CHAPTER VI

***

*** CONCLUSIONS, GENERALIZATIONS AND SUGGESTIONS
In the preceding chapter the results of the experiment were evaluated with the help of statistical techniques deemed appropriate for the data. The analyses and interpretations as attempted there warrant the following generalizations and conclusions with reference to the hypotheses examined in this study.

The findings and conclusions regarding the main effects and their interaction effects are as follows:

The F-ratios for the comparison of linear and mathematical styles of programming in the teaching of information (I), skill (S), information and skill (I + S) content are 0.3208, 0.3156 and 0.00427 respectively. These F-ratios are statistically non-significant. Thus we conclude that there is no difference between linear and mathematical styles of programming in the teaching of information, skill and information and skill content pooled together. Therefore, the hypothesis stating significantly better results through mathematical style of programming than through linear style of programming at all the three levels of content stands rejected.
The F-ratios for linear programme in the teaching of I, S and (I+S) are not statistically significant. Therefore, we find that there are no sex differences in the pupil performance with regard to the teaching of I, S and I+S content through linear style of programming.

The F-ratios for the variable of sex in the content areas pertaining to I and (I+S) which are zero and 2.508 respectively, are also not significant statistically in the mathematical paradigm. Thus, the boys perform equally well with the girls in the content areas under reference. However, the value of F-ratio (5.1569) in the teaching of skill exhibits significant sex difference at .05 level of confidence. The comparison of means of girls (M_g = 75.1) and boys (M_b = 71.85) exhibits superior performance of girls to that of boys in the skill content.

The value of F-ratios for the variable of sex in the content areas pertaining to I, S and (I + S) across the linear and mathematical programmes are .7213, 5.2693 and 4.3603 respectively. This value of F is statistically non-significant for the I content whereas the values of F for S and (I+S) content are significant at .05 level of confidence. Thus, the boys and girls fair alike in the content field of information and they exhibit their differences in the main fields of Skill, and Information and Skill combined together. On further analysis the mean performance of girls in S content (M_g = 74.4) and (I+S) content (M_g = 128.725) is higher than
the mean performance of boys with the mean scores of 71.95 and 125.525 in S and (I+S) content fields respectively.

On the variable of sex, we, therefore, conclude that the performance of girls is better in the following areas:

- In the main field of skill content in mathetical programme.
- Across the two programme paradigms (Linear and Mathetics) in the content areas of S and (I+S).

The hypothesis of the study, which states that girls will perform better in skill content whereas boys will fair better in information content, is partially confirmed. The part of the hypothesis pertaining to the superiority of boys over girls in the information content is rejected and a part of it, which pertains to the superiority of girls over boys in skill content, is retained.

The interaction effects of styles and Sex (SxS') as indicated by the F-values for I(0.7225), S(0.5622) and I+S(0.002137) are not statistically significant. It implies that the variable of sex does not interact with the variable of style. Therefore, the hypothesis of the study stating that the variables of sex and style will interact with each other to yield significant results at the three levels of content is rejected.
6.2. GENERALIZATIONS AND DISCUSSION OF RESULTS

The generalizations which might be formulated on the basis of evidence obtainable in this study are given below:

- There is no superiority of either of the linear or mathetics programs over each other in the teaching of content at three levels. This is in contradiction with the results given by Gilbert (1962), where he compared the mathetical exercises with the best available programmed material and found that these programmes required twice to ten times as much learning time, five to thirty times as many exercises to cover the same subject matter.

The findings of Davies (1972) stating that retrogressive chaining places smaller strains on the short-term memory than does progressive chaining are also not borne out by the results of the present investigation. Also Davies' (1972) assertion about the comparative effectiveness of retrogressive chaining over progressive chaining has not been confirmed. The plausible explanation for the departure of results may be attributed to the fact that time as a variable of study was not taken into account, and the students took their own time to grasp each and every concept thoroughly so as to warrant no significant differences on performance because of the difference in the styles of teaching.
The performance of girls is better in mathematics programme in the teaching of skill content. Girls also surpassed boys in their performance across the programming styles in the teaching of S and I+S content.

The results of our study are in contradiction with the ones given by Hicks & Hayes (1938) for the subject preference of boys and girls in a Junior High School, Book (1922), Colvin and MacPhail (1924), Livesay (1942) in comparing the subject preferences at the high school level. The boys named Science, Mathematics and History or Social Studies more frequently than did girls in all these studies.

The results are also not in keeping with the findings given by Terman and Tyler (1954) stating that boys outsored girls in Arithmetical reasoning, History, Geography and Science. However, the results of our study get support from their findings that the girls typically excelled in English, spellings, writing and art. Diagrammatic skill taken up by the investigator may be categorised in the domain of art, for which the findings of Terman and Tyler (1954) are valid.

The present study is fully supported by the results given by Anastasi (1958) when she gave superior ability of the girls and more docility of the girls as the reasons for superior school performance of girls.
The results are also supported by the studies of Clark (1959). The sample for his studies was drawn from the 3rd, 5th and 8th grade students of California University. Girls outscored boys in spellings in all the three grades. The performance of girls was better in mechanics of English at the 5th and 8th grade levels and in Arithmetical fundamentals at the 8th grade level.

Sharma (1975) and Sethi (1975) established the superiority of girls over boys in the areas of Hindi morphology and English spellings respectively.

Saini (1978) found out no significant differences in boys and girls in the learning of sociological concepts. The findings of the investigation in hand also do not give overall significant sex differences. However, the girls have shown their superiority in S content in mathetics and S and I+S content across the two styles.

There are no significant interaction effects between styles of programming and sex. This gets the support from the findings of Sharma (1975) and Saini (1978) wherein their results had also not shown significant interaction between the sequencing modes and sex in the former study and the modes of and sex in the former study and the modes of teaching and sex in the latter study.

6.3. LIMITATIONS OF THE FINDINGS

The applicability of the generalization of this study will be determined by the similarity of the conditions between the populations.
Although the conclusions are based on empirical data, yet the reliability of the data is affected by the motivation of the experimental subjects during the experiment, the difference of experimental conditions during different cycles of the experiment and other extraneous factors beyond the control of the experimenter. The findings can better be interpreted conservatively by taking into account the sampling errors according to the laws of probability.

6.4 SUGGESTIONS FOR FURTHER POSSIBILITIES

With regard to further possibilities of research in this area, some suggestions may be given as follows:

- A study may be conducted to compare the relative affectiveness of linear and mathematical styles of programming in different content areas of various subjects.

- An experimental study may be taken up to find out the relative effectiveness of I, S, and I+S programmes in linear, branching, mathematical and other mixed models of programming.

- A study may be conducted on sample of different population (Rural & Urban) and in different classes in the schools and colleges.

- The present study may be replicated in combination with one or more variables like intelligence, motivation and anxiety.