manner. It is means of prevention or minimizing from occurring unnecessary problems.

According to Barroso and Pon (2005), lesson planning focuses on objective and communicates to learners during each lesson. It is because of ongoing assessment which determines learners understanding during teaching through lesson planning.

As described by McKay (2010), lesson planning makes the lesson easy and understandable for the students along with the ever lasting impression in their minds. According to Kizlik, and Boca, Florida (2014), the teacher develops lesson plan which contains almost on learning objectives, instructional procedures, the required materials, and how the students will be evaluated.

As described by Lynn, Henriksen, Smith and Baker (1997), a teacher can visualize in advance every step of the teaching process through lesson planning. The teacher's success increases through this process. Lesson planning is record for good teachers to improve their teaching in future by going back and analyzing the lesson planning process.

According to Rhalmi(2010), lesson planning is concrete direction for a teacher to forward during the day. A teacher can save and manage his time efficiently through it. As the lessons are well organized a teacher does not need to beat around the bush.

As indicated by Barroso and Pon(2005), thoughtful lesson planning is helpful for teachers, learners and teaching process. A framework for instruction and guidance for implementation of standards-based education are provided through lesson planning. The learners use the new skills and knowledge in other fields of education. So in this way it is used for promoting generalization and relevance. Jones (2015) stated that although experienced teachers may carry plans in their minds, but for new teachers a detailed written plan is must in order to highlight what is to be taught and why it is to b taught .It gives confidence, learning experience and confirms an effective teaching. According to Traditional (Teacher-centered) Lesson Plan (2015),the role of teacher is more dominant than the learners in a traditional or teacher-centered lesson plan. It focuses mainly on what the instructor does. This is in contrast to a student-centered lesson plan, which focuses mainly on what the students do.

According to Universiti Malaya Kuala Lumpur (1999) a teacher uses numerous audio visual aids in his lessons. They are used in order to maintain a high level of interest in the lesson. According to Mahajian (2011) audio-visual aids have been not only the best tool for making teaching effective but also best means for spreading of knowledge. The time taken by it is short but concept delivered are clear and for long time. The impact of television would be hundred times more than book.

Binkley (2015) stated that audio-visual aids change teachers' verbal presentations into specific message .They keep the students attentive without a presentation. The use of simple, efficient aids, the teacher will enhance his teaching. According to Planet (2015) lesson planning helps in knowing how and what students learn so it is a key for effective teaching. It provides record to revisit previously taught lesson plans and thus opportunities for necessary change to improve the lesson.

According to Weimer (2009) there are six principles which make the teachers' teaching process effective. 1. Interest and Explanation 2. Concern and respect for students and student learning. 3. Appropriate assessment and Feedback 4. Clear goals and Intellectual change. 5. Independence, Control and Active management. 6. Learning from students.

Walls (1999) stated that there are four aces of effective teaching. 1. Enable students to concentrate on learning goals. 2. Clarity. 3 Engagements 4 .Enthusiasm. According to DAP Teaching strategies (2009), these are some teaching strategies. 1. Acknowledge what the learner do or say. 2. Encouragement, determination and effort. 3. Specific feedback. 4. Model attitude. 5. Demonstrate the correct way. 6. Create and add challenge. 7. Rouse learners thinking through questions 8. Provide help 9. Provide information 10. Provide directions.

Gerner and Geminiano (2011), described through lesson planning a teacher can manage his time, effort and resources efficiently. He organizes teaching process through it. Malick (2015), described that lesson planning prevents waste because it helps the teacher to be systematic and orderly. Hibanaz (2010) stated that lesson planning provides step-by-step directions. It checks understanding before proceeding. Thornbury (2012) described that for a detailed lesson plan pre-lesson decision-making is a quality of a teacher. Rhalmi (2010), described that lesson planning plays a fundamental role in teaching as the students follow for effective teaching.

According to Hunter's Lesson Plan (2007), first of all we take outlines of learning objectives and these objectives should be clear for the students. Tensely (2010) described that if a lesson plan has creative and entertaining aspect but may miss its mark due to

non-clear goals. Germet (2010), stated that goals may be clear and in logical sequence and written in numbers.

According to English (2010), a teacher must provide things which can motivate for the lesson. Ash and Bell (2000) stated that the student should be provided new tools or materials along with proper guidance. According to Barbara (2012), all presentation must be provided to each item so that the whole step may not exceed the time.

According to Cunningham (2013), the learning of the day can be analyzed by writing a brief note on the lesson taught recently. Kelly (2013), stated that the teacher should be pre-planned to focus on essential, create the assessment and for assigning home-work.

As stated by Melissa (2012), after checking students learning, the final step is to develop a conclusion and a preview .Fink (2005), the students understanding can be guessed through their answers and then feedback can be provided.

Methodology

The population for qualitative aspect of research consists of 117 Mathematics teachers of District Haripur who were teaching 10th class Mathematics in their respective schools. Through convenient sampling twenty five (25) teachers who were teaching 10th class Mathematics were selected. Then its 14 open-ended questions were selected after deleting the irrelevant or less relevant questions to the research topic.

In order to establish a valid and reliable test as well as questionnaire, tools were tested on pilot basis. The open-ended questionnaire of 14 questions was distributed among 5 MSc, MEd,

qualified Mathematics teachers of different schools who had been teaching 10th class Mathematics for more than 10 years. The responses of the teachers were checked by experts and then its validity was established. The main aspects of teachers' questionnaire for qualitative aspect were these.

They asked how and to what extent the lesson planning is done by the teachers. They were asked effects of teaching through lesson planning on the efficiency of the teachers and learning of the students. The aspects kept in view about lesson, teacher and the students were also asked by them. Encouragement from the institute and the department, conditions of stress for lesson planning by education department and application in refresher courses were also asked from the teachers.

Condition of course completion through teaching lesson planning was also asked. They were asked about the use of a.v-aids, conditions of their preparation and departmental help. They were asked how individual differences and environmental conditions are considered for lesson planning. More difficult and more suitable topics for lesson planning were also asked by them. They were asked equivalence of time for lesson planning and strategies to overcome deficiency of time and practically use of lesson planning during refresher courses were asked by the teachers through the questionnaire.

The researcher personally collected responses of 13 open-ended questions from the 25 Mathematics teachers who were teaching to 10th class in their respective schools. These responses were written as raw data, rearranged to write primary themes.

Due to some repeated responses present in the primary themes, secondary themes were obtained. Then primary and secondary theme were written first, in tabular form and then in figurative

form. Tables were converted into thematic figures to write final report.

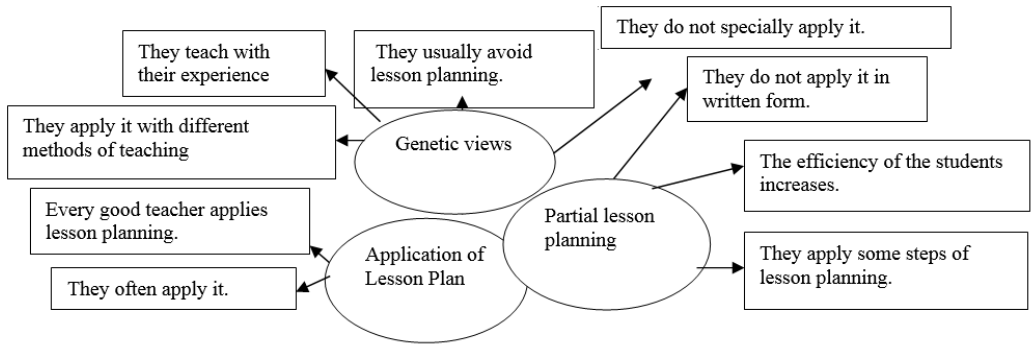


Figure 1: Application of Lesson Planning

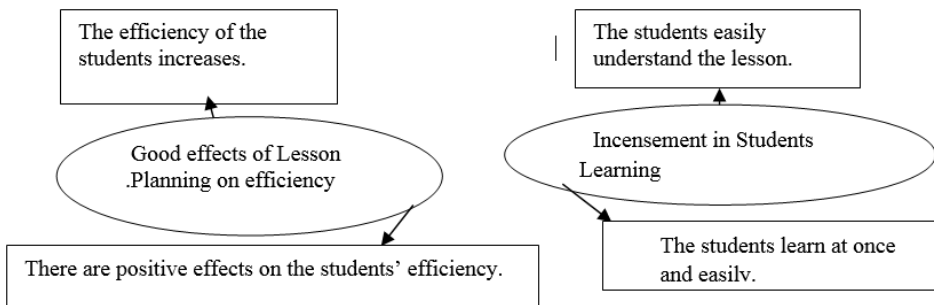


Figure 2: Good effects of lesson planning on efficiency

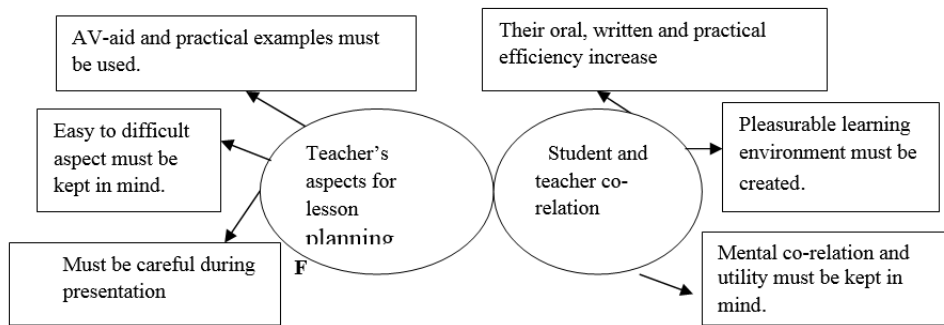


Figure 3: Main aspects for lesson planning

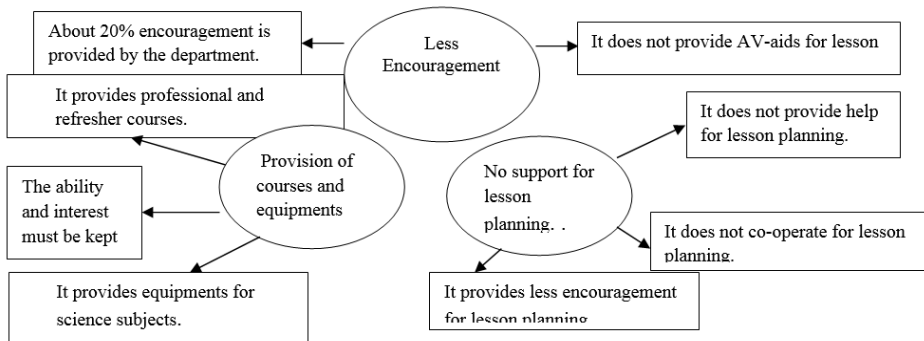


Figure4: The education department encouragement for lesson planning

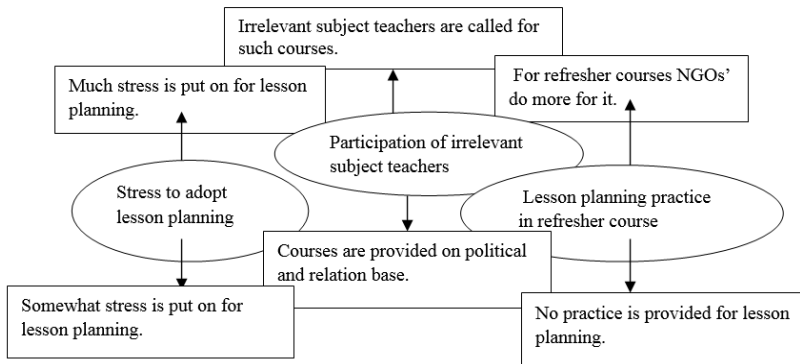


Figure 5: Stress on lesson planning during the refresher courses

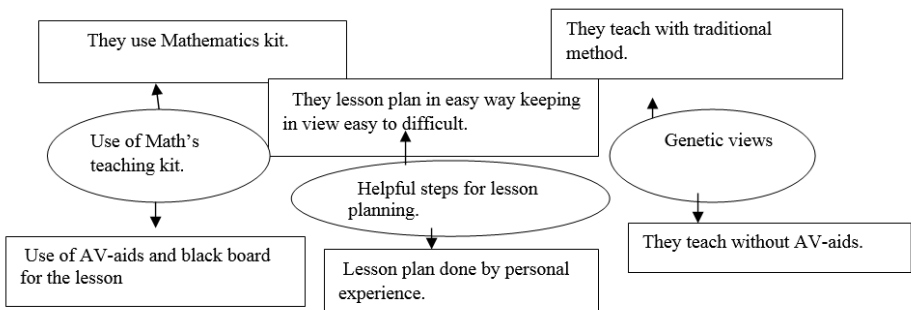


Figure 6: Use of AV.ads and accessories by the teachers

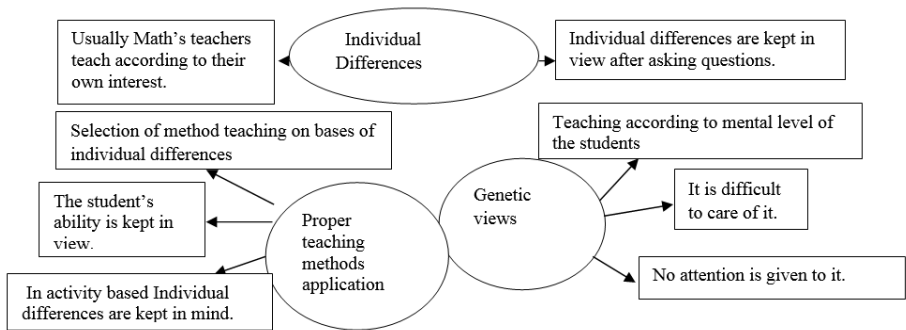


Figure 7: Keeping in view students individual differences

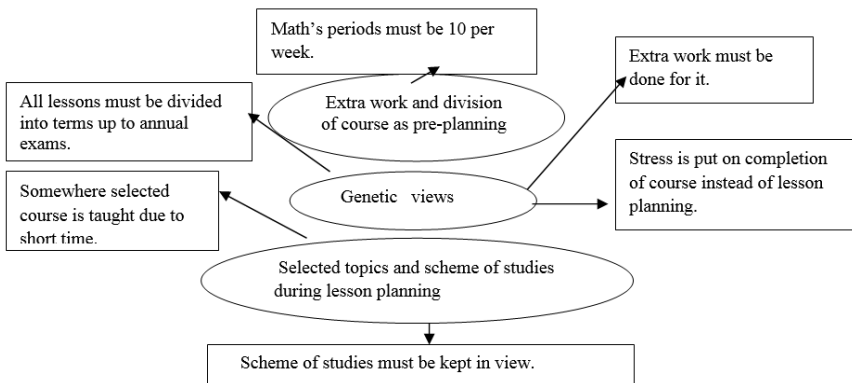


Figure 8: Extra work and division of course as pre-planning

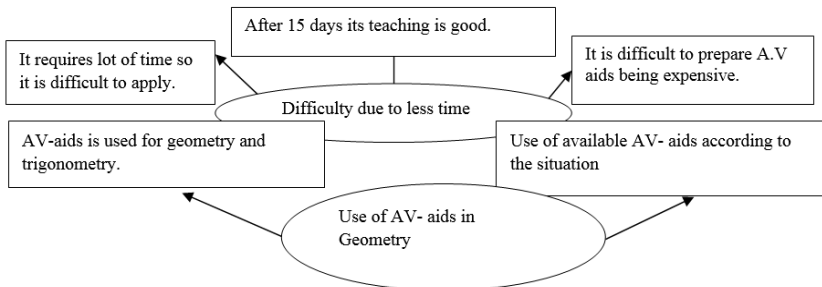


Figure 9: AV-aids in Geometry

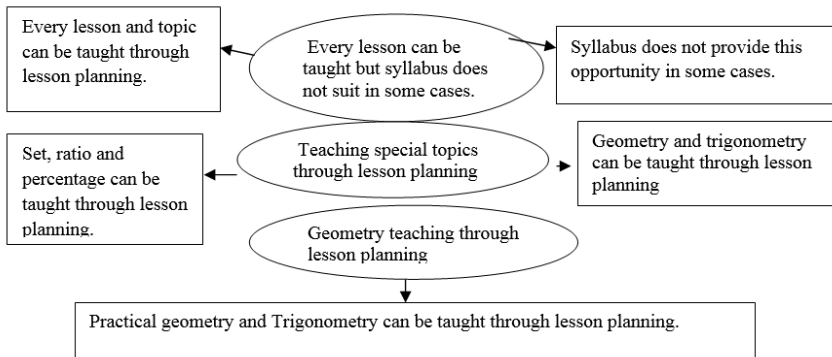


Figure 10: *Geometry and teaching through lesson planning.*

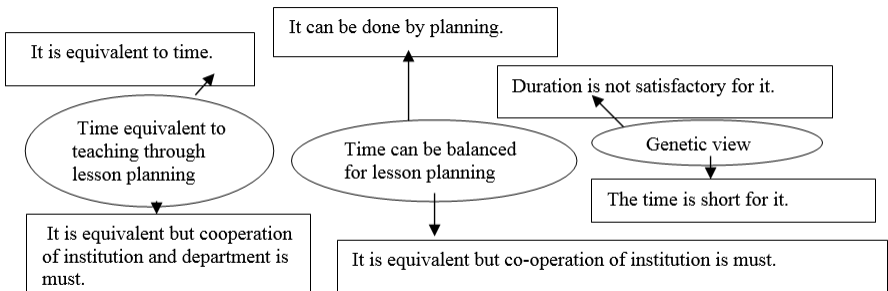


Figure 11: *Equivalence of time to lesson planning*

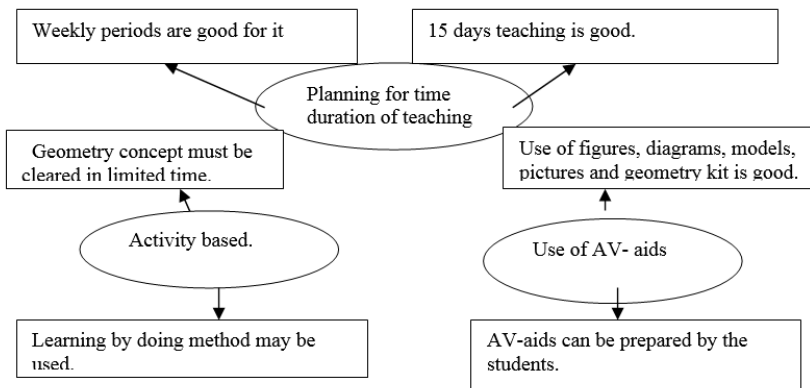


Figure 12: *The lessons of geometry and schedule of lesson planning*

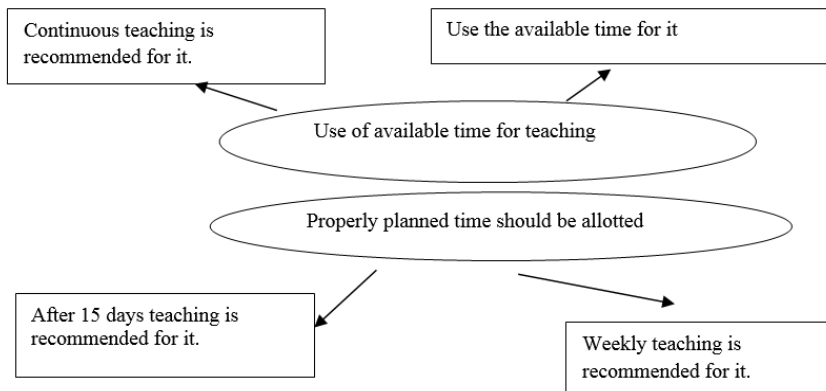


Figure 13: *Strategies to overcome deficiency of time*

Results

According to the Mathematics teacher, the role of lesson planning for teaching Geometry concepts at secondary level were;

Most of the teachers described that teaching Mathematics through lesson planning was as effective as the students easily understood the lesson as shown in Figure 2. Majority of the teachers believed positive effects on students' efficiency could be produced when they were taught Geometry via lesson planning as shown in Figure 2. Many teachers opined teaching Geometry through lesson planning was time-consuming and completing the course within due time was difficult but at the same time, departmental help in this connection, could be of great value resulting in the application of 'lesson planning' on the part of the teachers as shown in Fig. 11.

Many teachers proposed that the use of figures, diagrams, models, pictures and geometry kit was good for teaching Geometry through lesson planning as shown in Fig 12.

Mostly the teachers described that they applied appropriate method of teaching Geometry according to the lesson, situation and psychology of the student as shown in Fig. 1. Nearly all the teachers took care of the students' mental level, duration of the teaching period, quality and quantity of material given in the lesson in order to plan lessons of Geometry as shown in Fig.3. Many teachers provided opportunities to the students to work with their own hands as learning activities during teaching Geometry through lesson planning as shown in Fig.12. Several teachers carried out Geometry lesson planning keeping in view the individual differences in mind as shown in Fig.12. Most of the teachers considered fixed periods per week for teaching Geometry important for proper delivery along with the subject of Mathematics as shown in Fig.12. All the teachers described they would perform better in case they were provided refresher courses for teaching Geometry through lesson planning as shown in Fig.4.

Discussion

To understand the perceptions of Mathematics' teacher, regarding role of lesson planning and to explore the current practices of lesson planning at Secondary level specially in the subject of Mathematics. The research showed that there is a great effect of lesson planning on teaching process. This fact was described too through Database (2010), as each lesson includes clear learning targets, assessments, resource materials, teaching strategies and suitable examples are included in each lesson plan which has positive effects. The results of research showed that lesson planning is not only effective for learning but also has positive effects for the teachers too. The same thing was described by Boynton and Christine (2013), the expectations by the teachers from their students tend to become self-fulfilling prophecies

which is indicated through numerous studies. It is also a fact that these expectations have a dramatic impact on student academic performance. The results of research showed that students are more attentive due to regular use of lesson planning. Core (2012) also stated that in order to get the students on track and help them to learn more easily and make them able to relate their learning with their atmosphere which is possible with the help of a well planned lesson. The study revealed that the lesson planning in Math increases student-teacher interaction. This fact is described by Metcalfe (2011) as a framework for planning Math lessons to assist in promoting student achievement that is the reason the objective of this study was to provide teachers with an evaluation of the effectiveness of everyday lesson plans to promote student achievement in math. The study showed that there are lots of benefits of teaching geometry through lesson planning.

McREL's (2013) described too that the geometric ideas and relationships in areas outside the mathematics classroom should be recognized and applied such as art, science, and everyday life which is possible through lesson planning .The result of research showed that teaching through lesson planning showed better results.

Academy R.M. (2012) verified that the students who have a better school experience learn in a positive classroom environment. They are overall happier at school and learn new skills at a faster rate. They enjoy higher test scores. The research results showed that lesson planning provides positive effects on the part of the teachers along with good effects on learners and teaching process.

Conclusion

The conclusions of the study were drawn on the basis of findings of the study as given below;

- i. It was concluded from the descriptions of the teachers provided that the Geometry taught via lesson planning was more understandable to the students as compared to the lessons being taught without lesson planning.
- ii. Regular lesson planning in teaching Geometry can enhance students' efficiency. The condition of teaching Geometry through lesson planning could be improved if help on departmental level was provided.
- iii. The use of visual aids in teaching Geometry in terms of lesson planning, i.e. figures, diagrams, models, pictures and geometry kit etc., could further improve lesson planning of Geometry in terms of students' performance.
- iv. Teaching Geometry through lesson planning was beneficial for the students if the teachers applied an appropriate method.
- v. Planning the lessons of Geometry were to be based upon the mental level of the students in order to make the lessons effective for the students.
- vi. Activity based learning in teaching Geometry via lesson planning provided opportunities to the students to learn themselves by doing.
- vii. Geometry lesson planning required keeping in view the individual differences of the students.
- viii. Teaching of Geometry through lesson planning needed fixed periods per week for the students to absorb the material properly.
- ix. Providing refresher course for teaching Geometry via lesson planning in the shape of training could develop the competency of the teachers.

Recommendations

On the bases of findings and conclusions following recommendations are made;

- i. Teaching Geometry through lesson planning was recommended because it makes the students understand their lesson easily.
- ii. Regular lesson planning in teaching Geometry was recommended to enhance students' efficiency.
- iii. Departmental help may be provided in order to improve the condition of teaching Geometry through lesson planning.
- iv. It was recommended that AV-Aids, projectors, multimedia and internet facilities may be provided by the government in the schools for teaching Geometry through lesson planning in order to motivate and facilitate the teachers.
- v. It was recommended that teachers must be trained to apply appropriate methods of teaching according to the mental level of the students.
- vi. Activity-based learning may be applied by the teachers in teaching Geometry via lesson planning.
- vii. Individual differences of the students may be kept in view for Geometry lesson planning.
- viii. Fixed periods per week were recommended for the students to absorb the material properly for teaching Geometry through lesson planning.
- ix. Refresher courses may be provided for teaching Geometry via lesson planning in the shape of training to develop the competency of the teachers.

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