

Development of a Self-Study Booklet for the Learning of Geography at the Secondary School Level and a Study of Its Effectiveness.

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Abstract- The present study aimed to develop a self-learning booklet for Geography at the secondary school level and examine its effectiveness in improving students' academic achievement. The booklet was developed for the Geography unit "Distribution Maps, Internal Migration, and Urbanization" using a systematic instructional development process comprising four stages: defining objectives and planning, development of the prototype, evaluation through expert review and pilot testing, and revision followed by finalization. A comprehensive review of related literature, curriculum analysis, and expert guidance were utilized to ensure the content validity and pedagogical appropriateness of the booklet. A pilot study involving 50 secondary school students was conducted to identify necessary modifications before the final version was prepared. The effectiveness of the developed self-learning booklet was evaluated using an experimental research design with control and experimental groups. The experimental group received instruction through the self-learning booklet, whereas the control group was taught using conventional classroom methods. After a one-month intervention period, students' achievement was measured through a post-test. Statistical analysis using the independent samples t-test revealed a calculated t-value of 8.11, which exceeded the critical value of 1.98 at the 0.05 level of significance (df = 98). The null hypothesis was therefore rejected, indicating a statistically significant improvement in the achievement of students who used the self-learning booklet. The findings demonstrate that the developed booklet is an effective instructional resource that promotes self-directed learning and enhances academic performance in Geography among secondary school students. The study recommends the integration of self-learning booklets into Geography teaching to support learner autonomy and improve educational outcomes.

Keywords: Self-Learning Booklet, Geography Education, Secondary School Students, Self-Directed Learning, Instructional Material Development, Academic Achievement, Experimental Research.

I. INTRODUCTION

Education is a continuous developmental process that aims to foster the holistic growth of learners through meaningful learning experiences. Among the school subjects, Geography occupies a unique position as it enables students to understand the dynamic relationships between humans and their physical and social environments. However, many geographical concepts, such as map interpretation, migration, urbanization, and spatial relationships, are abstract in nature and often pose learning difficulties for secondary school students. Consequently, there is a growing need for learner-centered instructional materials that promote conceptual understanding and independent learning. Self-learning has emerged as an effective educational approach that encourages students to learn at their own pace, develop critical thinking, and assumes responsibility for their own learning. The National Education Policy (NEP) 2020 also advocates student-centered, experiential, and self-directed learning supported by diverse learning resources and digital technologies. Guided by the principles of constructivist learning proposed by Piaget, Bruner, and Vygotsky, self-learning materials can actively engage students in knowledge construction rather than passive information acquisition. In this context, the present study developed a self-learning booklet for the secondary school Geography unit "Distribution Maps, Internal Migration, and Urbanization." The booklet incorporates maps, illustrations, learning activities, self-assessment exercises, and QR code-enabled digital resources to facilitate independent and meaningful learning. Its effectiveness was examined through an experimental research design to determine its impact on students' academic achievement. The

findings of this study are expected to contribute to the development of innovative instructional materials and promote self-directed learning in Geography education at the secondary school level.

IV. RESEARCH PROBLEM STATEMENT:

The research problem for the present study is stated as follows:

"To develop a self-study booklet for the study of Geography for secondary-level students and to study its effectiveness."

II. RESEARCH OBJECTIVES

1. To identify the Geography units from the secondary-level textbook for the development of the self-study booklet.
2. To develop a self-study booklet for the study of Geography for secondary-level students.
3. To study the effectiveness of the developed self-study booklet for the study of Geography among secondary-level students.

III. NEED FOR THE RESEARCH

1. Students often face difficulties in understanding abstract concepts in Geography. The present study addresses this issue by incorporating real-life examples, learning experiences, and reinforcement activities to facilitate the understanding of abstract geographical concepts. Therefore, this research is necessary.
2. There is a need to provide students with high-quality learning materials that enable self-study at their own pace and convenience. This study aims to develop effective supplementary learning material beyond the prescribed textbook, making the research essential.
3. Students tend to rely heavily on teachers while studying Geography. This research is necessary to reduce students' dependence on teachers by providing them with an independent, comprehensive self-study resource for learning Geography beyond classroom guidance.
4. Experience-based, activity-oriented, and learner-friendly instructional materials that help students achieve a thorough understanding of geographical

concepts are not readily available. Therefore, the present research is needed to address this gap.

5. At the secondary level, limited instructional time is allocated to the teaching of Geography each week. Due to fewer teaching periods, interruptions in instruction often lead to students forgetting previously learned content, thereby reducing the effectiveness of learning. This research seeks to overcome these limitations.
6. Every student has a unique learning pace and learning style. A well-developed self-study booklet can address students' individual remedial and enrichment learning needs and serve as an effective guide for personalized learning.
7. A self-study booklet can function as a valuable supplementary learning resource by enabling advanced learners to engage in in-depth study while allowing slow learners to revisit and understand fundamental concepts at their own pace. Consequently, this research is necessary to help reduce educational disparities among learners.
8. Many students study Geography primarily for examination purposes, which prevents them from achieving the broader educational objectives of the subject, such as developing environmental awareness and acquiring map-reading skills. Therefore, the present research is necessary to promote meaningful and comprehensive learning of Geography.

IV. SIGNIFICANCE OF THE STUDY

1. Since the self-study booklet incorporates example-based explanations, reinforcement activities, and experiential learning tasks, it enables secondary-level students to relate geographical concepts to their daily experiences, thereby facilitating clearer understanding and better conceptual comprehension.
2. The study is significant as it addresses students' difficulties in understanding abstract geographical concepts by providing concrete, activity-based, and experiential self-learning materials.
3. The present research supplements the prescribed textbook by providing students with independent, structured, and learner-friendly self-study

material, thereby overcoming the limitations of textbook-based learning.

4. The study is important because it reduces students' dependence on teacher-centred instruction by providing self-directed, guided, and self-paced learning material for the study of Geography.
5. Meaningful learning of Geography remains incomplete without experiential learning resources. Considering the existing limitations in educational resources, an activity-oriented self-study booklet serves as an important tool for enhancing the quality of learning.
6. At the secondary level, Geography is taught as a component of Social Science, resulting in limited instructional time. Consequently, interruptions in teaching often lead to forgetting of the subject matter. The self-study booklet provides continuous support for regular revision and reinforcement of learning.
7. Since every student has a unique learning style and pace, the developed self-study booklet caters to both remedial and enrichment needs, ensuring inclusive learning opportunities for all students.
8. The self-study booklet provides equal opportunities for both high-achieving students, who wish to engage in advanced learning, and slow learners, who need to revisit and reinforce concepts. Thus, it helps reduce disparities in learning achievement.
9. As examination-oriented learning often restricts students to studying Geography only for examinations, the self-study booklet promotes the development of essential geographical skills such as map reading, environmental awareness, and spatial thinking, thereby contributing to the achievement of the objectives of Geography education.
10. By integrating geography-related technological resources into the self-study booklet, the study provides students with a modern and technology-enabled learning experience, making Geography learning more effective and engaging.

V. HYPOTHESES

1. Research Hypothesis:

The use of the developed self-study booklet for the study of Geography enhances the academic achievement of secondary-level students.

2. Null Hypothesis:

There is no significant relationship between the use of the developed self-study booklet for the study of Geography and the academic achievement of secondary-level students.

VI. SCOPE OF THE PRESENT STUDY

1. The present study is confined to New English School, Khandala.
2. The present study considers the students of Grade IX of New English School, Khandala.
3. The present study is related to the Geography subject of Grade IX in Marathi-medium secondary schools.
4. The present study focuses on the content of the units Distribution Maps, Internal Movements, and Urbanization included in the developed Geography self-study booklet.
5. The present study is concerned with the development of a self-study booklet for the study of Geography for secondary school students and the study of its effectiveness.

VII. LIMITATIONS OF THE PRESENT STUDY

1. The present study is limited to New English School, Khandala only.
2. The present study is limited to the Geography subject of Grade IX (Secondary Level).
3. The present study is limited to Grade IX students of the Marathi-medium.
4. The present study considers only the following Geography units for the development of the self-study booklet: Distribution Maps, Internal Movements, and Urbanization.
5. The present study is limited to the academic year 2025–2026.

VIII. RESEARCH METHODOLOGY

In the present study, the researcher used the ‘Tool Development Research Method’ to develop a self-study booklet for learning Geography for secondary-level students. Further, to study the effectiveness of the developed self-study booklet, the researcher adopted the Experimental Research Method.

IX. SAMPLE

In the present study, Objective No.3 focused on examining the effectiveness of the developed self-study booklet. For this purpose, the researcher adopted a two-group experimental design. Since this design was employed, a sample representing all the characteristics of the two-group design was selected using the probability-based random sampling method, specifically the lottery method. Accordingly, the researcher selected 50 students of Grade IX studying during the academic year 2025–2026 from

New English School, Khandala as the experimental group, and another 50 students from the same school as the control group.

X. TOOL FOR DATA COLLECTION

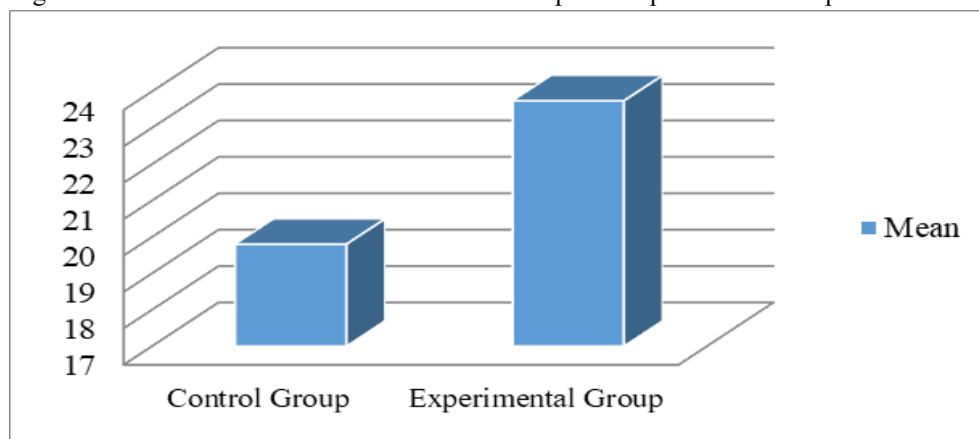
The present study used an achievement test (post-test) as the tool for data collection. It was administered to collect data on students' learning achievement and to evaluate the effectiveness of the developed self-study booklet.

XI. ANALYSIS AND INTERPRETATION OF THE COLLECTED DATA

Analysis of the Post-Test Achievement Scores of the Experimental and Control Groups of Class IX Students.

Study Group	No. of Students (N)	Mean	SD σ	Obtained 't' Value	Level of Significance (α)	df (df = $N_1 + N_2 - 2$)	Table t-Value	Significant / Not Significant
Control Group	50	19.80	2.36	8.11	0.05	98	1.98	Significant
Experimental Group	50	23.74	2.49					

Graph Showing the Mean Post-Test Scores of the Control Group and Experimental Group of Class IX



XII. OBSERVATION

The above data indicate that the post-test mean score of the control group was 19.80 with a standard

deviation of 2.36, whereas the post-test mean score of the experimental group was 23.74 with a standard deviation of 2.49. The standard error of the difference between the two means was 0.485. Based on these values, the calculated t-value was 8.11. For 98 degrees of freedom ($df = 98$), the critical t-value at the 0.05 level of significance is 1.98, and at the 0.01 level of significance it is 2.63. The obtained t-value (8.11) is greater than both the critical values.

XIII. INTERPRETATION

For 98 degrees of freedom ($df = 98$), the critical t-value at the 0.05 level of significance is 1.98. Since the obtained t-value (8.11) is greater than the critical value, the difference between the mean scores of the control and experimental groups is statistically significant.

Therefore, the null hypothesis, "There is no significant relationship between the learning achieved by secondary-level students through the developed self-study booklet in Geography and their academic achievement," is rejected.

Accordingly, the research hypothesis, "The academic achievement of secondary-level students improves when they study Geography using the developed self-study booklet," is accepted.

The findings clearly indicate that the self-study booklet in Geography developed by the researcher has a positive and significant effect on the academic achievement of secondary-level students. Thus, the use of the self-study booklet has contributed positively to enhancing students' learning achievement.

XIV. FINDINGS

1. The Geography units selected for the development of the self-study booklet were Distribution Maps, Internal Movements, and Urbanization.
2. The self-study booklet was developed by adopting the four stages Define, Develop, Evaluate, and Revise proposed by Gaya, T. K. (1988) in Development and Evaluation of Self-Learning Modules.
3. The findings revealed that the use of the self-study booklet for learning Geography significantly improved the academic achievement of Class IX students.

XV. CONCLUSION

The present study focused on the development of a self-study booklet for Geography at the secondary school level and examined its effectiveness in enhancing students' academic achievement. The booklet was designed for selected Grade IX Geography units using a systematic instructional development process. It incorporated learner-centred features such as maps, illustrations, activities, self-assessment exercises, and QR code-enabled digital resources. The content was validated through expert review and pilot testing before finalization. An experimental research design involving control and experimental groups was adopted to evaluate its effectiveness. Fifty students were included in each group, with the experimental group learning through the self-study booklet and the control group receiving conventional instruction. The post-test results revealed a significantly higher mean score for the experimental group (23.74) compared to the control group (19.80). The calculated t-value (8.11) was higher than the critical value (1.98), indicating a statistically significant difference. The findings demonstrate that the developed self-study booklet effectively promotes self-directed learning and improves academic achievement in Geography. The study recommends integrating self-study booklets into secondary school Geography teaching to support learner autonomy and improve learning outcomes.

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