CHAPTER VI
SUMMARY AND CONCLUSIONS

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6.1 INTRODUCTION

An educational research work has to exercise all care and caution in formulating its conclusions and arriving at any generalization on the basis of its data. Like interpretation of results, the formulation of conclusions and generalizations also demand keen observation, wide outlook and power of logical thinking. The present chapter comprises a brief summary of the procedure adopted and the conclusions derived from the study. A preliminary analysis of the scores of the different variables was attempted and analyzed to answer the research questions paused and hypotheses formulated for the study. Tests of significance and Analysis of Covariance were applied for testing the difference between the means of contrasted independent groups with respect to the dependent variables selected for the study. The quantitative analysis was further supplemented by qualitative analysis for in-depth meaning of the findings emerged out of the quantitative study.

The study in retrospect is followed by a short description of the major findings of the study. The chapter concludes with a discussion of the recommendations and suggestions that can be derived from the present study for future research especially in the field of commerce education.

6.2 THE STUDY IN RETROSPECT

The different aspects of the various stages of the present study summarized below under the following significant heads.
6.2.1 Statement of the Problem

The present investigation aims to develop two strategies namely Problem Based Learning and Graphic Organizer based on the existing pedagogical strands to ensure effective transaction of commerce curriculum. Keeping in mind, the present study is entitled as “DEVELOPING CERTAIN STRATEGIES FOR THE TRANSACTION OF CURRICULUM IN COMMERCE AT THE LEVEL OF HIGHER SECONDARY EDUCATION”.

6.2.2 Variables of the Study

Variables are the vital aspects of a testing condition that can change or take on different characteristics with different conditions, and are basically of two types viz; independent and dependent variable. In the present study, the independent variables are:

* The prevailing Activity Oriented Modes
* The developed instructional strategies namely,

1. Problem Based Learning
2. Graphic Organizer

The dependent variables comprise of

1. Academic Achievement and
2. Vocational Competency

Both are become the core outcome of curriculum transaction in commerce at higher secondary level.
6.2.3 Hypotheses of the Study

1. There is significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement.

2. There is significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Modes with respect to Vocational Competency.

3. There is significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement.

4. There is significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Vocational Competency.

5. There is no significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and Graphic Organizer Strategy with respect to Academic Achievement.

6. There is no significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and Graphic Organizer Strategy with respect to Vocational Competency.

7. There is no significant difference in the mean scores of Boys and Girls with respect to Academic Achievement when exposed to the select strategies.
8. There is no significant difference in the mean scores of Boys and Girls with respect to Vocational Competency when exposed to the select strategies.

9. There is no significant difference in the mean scores of Rural and Urban students with respect to Academic Achievement when exposed to the select strategies.

10. There is no significant difference in the mean scores of Rural and Urban students with respect to Vocational Competency when exposed to the select strategies.

6.2.4 Objectives of the Study

1. To analyze the prevailing instructive status of learning commerce at higher secondary level

2. To develop the select strategies namely Problem Based Learning and Graphic Organizer for the effective transaction of curriculum in commerce at higher secondary level

3. To test the effectiveness of select strategies namely Problem Based Learning and Graphic Organizer in improving Academic Achievement of commerce students at higher secondary level

4. To test the effectiveness of select strategies namely Problem Based Learning and Graphic Organizer in enhancing Vocational Competency of commerce students at higher secondary level
5. To compare the effectiveness of Problem Based Learning and Graphic Organizer with regard to Academic Achievement of commerce students at higher secondary level

6. To compare the effectiveness of Problem Based Learning and Graphic Organizer with regard to Vocational Competency of commerce students at higher secondary level

7. To compare the effect of Gender on Academic Achievement of commerce students at higher secondary level when exposed to the select strategies

8. To compare the effect of Gender on Vocational Competency of commerce students at higher secondary level when exposed to the select strategies

9. To compare the effect of Locale on Academic Achievement of commerce students at higher secondary level when exposed to the select strategies

10. To compare the effect of Locale on Vocational Competency of commerce students at higher secondary level when exposed through the select strategies

11. To analyze qualitatively the efficacy of the select strategies namely Problem Based Learning and Graphic Organizer in the learning space among certain randomly identified students at higher secondary level

6.2.5 Methodology in Brief

Multi stage process of experimentation with the adornment of mixed methodology coinciding both quantitative and qualitative approaches was employed in the study. The experiment was preceded by a survey to analyze the
prevailing instructive status of learning commerce at higher secondary level to identify the ways and means of transacting commerce curriculum in an effective manner. Based on this two strategies namely Problem Based Learning and Graphic Organizer was developed. In addition to this appropriateness of Problem Based Learning and Graphic Organizer was ensured through strategy evaluation proforma and self assessment matrix respectively. Also the investigator identified three students randomly from two Experimental Groups each (below average, average and above average strata) selected to undergone an in-depth interview to analyze qualitatively the efficacy of the select strategies in the learning space.

6.2.6 Sample Selected for the Study

The sample selected for the study comprised of 376 higher secondary Plus One Commerce students in Kerala state syllabus from eight schools and 75 teachers and experts from various educational institutions.

6.2.7 Investigative supports and Techniques Employed

The data for the study were collected from students, teachers and experts in the field of education. The following investigative supports and techniques employed to collect the data.

- Semi-structured Interview Schedule
- Judgment Schedule for Strategy Validation
- Lesson Designs Based on Problem Based Learning
• Lesson Designs Based on Graphic Organizer
• Achievement Test in Business Studies
• Vocational Competency Assessment Test
• Strategy Evaluation Proforma for Problem Based Learning
• Self Assessment Matrix for Graphic Organizer
• Individual In-Depth Interview Guide

The investigative supports and techniques were administered to students in group situation and individual interview situations. Also this can be administered in select sample of experts and teachers individually. The obtained data were scored as per the instruction in the respective manuals of tools, and were consolidated for statistical analysis.

6.2.8 Statistical Techniques Used

The data thus collected were tabulated and subjected to analysis using suitable statistical techniques such as Test of Significant difference between Means, Analysis of Variance (ANOVA), Duncan’s Multiple Range Test for Post Hoc Analysis and Analysis of Co-Variance (ANCOVA).

6.2.9 Major Findings of the Study

The following findings that emerged from the analysis of the data obtained on quantitative as well as qualitative investigation that leads absolute answers to the research questions framed by the investigator.
The research questions framed on the basis of the study are:

1. Can select strategies be efficacious enough to transact the curriculum of commerce at higher secondary level?

2. How can higher secondary commerce students be made to explore actively and confront learning scenario with confidence through the interaction effect of Problem Based Learning Strategy?

3. How does Graphic Organizer instructional strategy act as a powerful tool to interlock concepts and ideas in commerce to generate meaningful learning set?

4. How can the select strategies be effective in enhancing Academic Achievement and promoting Vocational Competency among commerce students at higher secondary level?

Section I

Findings based on analysis of the prevailing instructive status of learning commerce at higher secondary level pointing towards the modes, constraints, challenges and suggestive measures for effectual transaction of commerce curriculum.

The analysis of this section radiates the following findings.

1. Despite there are some instructional strategies, the expanse of effectual curriculum transaction modes in the present context is inappropriate in internalizing Vocational Competency among commerce students at higher secondary level.
2. New-fangled instructional strategies triumph over the constraints and difficulties experienced through the prevailing curriculum transaction modes of commerce and thereby accelerate their academic enrichment.

3. Outstanding magnitude of novel curriculum transaction strategies generates an interactive learning space for constructing creative and divergent knowledge schemes in commerce.

4. Instructional attributes inserted in the alternative instructional strategies equip the practitioners for successful realization of goals and aspirations of commerce curriculum.

Section II

Findings based on analysis of the effect of the developed curriculum transaction strategies in the enhancement of Academic Achievement and Vocational Competency among commerce students at higher secondary level

The findings of this section can be classified under the following sub categories:

1. Comparison of the test scores of the Problem Based Learning group and the Control Group using t-test (total score)

A. Comparison of test scores of Problem Based Learning group and the Control Group on Academic Achievement

In the Pre test, the obtained t value (0.566) is less than the tabled value (1.96) which is not significant at 0.05 level, indicates that the two groups were equitable in their initial levels of performance. But in Post test, the obtained t value (2.691)
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is greater than the tabled value (2.58) which is significant at 0.01 level, i.e.; Problem Based Learning group showed significant development in their level of academic excellence over their counterparts exposed to the prevailing teaching modes.

B. Comparison of test scores of Problem Based Learning group and the Control Group on Vocational Competency

In the Pre test scores of Problem Based Learning group and the Control Group found the t-value (1.476) is lesser than the tabled value (1.96) which is not significant at 0.05 level, i.e; the two groups were equitable in Vocational Competency at their initial level. In the Post test, the obtained t value (2.793) is greater than the tabled value (2.58) which is significant at 0.01 level, i.e.; the students who were exposed to Problem Based Learning Strategy showed significant enhancement in their level of Vocational Competency over their respective Control Group.

2. Comparison of the test scores of the Graphic Organizer group and the Control Group using t-test (total score)

A. Comparison of test scores of Graphic Organizer group and the Control Group on Academic Achievement

In the Pre test, the critical ratio (CR= 0.451; p> 0.05) indicates that there is no significant difference between the Control Group and the Graphic Organizer group. That is; the two groups were equitable in their preliminary level of academic performance. But in the Post-test scores, the obtained t value (2.771) is greater than the tabled value (2.58) which is significant at 0.01 level, i.e.;
Graphic Organizer Strategy is more effective than prevailing Activity-oriented strategies for enhancing Academic Achievement among commerce students at higher secondary level.

B. Comparison of test scores of Graphic Organizer group and the Control Group on Vocational Competency

The Pre test scores found the t value (1.110) is less than the tabled value (1.96) which is not significant at 0.05 level, i.e.; the two groups were equitable in Vocational Competency at their initial level. But in the Post test scores, t value (2.712) is greater than the tabled value (2.58) which is significant at 0.01 level. That is, the students who were exposed to Graphic Organizer showed significant enhancement in their level of Vocational Competency over their respective counterparts.

3. Comparison of the test scores of Problem Based Learning group and Graphic Organizer group using t-test

A. Comparison of test scores of Problem Based Learning group and Graphic Organizer group on Academic Achievement

The critical ratio (CR= 0.029; p>0.05) indicates that there is no significant difference between Problem Based Learning and the Graphic Organizer group in their Pre test scores. But in the Mean Post test scores reveals that the obtained t value (0.701) is less than the tabled value (1.96) concluded that Problem Based Learning and Graphic Organizer Strategy are equally effective instructional strategies for enhancing Academic Achievement among commerce students at higher secondary level.
B. **Comparison of test scores of Problem Based Learning group and Graphic Organizer group on Vocational Competency**

The Pre test scores explained that the obtained t value (1.866) is less than the tabled value (1.96) indicated that the Vocational Competency between Problem Based Learning group and the Graphic Organizer group is not significant at 0.05 level. But in the Post test, obtained t value (6.489) is greater than the tabled value (2.58) which is significant at 0.01 level. The result revealed that both strategies are well powerful in excelling Vocational Competency among the select sample of higher secondary commerce students. As a comparison between these two strategies, the Problem Based Learning showed significant enhancement in their level of Vocational Competency over Graphic Organizer instructional strategy.

4. **Analysis of test scores of Problem Based Learning group based on Gender and Locale of Institution towards Academic Achievement and Vocational Competency**

A. **Analysis of test scores of Problem Based Learning group based on Gender towards Academic Achievement**

To find out initial differences in the academic performance between Boys and Girls, the critical ratio which is not significant (CR= 0.806; p>0.05). But in the Mean Post test scores, the critical ratio 2.970 is observed which is significant at 0.01 level. That is, Girls influenced greatly than Boys when exposed to the select strategy.
B. Analysis of test scores of Problem Based Learning group based on Gender towards Vocational Competency

In the Pre test, the critical ratio is not significant at any level (CR= 0.939; p>0.05). This implies that the sample of Boys and Girls in commerce discipline involved in Problem Based Learning group was equated with respect to their Vocational Competency. But in the Mean Post test scores the critical ratio 4.166 is observed which is to be significant at 0.01 level. That is, the Boys have been influenced greatly than Girls when exposed to the Problem Based Learning Strategy.

C. Analysis of test scores of Problem Based Learning group based on Locale of Institution towards Academic Achievement

The critical ratio is not significant at any level (CR= 1.798, p>0.05) towards the Mean Pre test scores of Rural and Urban groups. But in the Post test the critical ratio 0.327 is observed which is not to be significant at 0.05 level. That is, the sub group based on Locale of Institution not differed significantly in their Post test scores. It can be concluded that Problem Based Learning Strategy is equally benefited for Rural and Urban commerce students with respect to their Academic Achievement.

D. Analysis of test scores of Problem Based Learning group based on Locale of Institution towards Vocational Competency

In the Pre test, the critical ratio which is significant at 0.01 level (CR= 3.668; p<0.01). This implies that there is minor dominance among Urban
students than Rural students with respect to their Vocational Competency. In the Mean Post test scores, the critical ratio 4.328 is observed which is to be significant at 0.01 level. That is, the sub group based on Locale of Institution differed significantly in their Post test scores. But pointed that the Rural group also go ahead to do better performance to strengthen their Vocational Competency through the interaction effect of Problem Based Learning Strategy.

5. Analysis of test scores of Graphic Organizer group based on Gender and Locale of Institution towards Academic Achievement and Vocational competency

A. Analysis of test scores of Graphic Organizer group based on Gender towards Academic Achievement

To find out initial differences in their academic performance, the critical ratio is significant at 0.05 level (CR= 2.040; p<0.05). This implies that there is slight superiority among Girls than Boys. In the mean Post test, the critical ratio 0.111 is observed which is not significant at 0.05 level. That is, the Boys and the Girls had equal advantages towards the effect of Graphic Organizer Strategy.

B. Analysis of test scores of Graphic Organizer group based on Gender towards Vocational Competency

In the Pre test, the critical ratio is not significant at any level (CR= 0.687; p>0.05). This implies that Boys and Girls involved in Graphic Organizer group were equated with respect to their Vocational Competency. In the mean Post test, the critical ratio 2.339 which is to be significant at 0.05 level. That is, Boys have
been influenced greatly than Girls when exposed to the Graphic Organizer Strategy.

C. Analysis of test scores of Graphic Organizer group based on Locale of Institution towards Academic Achievement

In the Pre test scores, the critical ratio is not significant at 0.05 level (CR=1.757; p>0.05). This reveals that there is no significant difference between Rural or Urban students with respect to Academic Achievement. But the critical ratio obtained in the Post test 0.364 which is also not significant at 0.05 level. That is, there is no significant difference between Rural or Urban students with respect to Academic Achievement when the interaction effect of Graphic Organizer as instructional strategy.

D. Analysis of test scores of Graphic Organizer group based on Locale of Institution towards Vocational Competency

The Pre test score found that the critical ratio is significant at 0.01 level (CR= 5.596; p<0.01), implies that Urban students have considerable enhancement in Vocational Competency than Rural students. But in the Post test scores the critical ratio 3.096 which is to significant at 0.01 level indicated that both the group shows positive improvement in their Vocational Competency towards consequence of Graphic Organizer. Instead of this improvement, the Urban samples have been influenced greatly than the Rural students.
6. **Determining the genuineness of the difference in the performance of the groups**

A. **Comparison of the Academic Achievement among higher secondary students with different learning strategies with respect to the Total Score (ANCOVA)**

For correcting the F scores for the difference in adjusted means scores, adjusted sum of squares and mean squares by taking Problem Based Learning, Graphic Organizer and Activity Oriented Modes by taking Pre test scores as covariate, it is evident that the adjusted F value (6.591) is greater than the tabled value of F (3.85) required for significance at 0.01 level. This indicates that there is significant difference in the adjusted mean scores of Academic Achievement between the higher secondary commerce students following Problem Based Learning, Graphic Organizer and Activity Modes.

B. **Comparison of the Vocational Competency among higher secondary students with different learning strategies with respect to the Total Score**

For correcting the F scores for the difference in adjusted means scores, adjusted sum of squares and mean squares by taking Problem Based Learning, Graphic Organizer and Activity Oriented Modes by taking Pre test scores as covariate, it is evident that the adjusted F value (34.519) is greater than the tabled value of F (3.85) required for significance at 0.01 level. This indicates that there is significant difference in the adjusted mean scores of Vocational Competency
between the higher secondary commerce students following Problem Based Learning, Graphic Organizer and Activity Modes.

The quantitative dimensions of this section proved that Problem Based Learning and Graphic Organizer is superior in enhancing Academic Achievement and thereby strengthen their Vocational Competency. The essential tenets articulated by the selected students in their delicate interface with Problem Based Learning Strategy concluded as

1. Problem Based Learning creates a joyful learning environment that promotes conviction, open communication and willingness to take risks without fear of negative consequences prevails.

2. Provides multiple exposure and complex interactions with knowledge in many and varied contexts which promote transfer of ideas to novel situations.

3. Permit to explore judgments, to perceive preconception, discriminate actuality from evidence and depict apposite elucidations from supportive and representative indication.

In order to make stronger the worthiness of Graphic Organizer in the midst of the identified targets concluded that:

1. Graphic Organizer allows them to unite information from past experiences, generate ability to decode and apply structural analysis of
concepts on instructional practices that expedite one’s pedagogic styles leads to academic excellence.

2. It is sufficient for prompting flexible thinking that helps to solve problems by take in to consider a range of ideas to explore multiple aspect of a problem in different perspectives which promote high Academic Achievement.

3. The interaction with Graphic Organizer act as a collaborative tool helps to detach out ideas and facts in to indispensable constituents and motivate them to bonding these constituents in to meaningful patterns.

**SUMMARY OF FINDINGS AND AUTHENTIC SOLUTIONS TO RESEARCH QUESTIONS**

The present study reveals the need for reifying prevailing instructional modes of commerce and the developed strategies are competent to realize the core outcome of commerce by enhancing Academic Achievement and promoting Vocational Competency also. Both strategies are equally effective in enhancing Academic Achievement and are well powerful in excelling Vocational Competency among higher secondary commerce students. But Problem Based Learning showed significant enhancement in their level of Vocational Competency over Graphic Organizer instructional strategy.
By comparing Boys and Girls towards the interaction effect of Problem Based Learning, Girls were influenced greatly than Boys with respect to Academic Achievement but Boys have been influenced greatly than Girls with respect to Vocational Competency. Towards the effect of Graphic Organizer, Boys and Girls performed equally with respect to Academic Achievement but Boys have been influenced greatly than Girls with respect to Vocational Competency. Comparing Rural and Urban students towards the interaction effect of Problem Based Learning Strategy, both group performed similarly with respect to Academic Achievement but Urban students influenced greatly than Rural students with respect to Vocational Competency. By analyzing the effect of Graphic Organizer, both Rural and Urban students got equal advantage towards their Academic Achievement but Urban students were influenced greatly than Rural students with respect to Vocational Competency. The statistical procedure of ANCOVA also proved that both Problem Based Learning and Graphic Organizer is superior to prevailing modes in enhancing Academic Achievement and there by strengthen their Vocational Competency. The qualitative dimension of the investigation also proved the positive effect of both strategies in same line of result towards the outcome of commerce education.

Based on the above analysis and description the present investigation concluded and gave an accurate answer to the set research question as
1. The select strategies are efficacious enough to transact the curriculum of commerce at higher secondary level.

2. The higher secondary commerce students be made to explore actively and confront learning scenario with confidence through the interaction effect of Problem Based Learning Strategy.

3. The select Graphic Organizer instructional strategy act as a powerful tool to interlock concepts and ideas in commerce to generate meaningful learning set.

4. The select strategies are effective in enhancing Academic Achievement and promoting Vocational Competency among commerce students at higher secondary level.

6.3 DISCUSSION BASED ON THE FINDINGS

Based on the above findings of the study the select strategies namely Problem Based Learning and Graphic Organizer are effective instructional strategies for transacting curriculum in commerce at higher secondary level with regard to most beneficial to students in enhancing Academic Achievement thereby promoting their vocational competencies.

These findings and interpretations are supported by the results of earlier studies based on learner’s academic excellence and augmenting their Vocational Competency. In contrast, some studies are against these findings. The findings regarding Academic Achievement on the effect of Problem Based Learning are
supported by results of earlier studies of Bayat and Tarmizi (2012), Keser and Gursul (2009), Orhan and Ruhan (2007) that the transactional effect of Problem Based Learning create significant difference in the enhancement in academic aspects and positive attitude towards their conceptual development and drag their misconceptions at the lower level.

By considering the influence of Gender towards the effect of Problem Based Learning Strategy, the study proved that Girls were influenced greatly than their counterparts. While studies conducted by Kimmons and Kang (2012) are contradicted by the research results that Problem Based Learning helped to reduce gender based achievement gaps between Boys and Girls in the subject matter, ie; both groups equally benefited to the influence of Problem Based Learning as instructional strategy.

The findings of the study also highlighted that Problem Based Learning Strategy is equally benefited for Rural and Urban commerce students with respect to their Academic Achievement. Most of the studies favored this conclusion especially Qing Li and Lynn (2009) concluded that the positive effects of this learning environment enhances their learning of math and science in general, in particular, both Urban and Rural students showed significant gains in their achievement.

The findings regarding various aspects of Vocational Competency towards the effect of Problem Based Learning are supported by results of earlier
studies of Song, Deok et al. (2006), Kirschner Song, Deok et al. (2006), Kirschner et al. (2006), Sungur and Ceren (2006) and Murray (2005). But the studies conducted by Zakaria, Zaiton et al. (2011) found disagreement with the above findings that there is no significant difference the parameters tested between Problem Based Learning groups with their corresponding Control Group.

The findings regarding Academic Achievement towards the effect of Graphic Organizers are supported by results of previous studies of Zahra (2012), Williams et al. (2007), Robinson and Molina (2002). By consider the influence of Gender towards the effect of Graphic Organizer proved that Boys influenced greatly than Girls with respect to Academic Achievement. This result has contradicted by the research result of Samuel (1999) is that the effect of this strategy is equally good for both groups.

The findings of the study also highlighted that Graphic Organizer Strategy is equally benefited for Rural and Urban commerce students with respect to their Academic Achievement. This conclusion was substantiated by the research studies of Tan Ooi; Leng Choo; Tan Kok and Norlida (2011). The findings regarding various dimensions of Vocational Competency towards the effect of Graphic Organizer are supported by results of earlier studies of Hoffman (2010), Patsalides (2010), Spears and Kealy (2005).

The findings of the study are in tune with the expectations of the investigator. Therefore, it is very clear that the appropriate application of these
strategies certainly enhance academic potential thereby strengthening vocational capabilities of Commerce students. These strategies provide practitioners and teachers for extracting the spirit of curriculum transaction attributes in a fruitful manner. Thus it can be concluded that instructional planning, exercises and processing criteria were considered as the responsible factor towards the sequential and effectual implementation of these strategies. Exposure of students with a novel, creative, flexible and collaborative learning space might have also been one of the reasons for these results.

Thus it can be stated that the strategies namely a Problem Based Learning and Graphic Organizer could not only become an instructional tool for enhancing Academic Achievement and augmenting Vocational Competency but also a create a constructive learning environment for attaining various tenets of curriculum transaction of commerce at the level of higher secondary education.

6.4 TENABILITY OF HYPOTHESES

The hypotheses formulated for the study are being stated for their tenability in this section.

Hypothesis 1 There is significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement.
For the purpose of analysis, the above hypothesis was converted into null hypothesis as: “There is no significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement”.

The analysis of the test scores of the select Experimental Group I namely, Problem Based Learning and the Control Group exposed to the prevailing Activity Oriented Modes of curriculum transaction reveal that there is significant difference in the mean Post test scores of Experimental Group I namely, Problem Based Learning when compared to the post scores of Control Group.

While considering the results of the comparison of test scores of the Problem Based Learning Group and the Control Group, it was revealed that the Mean Post test scores of the Problem Based Learning Group (M=11.137) was significantly higher than the Mean Post test scores of the Control Group(M=10.189). The obtained critical ratio(CR=2.691; p<0.01) vide Table 5.5 established the superiority of the Problem Based Learning Group over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Academic Achievement. Also the Duncan’s Multiple Range Test Proved the significant difference between Academic Achievement of commerce students at higher secondary level when they exposed with Problem Based Learning as compared with their Control Group.
Moreover, the F value (6.591) obtained in the Analysis of Covariance is greater than the tabled value of F (3.85) at 0.01 level of significance thereby pointing towards the superiority of the experimental treatment over the Control Group treatment.

Also the adjusted means for the Post test scores of select sample in the experimental and Control Group as observed through the results presented in Table 5.36 reveal that the adjusted means for the Post test scores of Problem Based Learning Group (11.086) was higher than the adjusted means for the Post test scores of Control Group (10.265) thereby emphasizing the superiority of Experimental Group I namely, Problem Based Learning over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Academic Achievement.

Therefore, from the above findings, it can be conclusively stated that the select Problem Based Learning Strategy is more effective than the prevailing Activity Oriented Modes of curriculum transaction in commerce at higher secondary level by enhancing Academic Achievement. Thus the null hypothesis formulated in this context is not accepted.

Therefore, the study hypothesis which states that “There is significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement” is sustained.
Hypothesis 2 There is significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Mode with respect to Vocational Competency.

For the purpose of analysis, the above hypothesis was converted into null hypothesis as: “There is no significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Modes with respect to Vocational Competency”.

The analysis of the test scores of the select Experimental Group I namely, Problem Based Learning and the Control Group exposed to the prevailing Activity Oriented Mode of curriculum transaction disclose that there is significant difference exists in the mean Post test scores of Experimental Group I namely, Problem Based Learning when compared to the post scores of Control Group.

Though justifying the results of the comparison of test scores of the Problem Based Learning Group and the Control Group, it was revealed that the Mean Post test scores of the Problem Based Learning Group (M=13.826) was significantly higher than the Mean Post test scores of the Control Group (M=12.127). The obtained critical ratio (CR=2.793; p<0.01) vide Table 5.7 established the dominance of the Problem Based Learning Group over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Vocational Competency. The Duncan’s
Multiple Range Test Proved the significant difference exists between Vocational Competency of commerce students at higher secondary level when they exposed with Problem Based Learning as compared with their Control Group.

Also, the F value (34.519) obtained in the Analysis of Covariance is greater than the tabled value of F (3.85) at 0.01 level of significance thereby pointing towards the superiority of the experimental treatment over the Control Group treatment.

Also the adjusted means for the Post test scores of select sample in the experimental and Control Group as observed through the results presented in Table 5.41 reveal that the adjusted means for the Post test scores of Problem Based Learning Group (13.573) was higher than the adjusted means for the Post test scores of Control Group(12.268) thereby emphasizing the superiority of Experimental Group I namely, Problem Based Learning over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Vocational Competency.

Therefore, from the above findings, it can be conclusively stated that the select Problem Based Learning Strategy is more effective than the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level by promoting Vocational Competency. Thus the null hypothesis formulated in this context is not accepted.
Therefore, the study hypothesis which states that “There is significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and prevailing Activity Oriented Mode with respect to Vocational Competency” is retained.

**Hypothesis 3** There is significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement.

For the purpose of analysis, the above hypothesis was converted into null hypothesis as: “There is no significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement”.

The analysis of the test scores of the select Experimental Group II namely, Graphic Organizer and the Control Group exposed to the prevailing Activity Oriented Mode of curriculum transaction expose that there is significant difference exists in the mean Post test scores of Experimental Group II namely, Graphic Organizer when compared to the post scores of Control Group.

While considering the results of the comparison of test scores of the Graphic Organizer Group and the Control Group, it was revealed that the Mean Post test scores of the Graphic Organizer Group (M=11.389) was significantly higher than the mean Post test scores of the Control Group (M=10.463). The obtained critical ratio (CR=2.771; p<0.01) vide Table 5.9 established the
superiority of the Graphic Organizer Group over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Academic Achievement. Duncan’s Multiple Range Test Proved the significant difference between Academic Achievement of commerce students at higher secondary level when they exposed with Problem Based Learning as compared with their Control Group.

Moreover, the F value (6.591) obtained in the Analysis of Covariance is greater than the tabled value of F (3.85) at 0.01 level of significance thereby pointing towards the superiority of the experimental treatment over the Control Group treatment.

Also the adjusted means for the Post test scores of select sample in the experimental and Control Group as observed through the results presented in Table 5.36 reveal that the adjusted means for the Post test scores of Graphic Organizer Group (11.344) was higher than the adjusted means for the Post test scores of Control Group (10.519) thereby emphasizing the superiority of Experimental Group II namely, Graphic Organizer over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Academic Achievement.

Therefore, from the above findings, it can be conclusively stated that the select Graphic Organizer Strategy is more effective than the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level.
by enhancing Academic Achievement. Thus the null hypothesis formulated in this context is not accepted.

Therefore, the study hypothesis which states that “There is significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Academic Achievement” is sustained.

**Hypothesis 4 There is significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Vocational Competency.**

For the purpose of analysis, the above hypothesis was converted into null hypothesis as: “There is no significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Vocational Competency”.

The analysis of the test scores of the select Experimental Group I namely, Graphic Organizer and the Control Group exposed to the prevailing Activity Oriented Mode of curriculum transaction disclose that there is significant difference exists in the mean Post test scores of Graphic Organizer when compared to the post scores of Control Group.

Though justifying the results of the comparison of test scores of the Graphic Organizer Group and the Control Group, it was revealed that the Mean Post test scores of the Graphic Organizer Group (M=10.306) was significantly
higher than the Mean Post test scores of the Control Group (M=9.038). The obtained critical ratio (CR=2.712; p<0.01) vide Table 5.11 established the supremacy of the Graphic Organizer Group over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Vocational Competency. The Duncan’s Multiple Range Test Proved the significant difference exists between Vocational Competency of commerce students at higher secondary level when they exposed with Graphic Organizer as compared with their Control Group.

Also, the F value (34.519) obtained in the Analysis of Covariance is greater than the tabled value of F (3.85) at 0.01 level of significance thereby pointing towards the superiority of the experimental treatment over the Control Group treatment.

Also the adjusted means for the Post test scores of select sample in the experimental and Control Group as observed through the results presented in Table 5.41 reveal that the adjusted means for the Post test scores of Graphic Organizer Group (10.517) was higher than the adjusted means for the Post test scores of Control Group (8.956) thereby emphasizing the superiority of Experimental Group II namely, Graphic Organizer over the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level with respect to Vocational Competency.
Therefore, from the above findings, it can be conclusively stated that the select Graphic Organizer Strategy is more effective than the prevailing Activity Oriented Mode of curriculum transaction in commerce at higher secondary level by promoting Vocational Competency. Thus the null hypothesis formulated in this context is not accepted.

Therefore, the study hypothesis which states that “There is significant difference in the mean scores of groups exposed to Graphic Organizer Strategy and prevailing Activity Oriented Modes with respect to Vocational Competency” is retained.

**Hypothesis 5** There is no significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and Graphic Organizer Strategy with respect to Academic Achievement”.

The analysis of the test scores of the select Experimental Group I namely, Problem Based Learning with the Experimental Group II namely Graphic Organizer on Academic Achievement reveal that there is no significant difference between the mean Post test scores of Experimental Group I Problem Based Learning when compared to the post scores of Experimental Group II namely Graphic Organizer.

While considering the results of the comparison of test scores of the Problem Based Learning Group and the Graphic Organizer Group, it was revealed that the Mean Post test scores of the Problem Based Learning Group
(M=11.137) was equated with the Mean Post test scores of the Graphic Organizer Group (M=11.389). The obtained critical ratio (CR=0.701; p>0.01) vide Table 5.13 established the parity of the Problem Based Learning Group over the Graphic Organizer Group with respect to Academic Achievement. Also the Duncan’s Multiple Range Test proved that there is no significant difference exists between Academic Achievement of commerce students at higher secondary level when they exposed with Problem Based Learning as compared with Graphic Organizer as instructional strategies.

Moreover, the adjusted means for the Post test scores of select Experimental Groups I and II as observed through the results presented in Table 5.36 reveal that the adjusted means for the Post test scores of Problem Based Learning Group (11.086) was associated with the adjusted means for the Post test scores of Graphic Organizer group (11.344) thereby emphasizing the suitability of Problem Based Learning and Graphic Organizer as instructional strategies for transacting curriculum in commerce at higher secondary level while enhancing Academic Achievement.

Therefore, from the above findings, it can be consolidated that the select Problem Based Learning Strategy is equated with Graphic Organizer for effectual transaction of curriculum in commerce at higher secondary level by enhancing Academic Achievement. Thus the null hypothesis formulated in this context is accepted.
Hypothesis 6 There is no significant difference in the mean scores of groups exposed to Problem Based Learning Strategy and Graphic Organizer Strategy with respect to Vocational Competency.

The analysis of the test scores of the select Experimental Group I namely, Problem Based Learning with the Experimental Group II namely Graphic Organizer on Vocational Competency reveal that significant difference exists between the mean Post test scores of Experimental Group I Problem Based Learning when compared to the post scores of Experimental Group II namely Graphic Organizer.

While considering the results of the comparison of test scores of the Problem Based Learning Group and the Graphic Organizer Group, it was revealed that the Mean Post test scores of the Problem Based Learning Group (M=13.826) was superior with the Mean Post test scores of the Control Group (M=10.306). The obtained critical ratio (CR=6.489; p<0.01) vide Table 5.15 established the dominance of the Problem Based Learning Group over the Graphic Organizer Group with respect to Vocational Competency. Also the Duncan’s Multiple Range Test proved that there is significant difference exists between Academic Achievement of commerce students at higher secondary level when they exposed with Problem Based Learning as compared with Graphic Organizer as instructional strategies.
Moreover, the adjusted means for the Post test scores of select Experimental Groups I and II as observed through the results presented in Table 5.41 reveal that the adjusted means for the Post test scores of Problem Based Learning Group (13.573) was associated with the adjusted means for the Post test scores of Graphic Organizer group (10.517) thereby emphasizing that Problem Based Learning Strategy is more advantageous in enhancing Vocational Competency when compared with Graphic Organizer. Therefore, from the above findings, it can be consolidated that the select Problem Based Learning Strategy is superior to Graphic Organizer Strategy for enhancing Vocational Competency of higher secondary commerce students. Hence the hypothesis 6 formulated in this context is rejected.

**Hypothesis 7** There is no significant difference in the mean scores of Boys and Girls with respect to Academic Achievement when exposed to the select strategies.

The analysis of test results that focused on the role of Gender of commerce students in their academic attainment reveal the following findings which has been highlighted in a table format:
The table 6.1 clearly expressed that Mean Post test scores of Girls experiment with Problem Based Learning Strategy were significantly higher than their respective counter parts with regard to Academic Achievement. But in the case of Graphic Organizer, it shows that both Boys and Girls are equally competent with regard to their Academic Achievement.

While considering the first Experimental Group which was exposed to the Problem Based Learning Strategy, it is noted that, the Mean Post test score of the Girls M=11.904 is greater than the Mean Post test score of the Boys of the same group (M=10.439), and the critical ratio CR=2.970; p<0.01 is significant at the 0.01 of significance (vide Table 5.17) revealing that Girls benefited more in encountering issues evolved through full of fascinating challenging situations act as a gaining drive to analyze and process information to lead reasonable conclusion, may possibly enhancing Academic Achievement than Girls.
Likewise, the Mean Post test scores of the Boys and Girls in the Graphic Organizer Experimental Group reveal no significant difference between their academic performances. The Boys belongs to the Graphic Organizer group got a mean Post test score of 18.105 and the Girls belongs to the same group got the mean Post test score as 18.019. Their critical ratio CR is 0.111; \( p>0.05 \) indicated no significant difference between Boys and Girls at 0.05 level of significance proved the equal advantages of Boys and Girls towards Academic Achievement.

From the above research findings, it can be conclusively stated that the select Problem Based Learning Strategy is more benefited to Girls than Boys but the Graphic Organizer Strategy is equally benefited to both Boys and Girls. Therefore the set hypothesis 7 “There is no significant difference in the mean scores of Boys and Girls with respect to Academic Achievement when exposed to the select strategies” in this context is partially accepted.

**Hypothesis 8** There is no significant difference in the mean scores of Boys and Girls with respect to Vocational Competency when exposed to the select strategies.

The analysis of test results that focused on the role of Gender of commerce students in their Vocational Competency disclose the following findings which has been highlighted in a table format:
Table 6.2

Summary of the Results of the Vocational Competency of Commerce Students Classified on the basis of Gender Difference

<table>
<thead>
<tr>
<th>Group</th>
<th>Gender</th>
<th>Mean Post Test score</th>
<th>Critical Ratio</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Based Learning</td>
<td>Boys</td>
<td>15.439</td>
<td>4.166</td>
<td>p&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>12.054</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphic Organizer</td>
<td>Boys</td>
<td>10.983</td>
<td>2.339</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>9.549</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table 6.2 clearly spoken that Mean Post test scores of Boys experiment with Problem Based Learning Strategy and also Graphic Organizer Strategy were significantly higher than their respective Girls section with regard to Vocational Competency.

While considering the first Experimental Group which was exposed to the Problem Based Learning Strategy, it is noted that, the Mean Post test score of the Boys M=15.439 is greater than the Mean Post test score of the Girls of the same group (M= 12.054), and the critical ratio CR=4.166; p<0.01 is significant at the 0.01 of significance (vide Table 5.19).

Likewise, the Mean Post test scores of the Boys and Girls in the Graphic Organizer Experimental Group revealed significant difference between them in their Vocational Competency. The Boys belongs to the Graphic Organizer group...
got a mean Post test score of 10.983 and the Girls belongs to the same group got the mean Post test score as 9.549. Their critical ratio CR is 2.339; p<0.05 indicated significant difference between Boys and Girls at 0.05 level of significance proved that Boys got more accomplishment than their Girls counterparts with regard to Vocational Competency when exposed through Graphic Organizer as instructional strategy.

From the above research findings, it can be conclusively stated that the select Problem Based Learning Strategy and Graphic Organizer Strategy is highly benefited to Boys and than Girls. This may caused that Boys gained more equip them to express relationships, allow them to amalgamate information from prior experience to new context and generate capacity to interpret and create structural analysis of concepts and ideas on instructional practices that accelerate their instructive styles may causes their Vocational Competency than Girls.

Therefore the set hypothesis 8 “There is no significant difference in the mean scores of Boys and Girls with respect to Vocational Competency when exposed to the select strategies” in this context is rejected.

Hypothesis 9 There is no significant difference in the mean scores of Rural and Urban students with respect to Academic Achievement when exposed to the select strategies”

The analysis of test results that focused on the role of ‘Locale’ of commerce students in their academic attainment reveal the following findings which has been highlighted in a table format:
Table 6.3

Summary of the Results of the Academic Performance of Commerce Students Classified on the basis of ‘Locale’ Difference

<table>
<thead>
<tr>
<th>Group</th>
<th>Locale</th>
<th>Mean Post Test score</th>
<th>Critical Ratio</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Based Learning</td>
<td>Rural</td>
<td>11.222</td>
<td>0.327</td>
<td>p&gt;0.05</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>11.055</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphic Organizer</td>
<td>Rural</td>
<td>11.480</td>
<td>0.364</td>
<td>p&gt;0.05</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>11.290</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table 6.3 clearly expressed that Mean Post test scores of Rural students experiment with Problem Based Learning Strategy were equally performed with their respective Urban counterparts on Academic Achievement. The same results revealed in the case of Graphic Organizer also, it shows that both Rural and Urban students are equally competent with regard to their Academic Achievement.

While considering the first Experimental Group which was exposed to the Problem Based Learning Strategy, it is noted that, the Mean Post test score of the Rural students (M= 11.222) is more or less similar to the Mean Post test score of the Urban students of the same group (M=11.055), and the critical ratio CR=0.327; which is not significant at the 0.05 (p>0.05) level of significance (vide Table 5.25).
Likewise, the Mean Post test scores of the Rural and Urban students interacted with Graphic Organizer Experimental Group also reveals no significant difference between their academic performances. The Rural students belong to the Graphic Organizer group got a mean Post test score of 11.480 and the Urban students belongs to the same group got the mean Post test score as 11.290. Their critical ratio CR is 0.364; those indicated no significant difference between Rural and Urban students at 0.05 level of significance (p>0.05) proved the equal advantages of Rural and Urban students towards Academic Achievement.

From the above research findings, it can be conclusively stated that the select Problem Based Learning Strategy and Graphic Organizer Strategy is equally benefited to both Rural and Urban groups. Therefore the set hypothesis 9 “There is no significant difference in the mean scores of Rural and Urban students with respect to Academic Achievement when exposed to the select strategies” in this context is accepted.

**Hypothesis 10**  
There is no significant difference in the mean scores of Rural and Urban students with respect to Vocational Competency when exposed to the select strategies.

The analysis of test results that focused on the role of ‘Locale’ of commerce students in their Vocational Competency disclose the following findings which has been highlighted in a table format:
Table 6.4

Summary of the Results of the Vocational Competency of Commerce Students Classified on the basis of ‘Locale’ Difference

<table>
<thead>
<tr>
<th>Group</th>
<th>Locale</th>
<th>Mean Post Test score</th>
<th>Critical Ratio</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Based Learning</td>
<td>Rural</td>
<td>12.037</td>
<td>4.328</td>
<td>p&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>15.582</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphic Organizer</td>
<td>Rural</td>
<td>9.370</td>
<td>3.096</td>
<td>p&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>11.241</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table 6.4 clearly viewed that Mean Post test scores of Urban students experiment with Problem Based Learning Strategy and also Graphic Organizer Strategy were significantly higher than their respective Rural strata with regard to Vocational Competency.

While considering the first Experimental Group which was exposed to the Problem Based Learning Strategy, it is noted that, the Mean Post test score of the Urban (M=15.582) is greater than the Mean Post test score of the Rural students of the same group (M=12.037), and the critical ratio (CR=4.328); which is significant at the 0.01 of significance (p<0.01) (vide Table 5.27).

Likewise, the Mean Post test scores of the Urban students interacted in the Graphic Organizer Strategy revealed significant difference between their corresponding Rural counterparts towards Vocational Competency. The Urban groups belongs to the Graphic Organizer group got a mean Post test score of
11.241 and the Rural group belongs to the same group got the Mean Post test score as 9.370. Their critical ratio CR is 3.096; p<0.01 indicated significant difference between Urban and Rural students at 0.01 level of significance proved that Urban students got more success than their Rural equivalents with regard to Vocational Competency when exposed through Graphic Organizer as instructional strategy.

From the above research findings, it can be summarized that the select Problem Based Learning Strategy and Graphic Organizer Strategy is highly benefited to Urban students and than their Rural matching parts. Therefore the set hypothesis 10 “There is no significant difference in the mean scores of Rural and Urban students with respect to Vocational Competency when exposed to the select strategies” in this context is rejected.

6.5 IMPLICATIONS

The findings of the present study have the following implications:

1. A successful instructional strategy based on the stipulated self directed paradigm endow the establishment and orientation of practitioners with a deep perceptive of their subjects and present a strengthened pedagogical stand stimulate for executing them effectively in the learning space by realizing the dimensionalities of curriculum transaction. This will fortify the managerial
and procedural scaffolds and initiate the development of professional excellence at all facets of instructive process.

2. Prevailing modalities of curriculum transaction in commerce education if blended with the developed instructional strategies prompt students to systematic and active involvement in solving authentic or real world problems. Commerce is a discipline structured with the bridging and interlocking of concepts, ideas and principles that demands instructional strategies aimed to concentrate on conceptual learning. The findings of the study revealed that in order to create a learning environment under this perspective, practitioners and policy makers must identify and develop content structure and instructional strategies which is sufficient to attain the core outcome of commerce education.

3. The experimental investigation of Problem Based Learning Strategy reflect that opening with a problematic issue provides students with a well-built grounds that brainstorm the degree of composition in a problem, the dimensions of problem scenario, the assortment of resource accessed, the concepts and skills are expected to address and the level of complexity within the problem that capitalizing students’ insights and thought processing. By equipping the students under this perspective should definitely create a framework to make a strong knowledge base for processing information that facilitates professional improvement and for promoting intellectual initiatives for career advancement.
4. The study examines the effect of Problem Based Learning Strategy on constructivist outline that drives the enrichment of cognitive strengthening and task oriented expertise are distributed across individuals working in a real life context. In this aspect, practitioners who engaged in Problem Based Learning Strategy need to understand the ways in which instructional processing can be carried out to estimate the learners’ capacity to engage in the frames of problem solving sequence. By considering these aspects on experiential space, the practitioners create an interactive environment of seeking information in order to construct viable and innovative solutions to tackle issues of commercial problems through which the learning process become more enjoyable, appealing and rewarding one.

5. Graphic Organizer Strategy inspired the students by structuring mental scaffolds that prepare them for elevating professional capability. The present investigation makes an eye opener to practice vividness to the spectrum of thinking process with the support of varied styles of Graphic Organizers that surely mould the competitive generation with an option for creative analysis of ideas, issues, themes and problems that persuade their insights which stimulate reflective actions and constructive judgments. To bridge Graphic Organizer Strategy in pedagogical paradigms, the unique architectural modifiability of this strategy expedite one’s thinking styles by augmenting research infrastructure to opt appropriate career stance and take pertinent decision making by enter into right position.
6. The present investigation involved through the effect of Graphic Organizer as instructional strategy enhancing critical and creative thinking skills among students resulting improvement in their vocational competencies. In order to continues this traits in their professional field and the teachers regularly promoting the use of Graphic Organizer in their learning circle that begin to think the configures and structures; integrate instructional components systematically which will increase their ability to visualize, remember, arrange, and make meaningful information and ideas. This strategy can process the deliberations individually and share them with the group by organizing; analyzing and interpreting data that enable them to generate a new internalization which will facilitate a research aptitude among the future world.

7. This inquiry viewed as an important determinant of extracting learner’s academic potentials by control over their own cognition, motivation and behaviour in order to make their learning an exciting one. These select strategies reflects the quantitative and qualitative aspects of instructional processes that students properly use the frequency and skills towards the utilization of the strategies prompts the mode of their cognitive styles and stimulate their whole brain activities. Hence, the teachers, parents, school administrators and counsellors could be made aware of the significance of these strategies towards their students/ clients and its practicing modes which would lead to self-initiated effort of learning. Parents can help their wards in
the successful accomplishment of the learning task and could also be trained to provide constructive feedback to their child who in turn promotes self reflection, corrections and take future actions.

8. The developed strategies provide preference to the practitioners and teachers to implement and carry out it with their own visions, flexibility, additions and modifications that guide them to direct the learners to focus on goal setting, knowledge production and skills attainment. It could also prepared the teachers to offer feedback mechanism and student support systems that should help the learners to understand why, when, and how often to adopt and implement these strategies effectively and systematically.

9. These learner centered instructional strategies provide individual autonomy, initiates collaborative learning, encourage students to bring social experiences and link with the concepts and ideas related the content. Both strategies are sufficient to strengthen dialectical thinking and promote dialogical approach along with acquisition of process skills and contextual competencies. It helps to nurture social and emotional skills of learners which help them to solve real life problem and to develop life coping skills.

10. The quantitative and qualitative assessment tools allow students to estimate the amount of their higher order thinking skills attained towards the ongoing instructional process and provide opportunity to portray their creativity and exhibit their individuality. Participatory process and activity methods are unique features of these strategies and can promote the learner’s team spirit,
co-operation, group accomplishment, individual responsibility and fellow feelings.

11. The curriculum planners and policy makers must take initiatives to make use of these strategies adequately and follow the findings and recommendations to enhance the status of curriculum transaction strands of commerce education in the prevailing higher secondary system and surely generate a competitive and productive young world.

The result of this investigation may assure the need to conscientize practitioners and prospective teachers in commerce at higher secondary level to integrate the spirit of professional practice in addition to promote academic excellence with the interaction effect of Problem Based Learning and Graphic Organizer Strategy.

6.6 LIMITATIONS OF THE STUDY

The study has certain limitations that need to be taken into account. First, the validity and reliability of the study are limited by the sample of higher secondary commerce students from eight schools coming under three revenue districts of Kerala. Second, the stratification based on Gender and Locale of Institution is only taking into consider. Third, the researcher has focused only on two strategies for transacting curriculum in commerce at the level of higher secondary education thereby enhancing Academic Achievement and promoting Vocational Competencies.
Despite the aforementioned limitations, the study has great implications in a wider context as mentioned in an earlier section and also points towards the scope for further research. Though not a universal remedy for resolving all the constraints experienced by stakeholders in transacting commerce curriculum effectively, the select strategies can act as intellectual scaffolds to build mental models, develop instruments for dealing with emerge during instructional processing, and assist learners to extent leaning in meta cognitive strands.

### 6.7 SUGGESTIONS FOR FURTHER RESEARCH

An exhaustive examination of the research done in the areas that come under the jurisdiction of the study points towards the pertinent need for a wide array of auxiliary investigation in the select dimensions of both strategies. A few of the relevant areas are cited below. They are:

- An investigation on the effect of certain curriculum transaction strategies for promoting reflective practices among commerce students at higher secondary level.
- Effectiveness of Problem Based Learning Strategy for enhancing life skills among higher secondary students.
- Developing a blended approach with Problem Based Learning Strategy for improving academic excellence among secondary school students.
- Effect of technology enabled instructional strategies for enhancing vocational orientation among undergraduate students.
Developing instructional designs based on the select strategies to foster meta cognition among higher secondary students.

Augmenting varied learning styles through the interactive effect of Problem Based Learning.

Comparative analysis on the effectiveness of Problem Based Learning and Brain based learning on reflective learning.

Developing Graphic Organizer based instructional strategy for the academic achievement of differently able students.

A SWOT analysis of present educational system through instructional designs of Problem Based Learning.

Develop certain intervention packages based on Graphic Organizer for slow learners at primary level.

Develop certain curriculum transaction models for the up gradation of performance task among learners at higher secondary level.

Construct and validate a self learning package based on Graphic Organizer for secondary school students for promoting vocational orientation.

Effectiveness of Problem Based Learning for developing entrepreneurial skills among commerce student at higher secondary level.

Prepare an instructional module based on the select strategies for extracting the outcome on vocational education.
Summary and conclusion

- Develop an instructional design based on Problem Based Learning for teaching computerized accounting at higher secondary level.
- Prepare a remedial programme based on Graphic Organizer for rectifying difficulties in solving accountancy problems in higher secondary level.
- Effectiveness of Graphic Organizer on enhancing critical thinking among secondary school students.
- Effectiveness of Problem Based Learning on augmenting multiple intelligence among higher secondary school students.
- Construct a training programme for practitioners in commerce based on Problem Based Learning for professional excellence at graduate level.
- Preparation and validation of certain instructional materials based on Graphic Organizer of primary school students for developing creative thinking.

An association of focusing research through these suggestive dimensions can enrich the level of memory, thinking skills, critical and creative thinking, value inculcation, decision making power, problem solving skills etc. among learners of Commerce in general and also in global perspective.