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Enhancing Student-Teachers' Map Reading Skills Through Training Programme

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Abstract

The study was designed as a single group experimental design aimed at studying the effectiveness of training programme in enhancing map reading skills of elementary level student-teachers. 32 student-teachers were selected as sample using purposive sampling technique. The self-developed test was used to assess the map reading skills of the student-teachers. The investigator also prepared a module to implement the training programme on map reading skills for the student-teachers. Both map reading skills test and module were validated by the subject experts. For the map reading skills test, the reliability was estimated. After developing the research tool and module, the training programme on map reading skills was imparted to the student-teachers using the prepared module. The map reading skills test was administered to the student-teachers at three different phases as pre-test, post-test and retention-test. The data were analysed using paired-samples 't' - test with the help of SPSS. The results indicated that the imparted training programme using the developed module was effective in improving map reading skills of the student-teachers.

Keywords: Map Reading skills, Geography, Training Programme, Student-teachers.

Introduction

In India, Social Science is one of the compulsory subjects taught at school level where it has been a part of 'Environmental Studies' before the upper primary stage and emerge as a separate subject at the upper primary stage. The social sciences encompass diverse concerns of society and

include a wide range of content drawn from the disciplines of history, geography, political science, economics, and sociology (Position Paper of National Focus Group on Teaching of Social Sciences, 2005). Geography is an integral component of Social Science and introduced as one of the discipline under the umbrella of Social Sciences.

Geography is an essential field to every human being because it consists of knowledge of the world around us. Knowledge of geography and the ability to think geographically aids the individual in understanding and interpreting the realities of the world. Geography deals with many components and among the different components of geography, map work stands out very significantly. Hartshorne (1939) states that the use of maps in geographic work is so important that it seems fair to suggest that "if the problem cannot be studied fundamentally by maps, then it is questionable whether or not it is within the field of geography". According to Haggett (1990), "geography is the art of the mappable". Ofomata (2006) opines that "maps aid the achievement of objectives of geography as the map is the distinctive tool of the geographer". The well-known geographers often define geography around maps and map use.

A map is considered to be a drawing to a scale of the whole or a part of the surface of the earth on a plane surface; it is a manually or mechanically drawn picture of the earth showing the location and distribution of various natural and cultural phenomena. The most universal use of maps is for locating places and things. A well-prepared map is worth hundreds of pages of a book in many respects. Maps are regarded as indispensable aid in the teaching and learning of Social Sciences, particularly Geography.

Though map reading is primarily taught in Geography, but map is a tool which is used by other disciplines also. Ample maps have been used in textbooks, but unless the students know how to read a map, they will not be able to understand what is being taught to them. Moreover, lifelong learners will come across variety of maps in their daily life while reading books, newspaper, magazines, watching television or visiting any new place etc. The use of maps also facilitates the understanding of Global Positioning System (GPS) and Geographic Information System (GIS) which are the modern navigational technologies that appear in our everyday life (Wigglesworth, 2003). Unfortunately, map work has posed a great threat to effective geography teaching in elementary and secondary schools and weakened the morale and enthusiasm of students of Geography.

NEED FOR THE STUDY

Maps are very much important in students' daily life for different purposes and at their different life stages, whether it is in tourism, for research, in a planning, on television or as part of a job. Maps are important sources of geographical knowledge. Unfortunately, in India, people do not use maps efficiently. This is because of the teachers graduated without gaining map perception and map reading skills. Consequently, every school teacher encounters methodical problems when using maps to try and impart geographical knowledge to their students.

Maps, being part of teaching-learning in Geography at all stages, it is important for elementary level student-teachers have a clear understanding of the basics of maps. Geography being one of the divisions in Social Science is taught by secondary grade teachers at the elementary level and by trained graduate teachers at secondary level. The elementary level student-teachers studying Diploma in Elementary Education in the elementary teacher education institutions are going to work as a secondary grade teachers in elementary schools after completion of their teacher education programme.

A secondary grade teacher in an elementary school has to teach all the subjects including Social Science. The investigator taught Social Science to elementary level student-teachers for four years at the District Institute of Education and Training, Uthamapalayam, Theni District in Tamil Nadu. The investigator observed that the student-teachers find geography lessons very difficult to understand, especially the activities related to maps. They do not know even about the latitude and longitude. It is because of the student-teachers were not taught properly about the maps during their elementary and secondary school education.

The map reading skills enhance the ability of the students to understand and explore occurrences related to the spaces around them. It provides students with the knowledge of the places and the socio-economic processes taking place or having taken place at a particular location. Therefore, map reading skill is very important to the students at the elementary school education level. But, most of the elementary school teachers are not equipped to effectively teach map reading skills and basic components of the map. So, it is essential to equip the elementary level student-teachers with map reading skills during their pre-service teacher education programme itself. If we equip them with map reading skills, they will teach the basic concepts of map reading to the students when they got placed in elementary schools.

In this context, the investigator decided to prepare a module on map reading skills and implement a training programme to enhance map reading skills of elementary level student-teachers. The need for a training programme on map reading skills was felt by the investigator on the basis of the review of related literature and observations on the present Geography lessons of the Social Science textbooks at elementary level. Ezeudu & Utazi (2014), based on the findings of their study, states that training programmes will equip the teachers to teach map-related tasks effectively to their students.

PURPOSE OF THE STUDY

The major purpose of the present study was to study the effectiveness of training programme in enhancing map reading skills of elementary level student-teachers before and after implementing the training programme.

HYPOTHESES OF THE STUDY

The following hypotheses were framed for verification**.**

- There is a significant mean score difference in map reading skills of elementary level student-teachers between pre-test and post-test.
- There is a significant mean score difference in map reading skills of elementary level student-teachers between post-test and retention-test.
- There is a significant mean score difference in map reading skills of elementary level student-teachers between pre-test and retention-test.

METHODOLOGY

Considering the purpose and nature of the study, a single group pre-test and post-test experimental design was followed.

Variables of the Study

In the present study, the training programme imparted to elementary level student-teachers with the help of prepared module on map reading skills is considered as independent variable whereas the student-teachers' achievement in map reading skills is considered as dependent variable.

Sample

The present study was conducted with 32 student-teachers of first-year Diploma in Elementary Education at the District Institute of Education and Training, Perundurai in Erode district, Tamil Nadu. They were selected using purposive sampling technique.

Research Instrument

The investigator developed 'Map Reading Skills Test' for the selected map reading skills namely, directions, grid reference, scale, symbols, colours, distribution, and inference. The test contains 15 test items for a total of 60 marks. The test contains the items ranging from one mark to five marks. The content validity of the test was ensured through expert review. Further, a pilot study was conducted with 16 student-teachers. The expert review and pilot study provided a scope for slight modification of the test. The test had reliability coefficient of 0.96 which is significant at 0.01 level of significance, when tested for inter-rater reliability.

Preparation of Module on Map Reading Skills

The investigator prepared a module on map reading skills which is in the form of 'teacher support material'. The skills that are required to read the maps given in the Geography lessons of the Social Science textbooks at elementary level formed the basis for the selection of map reading skills. In addition, the list of 17 essential skills required for map reading prepared by Wilson (1980) also consulted for the selection of map reading skills. Considering the purpose of the present study, only seven skills were considered as essential for inclusion in the training module namely, directions, grid reference, scale, symbols, colours, distribution, and inference. It is not possible to make use of the given map meaningfully without acquisition of these skills.

After finalisation of map reading skills, they were sequenced and task analysis was done by identifying learning objectives and writing activities for each of them. The initial draft of the training module was edited and tried on a small group of student-teachers. It was also referred to subject experts. The final draft of the training module was prepared by incorporating the changes suggested by the experts and was intended to overcome the difficulties faced by the student-teachers during the field practice. The final draft of the training module on map reading skills was subjected to validation through an experiment which was a major objective of the present study.

Experimentation Procedure

The study was conducted in five phases. In the first phase, the module on map reading skills and a test to measure map reading skills of student-teachers were prepared. In the second phase, the developed map reading skills test was administered to the student-teachers as a pre-test. In the third phase, the training programme on map reading skills, as an intervention

strategy, was imparted to the student-teachers using the prepared module for three consecutive days. In the fourth phase, map reading skills test was again administered to the student-teachers as a post-test. After the lapse of 30 days, in the fifth phase, the map reading skills test was once again administered to the student-teachers as a retention-test.

RESULTS AND DISCUSSION

This section describes the analysis, description and interpretation of data on establishing the effectiveness of training programme on map reading skills of elementary level student-teachers through pre-test, post-test, and retention-test scores. These scores were obtained through administration of a test on map reading skills which was analysed and described by using inferential statistics. The data were analysed for the total achievement scores employing the paired-samples 't' - test using SPSS. The mean scores of pre-test, post-test and retention-test were computed and are presented in the table-1.

Table - 1: Mean, Standard Deviation and 't' values for Pre-test and Post-test, Post-test and Retention-test, and Pre-test and Retention-test Scores of Map Reading Skills

Test Phases	*N*	*M*	Mean Difference	*SD*	*Df*	*t*	Sig. (2-tailed)
Pre-test	32	12.09	33.85	2.81	31	62.36	.000
Post-test		45.94		3.12			
Post-test	32	45.94	4.16	3.12	31	9.30	.000
Retention-test		41.78		3.61			
Pre-test	32	12.09	29.69	2.81	31	39.98	.000
Retention-test		41.78		3.61			

The data presented in the first row of table-1 shows that the Mean post-test score (45.94) is higher than the Mean pre-test score (12.09) with a Mean difference of 33.85. The obtained Mean difference was found to be statistically significant as evident from 't' - value of 62.36 which is computed at 0.01 level of significance. Consequently, the stated hypothesis was accepted. This indicated that the imparted training programme on map reading skills using the developed module was effective in improving elementary level student-teachers' map reading skills.

The data presented in the second row of table-1 shows that the Mean retention-test score (41.78) is lesser than the Mean post-test score (45.94) with a Mean difference of 4.16. The obtained Mean difference was found to be statistically significant as evident from 't' - value of 9.30 which is computed at 0.01 level of significance. Hence, the stated hypothesis was accepted. However, the analysis of the mean scores reveal that the elementary level student-teachers have failed to retain what they had attained through training programme on map reading skills because the retention-test was administered to them after the lapse of 30 days from the date of administration of the post-test. The Decay theory of forgetting suggests that our memories decay or weaken with passage of time.

The data presented in the last row of table-1 shows that the Mean retention-test score (41.78) is higher than the Mean pre-test score (12.09) with a Mean difference of 29.69. The obtained Mean difference was found to be statistically significant as evident from 't' - value of 39.98 which is computed at 0.01 level of significance. So, the stated hypothesis was accepted. This indicated that the imparted training programme on map reading skills using the developed module was effective in improving elementary level student-teachers' map reading skills when comparing the pre-test and retention-test scores.

CONCLUSION

The findings of the present study indicated that the Mean post-test score is higher than the Mean pre-test score with a very high significant difference. This shows that there is a significant gain in the elementary level student-teachers' achievement in map reading skills when taught through a training programme using the developed module. But, in the retention-test phase, the student-teachers were unable to retain their knowledge and skills they had attained during the post-test phase. Besides, a close look at the pre-test and retention-test scores revealed that the map reading skills of the student-teachers improved significantly due to the manipulation of a training programme. Hence, it is safely concluded that the training programme on map reading skills proves useful for the student-teachers in improving their map reading skills.

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