Chapter - I
Introduction
## CHAPTER – I : INTRODUCTION

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1.0 Abstract

This study involves finding the relative status of achievement of Process Skills and Map Skills compared between Secondary School students of Seychelles and Mysore (India), and experimentally study the effects of Inductive Thinking Model of Teaching (by Hilda Taba, 1966) on the development of Competencies – Knowledge and Understandings, Process skills and Map Skills, in the learning of Geography among Secondary students in Seychelles. The purpose of the study was to study and make comparisons between the Secondary schools of Seychelles and Mysore (India) in levels of achievement in Map Skills, and Process Skills. Another aim was to prepare an Instructional Programme using a strategy based on Hilda Taba’s Inductive Model of Teaching to develop expected competencies in Geography among Secondary students at S1 level in Seychelles, and finally compare the effectiveness of teaching through the Instructional Programme in terms of achievement of the selected competencies in Geography among secondary students at S1 level. The methodology of the study is divided into two phases: descriptive and experimental phases. The descriptive phase included survey of achievement levels of Map Skills and Process Skills among 8th Standard students in Mysore and among S1 students in Seychelles, and the experimental phase conducted in Seychelles in two schools using post test-two group design. Some results of the study were that the girls are better than the boys in Seychelles in all the Map Skills and that the students in India are better than Seychelles students in all sections of Process Skills. It was found that the experimental treatment based on Hilda Taba Inductive Thinking Model of teaching is more effective than the conventional treatment in the parallel groups in achievement in Knowledge and Understandings in Geography ‘Part III’ in school 1, school 2 and, school 1 and 2 taken together both before and after adjusting for the covariates namely; Pre-achievement in Knowledge and Understandings in Geography ‘Part III’, and Intelligence. This model of teaching was built into the instructional programme which was activity-based. Hence it is also demonstrated that the instructional programme was effective. Further, it is demonstrated that the developed programme is feasible from the following points of view – one, it can be fitted into the existing Geography curriculum, and two it is perceived favourable by the students who were exposed to it.
1.1 Introduction

In this modern era, there is increased emphasis on the development of students’ ability to think rather than the teacher getting them to learn the content of subjects taught through mainly rote learning. Today’s curriculum ensures that the teacher is not only exposing the students with information but also structuring the content, organizing the data and sensing the problems. He/she is also organizing activities so that students can in turn process the information more effectively and make better and more rational decisions for higher quality learning. In the view of the teaching of Geography at lower secondary schools, related literature and empirical studies both reveal that there are certain drawbacks of classroom transactions that this process of information processing is not really being exhausted. These drawbacks are visible in Seychelles as well as in Indian schools. However, these problems are to some extent happening in schools in the United States of America, Canada and some areas in the United Kingdom as explained under caption 1.4 of this Chapter.

Kamath (1998), revealed the common drawbacks of classroom transactions in the Indian context, in the teaching of Social studies in general and Geography in particular. These drawbacks include: (i) inadequate acquisition of map skills; (ii) greater stress on rote learning and memorization; (iii) teacher-centred learning; (iv) dull and boring teaching-learning process; and (v) inadequate teacher support materials. In the Seychelles context, certain drawbacks can be observed at Secondary school level of which are: (i) inadequate use of a variety of teaching strategies namely in line with information processing skills; ii) the syllabus is mostly data and knowledge-driven whereby students have to depend on rote learning and memorization; iii) overcrowded classrooms; iv) mostly teacher-centred learning despite the syllabus emphasizing on varying the teaching methods; v) inadequate and out-dated teacher support materials; vi) lack of trained teachers in the field of Geography teaching.

Recognizing the importance of developing the competencies in the learning of Geography at secondary level as well as knowing the several drawbacks that can be remedied such as the improvement of teaching and learning strategies on the part of teachers, there was the need to conduct this study.
In this study the investigator developed an Instructional Programme and validated the same in relation to the existing approach used in teaching Geography at secondary classes. The Instructional Programme was designed using the Inductive Thinking Model of Teaching and learning based on Hilda Taba’s work in 1966. The decision for the investigator to use this model was to help teachers better their teaching and not only providing their students with as much information but getting them to enhance their intellectual ability to process the information into understandings, thus where they can also form generalizations. In other words, teachers will be able to provide the learner with information to get them to think rather than to memorize the facts. Another reason goes to developing the competencies that needs to be developed in learning Geography at lower secondary level and especially the development of Map Skills which is one area that contains the competencies that forms the backbone of Geography teaching. Thus the investigator has attempted to validate a strategy in the teaching of Geography at lower secondary level in Seychelles. This strategy is based on Hilda Taba’s Inductive Thinking Model of Teaching which focuses on fostering process skills as well as understandings. In addition, this strategy attempts to develop competencies in the use of map skills in developing understandings in Geography.

1.2 The Importance of Geography in Secondary School Curriculum

To state briefly, Geography concerns the study of people and places. It involves the study of humans and how they adjust to their environment. Thus, this subject deals with an in-depth study of the way human beings relate to their environment as well as how they make use of it. At school level therefore, students learn about man and his environment of which encompasses a mass of information.

According to Walker (1953, p.3), there are two sets of factors that must be considered when teaching Geography in schools. He discussed that firstly, there are the physical facts of place whereby the fundamentals of position, size and relief conditions of territory and the peculiarities of climate must be reviewed. The second factor is that of man being an element that gives place conditions in Geography real value and interest. This happens when there is an intimate relationship between man, his work and distribution, and such conditions. This aspect has been according to Walker so often neglected in the past, where, especially young students cannot be
expected to show any enthusiasm or interest in isolated details regarding the location or physical structure of features such as plains, mountains and rivers, or generally inadequate statements concerning climatic condition that often confront them in the classroom. With this situation then, since it is apparent that they lack the interest and enthusiasm, it does not mean that the physical aspects of Geography should be ignored nor neglected. Moreover, those physical facts should not be presented as isolated facts, but in relation to human effort and achievement.

Geography as a subject in the school’s curriculum has passed through many phases. In recent years a lot of emphasis has been placed on recognizing it as a separate subject taught in the schools. Modern Geography of today is the result of various stages of development. It is no more confined to cramming of certain things or facts. It forms part of Social Science, which is now heading towards a scientific form. The element of scientific study has taken full control of the study, now considered as a separate science. With increased knowledge about people and their environment, geographers included in the subject; the relationship of man to the climate, relief features, and resources of the world, as well as the facts concerning those things.

In the school curriculum, at Primary level it is usually integrated in the Social Science or Social Studies subject where students are taught the basic knowledge and understanding. As they gain experiences through appreciating the facts of their place, the students also instinctively begin to adjust to them. Those experiences can include changes in the weather conditions in their surroundings where if the rain is falling heavily, they cannot go out to play, etc. Thus the manner in which the students’ own activities are influenced by their conditions, make much of the incidental knowledge acquired truly geographical, though it is not known by that name yet. What the student learn, may at first lack that system and correlation which the more mature mind may think essential in any development; it may be marked by a startling and haphazard variety of which is in his/her own way and in his/her own time and will not fail to be in persistent questioning. As he/she grows older this is being done by practical experiment (Walker, 1953).
To have knowledge of Geography is valuable for solving many of the problems and planning the economy of the country. It helps in broadening the mental outlook of the learners and offers them the chance to develop a critical attitude towards world problems. Furthermore they come up with generalizations about preserving and regeneration of their country’s resources as well as their neighbouring countries.

Hence, since human beings like being part of the physical environment as well as interacting with others, it is necessary that we know some aspects on the environment in which we live in. At the school level, it is the responsibility of the teachers and educators to help the learner to understand the environment they live and interact with. Geography becomes important as it can realize a great part of those aspects.

Geography teaching at school level provides a great scope and opportunity to develop scientific attitudes, skills and values among the learners. Geography because it deals with spatial relations, focuses on the distribution of resources and their interrelationships. At present Geography is one of the important subjects in the school’s curriculum. It derives a lot of materials from other subject matters like the sciences, sociology, mathematics, and so on. The subject matter of Geography includes the study of natural environment of man and also the study of social and cultural environment, hence giving the subject a wide scope unparalleled with other subjects. Finally, Geography occupies an important place in various fields of life. It also inculcates a spirit of patriotism and internationalism. Because of this, Geography occupies an important place in primary, secondary and higher education (Walker, 1953).

1.3 Objectives of Teaching Geography in Schools

In order to determine the aims of teaching any subject, we have to take into consideration the utility and usefulness of that subject. The aims and objectives of teaching Geography include all the aims and objectives of education. According to Rao, 1993, different writers have listed these aims and objectives in different ways. They are summarized as below.
The aim of teaching Geography is seen also as, providing mental discipline which means that the subject trains the students’ whole mode of thought which in turn influences his intellectual life and studies in the same field. To a Geography teacher the aims and objectives of teaching the subject are of foremost importance as it is this which influences the organization of the curriculum and the teaching approach. So the objectives of teaching Geography need to be specified. Moreover, the objectives are the specific and precise behavioural outcomes of teaching a particular topic in Geography and any topic will help in realizing some general aim of teaching the subject matter. The characteristics of a good objective are that: (i) it should be specific and precise and (ii) it should be attainable. Also the objectives of Geography are designed using the Bloom’s Taxonomy of Objectives where the students’ cognitive, affective and psychomotor domains are tested. Firstly, the cognitive domain objectives include knowledge, understandings, applications, analysis, synthesis and evaluation. Secondly, the affective domain objectives include the appreciations, values, attitudes, interests and feelings. Lastly, the psychomotor domain objectives include skills. (Rao, 1993)

Some objectives of Geography stated by the Seychelles Curriculum Framework (2001) include the following: (i) To develop an understanding of the nature of the earth’s surface and the characteristics of places, the complex nature of people’s relationships and interactions with their environment, and the importance in human affairs of location and the spatial organization of human activities; (ii) To gain an understanding of economic activities, including those important to Seychelles, such as tourism, agriculture and other industries. (iii) To develop a wide range of general and specific skills, including skills in research, critical and creative thinking, communication and social participation.

According to a study by Suvarna (1993) some of the objectives of Geography that she quoted are: (i) To develop an understanding of man and environment and their interrelationship at the global level; (ii) To develop an appreciation of the interdependence of different regions of the world; (iii) To develop an understanding and concern about the growing world population and its impact on the environment; and (iv) To develop the skill to read, understand and analyze Geographical information and data presented in various forms such as photographs, maps, graphs, diagrams and charts.
From the two given examples above, those general objectives can be used to formulate instructional objectives for Geography teaching at school level. Some of these instructional objectives can be described below, taken from the Seychelles International School’s Geography Curriculum of year eight (2003) and they are: (i) The students are provided with a broad understanding of the world by using case studies in a variety of countries; (ii) The students will develop the basic skills of using maps, photographs, graphs, diagrams and statistics in different areas of the subject; Physical, Human and Environmental Geography; and (iii) The students will demonstrate their increasing knowledge and understanding of the human environment, the value of the natural environment and the possibilities for protecting and managing environments.

Kamath’s study (1998) revealed that the central objective of Geography as a school subject is to develop a knowledge and understanding of Geography and to build a working knowledge of its basic methodology. It also aims at helping the learner to acquire understanding of the essential geographic skills like searching out appropriate data, observation and map reading. The other objectives include helping the learner to predict the phenomena, develop positive attitude towards the physical and cultural world and offer opportunity for aesthetic experience.

1.4 The General Methodology and Strategies for Teaching Geography

The role of Geography teachers is mainly to understand the aims, objectives, techniques and methods used for teaching Geography in schools. They also have to ensure that there is curriculum continuity in their subject, particularly at times of transfer such as when students move from primary to secondary school.

The place of Geography at Secondary school plays a major role. Since it is recognized as a separate subject, Geography keeps evolving and acquires links from the other sciences. At this level Geography basically is the study of relationship between man and the environment of which attempts to explain the actions and reactions of man, whose life is confined to a very narrow strip, made up of the thin upper crust of the earth and the shallow bottom layer of the atmosphere. Students therefore are able to study not only their immediate environment, but develop the knowledge and understandings of global interrelationships which involves the
formation and development of concepts of which can include complex ones. Thus it is essential that students at secondary level then are taught how to develop their thinking process such that they are able to have a better understanding of the complex concepts through collecting, organizing and manipulating the data. Apart from information processing, most importantly there is also the development of skills and attitudes in the study of Geography (Slater, 1982).

With the Geography taught in the schools, the teachers give rich opportunities in providing activity learning as well as teaching their students how to think. So Geography also develops critical thinking and reasoning amongst students at school level. Since it has an educative value, Geography provides to the student a complete knowledge of natural resources of his country and those of other countries and it helps in broadening the mental attitude of the students and enables them to offer a critical attitude to world problems. Furthermore, the students can also develop their power of observation, imagination, thinking and reasoning. Also, there is no set methodology and strategy to the teaching of Geography. Although, Geography is a rich subject in terms of the development of not only the Knowledge skills, but practical skills and attitudes, the teacher has an array of methodologies to use in teaching this subject, and to move away from traditional didactic methods. A variety of strategies can also be adapted to encourage active learning amongst the students where they are totally immersed in the learning situation. These can include fieldwork activities, role plays, simulation of situations related to learning, explanation of topics by students following a group-work activity, group investigations where inductive and deductive thinking process can be developed (Slater, 1982).

The general methodology and strategies developed that teachers of Geography can make use of, is vast. There are facilities available for teachers to vary their strategies to make learning for the students more meaningful. It can be found in schools or else in the community. An example is the use of internet technologies. In most schools classes are equipped with computers, or otherwise there are special computer rooms that can be found within the school. For students, the use of internet technologies, according to the online centre for global Geography education, key learning objectives include (a) the ability to use the information, methods, and concepts of Geography to examine global issues; (b) knowing how to use Internet
technology for effective learning and collaboration; (c) being able to formulate and carry out strategies for asking and answering geographic questions in an international team; and (d) greater interest in the study of Geography and appreciation for its perspectives on global issues. Moreover, the development of skills in Geography using appropriate strategies also can get students to reach high level of generalizations whereby threads of our understanding are drawn together or codified. Slater (1982, p.47) explains that in planning the lesson, it is important to work towards a general understanding from a question as it is helpful to initiate an enquiry sequence through a question. He further provided a very simple model being:

Identify question → Develop generalizations

According to Slater (1982), such a progression is crucial as a structure for activity planning and as a strategy for developing meaning and understanding. Furthermore, meaning and understanding define the process of trying little factual knots of information into bigger general knots of information so that Geography begins to make sense, not as a heap of isolated facts but as a network of ideas and procedures.

The present teachers should be making effective use of active learning and more student-centred classroom. They should however be using less dogmatic approaches to teaching. Sometimes teacher-centred learning occurs in cases where the classroom is overcrowded and where students display bad behavioural problems. Similarly, the Final Report from Erebus International of February 2008 for the Department of Education, Employment and Workplace Relations highlighted the concerns of the type of Geography taught in Australian schools.

According to this Final Report on ‘A Study into the Teaching of Geography in Years 3-10 in Australia’ was conducted on an initiation of the then Minister for Education, Science and Training, Hon. Julie Bishop MP. The then Minister’s Press Release outlined the purpose of the study as being “to investigate why there has been decline in the quality of the content and rigour in the teaching of Geography in our schools”. Based on that initiative, several organisations including the Institute of Australia Geographers (AIG) and the Australian Geography Teachers’ Association
(AGTA) raised concerns that too little Geography is being taught in schools. The minister noted that parents also raised concerns on the issue of lack of rigour in the teaching of Geography. According to the AGTA in the 2007 report, they released figures showing that for the Years 11 and 12, there was a decline in the enrolments in Geography courses. The concerns about the teaching of Geography in Australia centres on a loss of specific focus on Geographic Skills and Knowledge that has occurred in the incorporation of Geography, along with history and a number of other areas of learning into broader curriculum groupings of Studies of society and Environment (SOSE) (Wyatt T., Carbines R., & Robb L, Final report (2008)).

In line with the discussion in the report (2008) on the factors which affect the quality of teaching and learning of Geography in Australian schools, according to the report;

“the perceived decline in the teaching of Geography is most likely a product of several factors, some of which are related to curriculum structures, and some of which relate more generally for teaching and learning, school organisations and teacher professional development” (Erabus International Report 2008, Pp.36).

In the number of obstacles to quality of teaching and learning of Geography that were identified, one of the factors mentioned was the failure to engage students. Here, one of the many reasons for the decline in students’ interest in Geography was perceived by the way the subject is taught by some teachers. It reflected on the argument about inadequately prepared teachers and also a much older perception that the way Geography is taught by some teachers (at both Primary and Secondary Levels) fails to engage students, relying on memorisation of geographical facts as a teaching style referred to as ‘capes and bays’ Geography. According to the report, they recognised that the modern teaching of Geography needs to incorporate the use of technologies and methodologies that are an integral part of the practice of the discipline, instead of relatively taught by ‘chalk and talk’. Furthermore, the report (2008) noted that:
“...there is a strong body of opinion within the Geography profession that contemporary Geography curriculum should allow students to progressively work towards designing investigations in which they collect data from primary sources, secondary sources and work with this data to process it, to draw conclusions which may include recommendations for action on issues which have spatial components. Inquiry can be conceptualised in many ways including using scientific methods as seen in the ‘develop a hypothesis and test it’ type of activity or a series of guiding questions that are more commonly found in the Social Sciences” (Erabus International Report 2008, pp. 40).

In term of resources in the teaching of Geography, according to Roberts (2003), the textbooks that incorporate some open ended tasks are available but an “almost inevitable disadvantage of data in textbooks is that only the relevant data is provided” (Roberts, 2003, p. 41). This limits students experience in finding and selecting data. At some stages of the child’s development, this can be seen as scaffolding but it also illuminates the need to use textbooks as source books not course books. Some modern textbooks used in Australian schools are partly moving beyond comprehension to provide a range of open-ended tasks (Kriewaldt, 2007). Thus, there is a need for a revision of type of textbooks used in schools as well.

1.5 Competencies in the Learning of Geography

Competency refers to the ability of the learner to demonstrate a composite performance which is based on the acquisition, integration and application of a set of specific skills and knowledge competencies. The expected learning outcomes have a relation with more familiar concepts, goals and objectives. On the continuum of goals to objectives, though the competencies are considered to lie in the mid-range, they are used to refer as objectives.

In the teaching of Geography it is a common practice to develop competencies in terms of general objectives. In the Seychelles Geography Curriculum (2006), the competencies are of i) knowledge; ii) skills; and iii) attitudes (Ministry of Education, Seychelles (2006). The knowledge competence ensures that teachers enable students
to demonstrate mainly an understanding of facts, ideas and concepts through various uses of geographical methods, activities and strategies. Students can also be taught to perform higher-order thinking where they can apply geographical methods and techniques to form deeper understanding of concepts. In the development of skills competence, this is the area of Geography which is crucial, for at that instance students are really developing geographic skills. The geographic skills include: i) enquiry; ii) analysis and synthesis; iii) observation; iv) interpretation, v) communication; and vi) judgment and decision making.

Furthermore in the Seychelles Geography Curriculum (2006), there are several sub-competencies in this category of which involves higher-order thinking and decision-making. From basic observation using geographic tools, students develop the skills in enquiry, analysis, and so on. Since this area of Geography teaching and learning involves complex components, then it is vital that this area is studied upon to ensure that appropriate teaching model and learning strategies and activities is worked upon. Moreover, there are competencies in the line of attitudes of which should be specific to Geography. As Geography involves the study of man, the environment and the relationship that exist between them, there is the need for students to develop a positive attitude towards their planet, country, and so on. Thus, there is a need to develop understandings of the interdependence between humans and the environment, and appreciating the living and non-living things of the Earth. In this respect, sub-competencies are developed and successively to objectives as learning outcomes, where the teacher should be using appropriate teaching methods, strategies to develop this competency with the students.

In the Secondary Education in New Zealand, the competencies developed are in the line of skills, where students of Geography develop many skills including social skills, intellectual skills, values and attitudes. Those skills are vital to meaningful learning. With the development of different skills in turn help to shape the learners future, hence prepares them for their future career. The New Zealand National Curriculum identified the following essential skills (Marsh, 2000): (i) information skills; (ii) communication skills; (iii) self-management skills; (iv) work and study skills; (v) social skills; (vi) numeracy skills; and (vii) problem-solving and decision-making skills.
According to the National Council for the Social Studies Task Force in Australia (1984), skills are identified as follows: (a) skills related to acquiring information of which are; (i) reading skills; (ii) study skills; (iii) reference and information-search skills; and (iv) technical skills unique to electronic devices. Then (b) skills related to organizing and using information: (i) intellectual skills; and (ii) decision-making skills. Finally (c) skills related to interpersonal relationships and social participation: (i) personal skills; (ii) group interaction skills; and (iii) social and political participation skills.

1.6 Importance of Developing Information Processing Skills in Learning Geography

The way that the curriculum is structured in the present day education system encumber the learners with plenty of data and knowledge whereby in turn they try to memorize as much information as they can so as to pass their assignments and/or exams at the end of the term, semester or year. The learners thus are not really processing the information (as meaningful learning is lacking and is replaced by rote learning), generalizations are not found and moreover they are not given the chance to use their cognitive skills effectively. What is happening in the classroom is that students are mostly reading and memorizing notes on their own.

Many teachers are still using the authoritarian approach to teaching and to a greater extent in their classroom; the students are sitting quietly in rows and responding only when they are called upon to participate. They rarely get the chance to illustrate and analyse important abstract ideas and concepts. Nevertheless, learning should be an interesting and exciting experience on the part of the students, as in Slater’s (1982) words explain where;

‘...as communication and exchange among teachers and students increases, teachers develop a sensitivity towards, and an intuitive feel for how best to arrange the resources and activities to facilitate assimilation and accommodation process and to promote the ability to go beyond the information given’.

In the words of Hilda Taba (1966), ‘Thinking inductively is inborn and lawful. This is revolutionary work because schools have decided to teach in a lawless fashion, subverting ‘inborn capacity’’. Basically thinking help learners to solve problems on
their own. The ability to think is inborn and in getting the students to develop this inborn ability makes a positive difference in their intellectual development. Otherwise weakening this inborn capacity is weakening their ability to face obstacles in their schooling years as well as in their future undertakings. As educators it is our responsibility to help the learners to think for themselves, to come up with new and novel ideas. The need for them to apply and also synthesize the knowledge gained during their schooling. As the words of Okey (1972) states; ‘the process of skills that go beyond the acquisition of facts are of high value, because they approximate how students will use or operate on knowledge in and out of school situations’.

Many educators have considered the development of process skills (of which is required in thinking) in students to be a major objective in education [(Gagne, (1965); Heror, (1970); Neil, (1972); Okey, (1972)]. Moreover, various programmes have been conducted on developing thinking in students. Comprehensive staff development that provides teachers with theory, modelling, analysis, guided practice and supported classroom application of specific teaching strategies can lead to significant changes in teaching behaviour. When these strategies are focused on thinking skills they make a positive difference in students’ intellectual development (Hughes, 1981).

Students can learn through practice on the part of the teacher, how to think. Thus thinking can be taught, as used by Taba, where through practice, the students develop inductive thinking ability. Then since mental operations cannot be taught directly or be acquired by absorbing someone else’s thought products, the teacher can assist the students by providing tasks required for complex mental processes through modelling. And as the students become more proficient, then progressively, less direct support is given. The third assumption by is based on, as Taba’s (1966) words describes, ‘processes of thought evolve a sequence that is “lawful”’ This involves the learner in order to master certain thinking skills, first he/she must first master certain earlier ones, and this is irreversible. In order to develop these three thinking skills, Taba developed three teaching strategies namely: concept formation, interpretation of data, and application of principles.
1.7 Status of Geography Teaching in the School Curriculum

Gritzner (1986, p.252) has suggested that,

No building or field of knowledge is stronger than its foundation; the ‘temple’ of academic Geography rest upon the geographic knowledge and skills possessed by the products of the nation’s elementary and secondary schools and the students who both quantitatively and qualitatively, ultimately enroll in our courses.

Such experiences, though, vary greatly, not only between countries, but also within a single country depending on the type of syllabus followed. According to Unwin (1992, p.7), ‘the amount of Geography studied at primary and secondary levels can almost vary from almost none, as in much of the United States of America, to about one-third of the curriculum for those doing A-Level Geography in England and Wales. In most European countries, the required amount of Geography varies somewhere between those two extremes. Broadly speaking, it is possible to categorize educational systems into those that maintain a breadth of subjects throughout the primary and secondary curriculum, as in much of Europe, and those that allow considerable specialization, as currently in England and Wales where those in the last two years of their secondary education can specialize in as few as two or three subjects. The contrast between the role of secondary Geography in the United States of America and in England provides a good indication of the different problems faced by undergraduates reading for Geography degrees in the two countries.’

Within the United States of America, the content of the school curriculum varies not only by state, but also by local school district. Despite this potential for diversity, there are only very few students who study a specific high school subject called Geography. Indeed as Hill and LaPrairie (1989, p2) pointed out that school Geography has almost disappeared as a separate subject’. The Geography that is taught at the secondary level is usually included in a combined social studies course, or in general courses on history, more often not taught by people without geographical background. As Holcomb and Tiefenbacher (1989, p161) have thus noted,
Geography’s place in the school curriculum has been slipping for many years despite an effort in the 1960s to reintroduce the scientific inquiry method through the High school Geography Project funded by the National science Foundation. In most school curricula, Geography was merged into a more general ‘social studies’ and frequently subsumed into American history.

Holcomb and Tiefenbacher (1989, p161) further noted that ‘the closing of the Geography department in such prestigious universities as Michigan, Chicago and Columbia, and the virtual absence of Geography in the Ivy League, caused a perceived vulnerability of the discipline in the American academia’.

According to Unwin (1992, p8); ‘the effect on the higher education sector of this dearth of geographical education at the primary and secondary levels is threefold’. He explains further that firstly, the freshmen, and even the second-year students have only limited knowledge of either the content or the skills associated with Geography. This in turn means that the higher-education lower-division Geography courses must frequently begin with somewhat elementary content-based courses, covering the fundamentals of such subjects as the physical environment and cultural Geography. Secondly, the lack of Geography in high school means that most secondary students have little idea in advance of the content of higher education courses in Geography. Hill and LaPrairie (1989) suggest that other disciplines such as psychology are readily able to overcome such a handicap, it can nevertheless have serious repercussions for undergraduate recruitment, with many potential undergraduates opting for subjects with which they have some direct familiarity, rather than for the unknown. With this leads to the third effect described by Holcomb and Tiefenbacher (1989), which is that the relatively low academic status of Geography means that many of the most intellectually able students opt for disciplines which are seen by society at large as being more demanding and thus more prestigious. These influences are all closely related in a complex structure of causation, since the level at which undergraduate Geography courses commence has a direct influence on the abilities with which students graduate, and thus with the overall academic status of a discipline. During the 1980s it was increasingly argued that one way of reversing the declining status of university Geography in the United States of America was to revitalize it in the secondary curriculum.
Of all the countries in the world, Geography is probably in the strongest position in the primary and secondary curriculum in England and Wales (Storm, 1989). Prior to the late 1980s Geography was well-established in the school system, and was widely taken both at O-level, the main academic exam taken by the 15- and 16-year-olds before its replacement in 1988 by the GCSE examinations, and at A-level, the final exam was taken by secondary students usually at the age of 17 or 18. The only subjects that were more popular at O-level in 1980 were English language, mathematics, English literature and biology, although at A-level in 1982 it was ranked as the ninth most popular subject after mathematics, English, physics, chemistry, biology, economics, general studies and history (Lee, 1985). Despite Geography’s relative success during the 1970s and 1980s, many Geography teachers still complained about ‘the government’s apparent neglect of value of maintaining a significant geographical element in the curriculum’ (Bunce, 1986, p325).

According to Robinson (1986), in Canada, compared to the United States of America, Geography is more established in the school curriculum. In Wolforth’s (1986, p.18) words, ‘it has for a long time been an independent high school subject in most Canadian provinces, is usually taught by well-trained specialists and has a solid content that academic geographers would recognize as respectable, if not rigorous. It is supported by an enviable array of generally well-written textbooks, and imaginative teaching materials.’

However in Canada there are problems where according to Wolforth (1986, p.18), ‘in some provinces it is a mandatory subject throughout the high school years’, and ‘as an optional subject, it is often thought to appeal to the academically weaker students’.

In the Seychelles context, Geography is recognized as a separate subject in secondary schools, and at primary level it is integrated in social studies. At post secondary level it is an option for students following A-level studies. When focusing on Geography at secondary level the curriculum designed for Seychelles schools encompasses two cycles. These cycles are consolidated as a process with three previous cycles at primary level. Thus Cycle 4 is basically made up of the secondary one, secondary two and secondary three cohorts, whereas in Cycle 5 (made up of secondary four and secondary five), the teachers follow the IGCSE syllabus for the teaching of Geography.
Geography teaching in the Seychelles too has passed through reforms. Initially it was given less teaching time than teaching the sciences, mathematics and the languages. Today in Cycle 4, the subject is allocated 120 minutes (one single lesson of 40 minutes and a double 80 minutes lesson) of teaching per week as opposed to only 80 minutes in the 1980s until the late 1990s. As for Cycle 5, with the introduction of the IGCSE syllabus in 2003 the teaching of Geography was allocated 160 minutes (two double lessons of 80 minutes each).

With the introduction of IGCSE then certain amendments were made on the existing curriculum in progression thus ensuring continuity from Cycle 4 into Cycle 5. One of the aim of the Geography curriculum is to provide the outgoing secondary student for life as informed skilled and active citizen of the 21st century by providing the necessary knowledge, skills and values to the student in order to become a geographically informed person at the end of his/her secondary education.

1.8 The Role of Maps in Geography Learning

Maps are useful tools in the teaching and learning of Geography. They are required in the study of most topics including position, relief, climate, natural vegetation, minerals, population distribution, towns, industries, and communications. These maps give a realistic picture of the subject matter to the students as they also give a proper explanation of geographical facts and geographical factors. The educational value of maps in the Geography room is that it makes the subject interesting and attractive as well as it facilitates the teachers.

Educators must be concerned with the acquisition of both knowledge and skills, for children cannot easily acquire knowledge nor can they educate themselves. In the Geography classroom, students should be equipped with the skills that are related to reading, interpreting and drawing of maps and in most cases they are considered as ‘Map Skills’. The literature related to the importance of developing Map Skills among the students learning Geography is reviewed in Chapter 2, Caption 2.6.

It is of the teacher’s responsibility to teach the basic Map Skills through direct instruction to the students. The students further develop the ability to read maps and ‘the greater the acquisition of map skills, the greater is the understanding of ‘maps’.
1.9 Need for the Study

The main objective of Geography as a school subject is to develop a knowledge and understanding of Geography, and to build a working knowledge of its basic methodology. It also aims at helping the students in working out their skills and appreciating the materials given to them by the teacher. The status of Geography learning has not been satisfactory. The methodologies employed generally involved rote learning of information without relating to the world outside. Various strategies have been suggested for effective Geography teaching but none of them appeared to have been effectively used in the classrooms. The development of Map Skills and Process Skills are totally ignored.

Hilda Taba’s inductive thinking model suggested in the year 1966 was especially for the teaching of social studies, has not been tried or experimented by teachers adequately. In the present study, an attempt is made to evolve a justification for a strategy to improve the quality of teaching of Geography in schools by analysing the status of achievement of process skills and map skills among secondary schools students in Seychelles. Another main objective was to re-examine the suitability of inductive model for promoting thinking/process skills in Geography among students.

The teaching model proposed by Hilda Taba was adapted to integrate the objective of the development of Map Skills as well. The strategy based on this model was experimentally tried out to study its effectiveness in developing Process Skills, Map skills, and understandings in Geography which are the main objectives of teaching Geography in general. Further this status of achievement of student in Seychelles is compared with secondary schools students in Mysore, a city in India where a relatively similar curriculum of CBSE (Central Board of Secondary Education) is followed.

1.10 Statement of the problem

The study focuses on exploring the relative status of achievement of Process Skills and Map Skills among Secondary School Students of Seychelles and Mysore (a city in India) and to mainly study experimentally the effects of Inductive Thinking Model of Teaching on the development of Competencies – Knowledge and Understandings, Process skills and Map Skills, in the learning of Geography among Secondary students in Seychelles. This model of teaching is developed by Hilda Taba (1966).
1.11 Objectives of the study

General objectives:

i) To study the levels of achievement in Map Skills among Secondary level students in Seychelles and Mysore (a city in India) and to make a comparison of these levels between the two countries

ii) To study the levels of achievement in Process Skills among Secondary level students in Seychelles and Mysore (a city in India) and to make a comparison of these levels between the two countries

iii) To compare the levels of achievement in Map Skills and Process Skills between boys and girls in Mysore (a city in India) and between boys and girls in Seychelles, taken separately

iv) To analyse the perceptions of Geography Teachers and their students in Seychelles on learning of Geography

v) To prepare an Instructional Programme using a strategy based on inductive Model of Teaching by Hilda Taba to develop expected competencies-knowledge and understandings, Process Skills and Map Skills in learning of Geography among Secondary students at S1 level in Seychelles, using the inductive thinking model developed by Hilda Taba (1966)

vi) To compare the effectiveness of teaching through the Instructional Programme based on Hilda Taba’s Inductive Thinking Model and through existing/conventional approach being used, in terms of achievement of the selected competencies in Geography among secondary students at S1 level in Seychelles as listed below:

- Achievement in Process Skills,
- Knowledge and Understandings in Geography,
- Achievement in Map Skills

1.12 Hypotheses of the study

Hypotheses were formulated both for the Descriptive Phase and the Experimental Phase of the Study related to objectives i, ii, iii, iv, v and vi.
Ho₁: There is no significant difference between Secondary One (S1) students in Seychelles and 8th Standard students of Mysore (a city in India), taken separately with regard to:
- Achievement in Map Skills
- Achievement in Process Skills.

Ho₂: There is no significant difference between means of boys and girls among Secondary One (S1) students in Seychelles and between boys and girls among 8th Standard students of Mysore (a city in India), taken separately with regard to:
- Achievement in Map Skills
- Achievement in Process Skills.

Ho₃: There is no significant mean difference between students in the Experimental groups after the experiment with respect to the achievement of Process Skills after adjusting for the initial difference in intelligence.

Ho₄: There is no significant mean difference between students in the Experimental groups after the experiment with respect to the achievement in Knowledge and Understandings in Geography after adjusting for the initial differences in Pre-achievement in Knowledge and Understandings in Geography and Intelligence.

Ho₅: There is no significant mean difference between students in the Experimental groups after the experiment with respect to the achievement of Map Skills after adjusting for initial differences in Pre-achievement in Map Skills and Space Relations.

1.13 Definition of Key Terms

- **Knowledge and Understandings in Geography**: They are related to the basic understandings intended to be learnt from the units on ‘Population studies, Settlement Studies and Tourism’, of Geography prescribed for the S1 students in the Seychelles Geography Syllabus.

- **Process skills**: They are intellectual skills or capabilities required to analyse information. They are also called the Thinking Skills. Process Skills also include the ability to make observations and, through the use of inference to generalize, to predict and to explain events. Through these processes the learner is able to move beyond memorization of information to the development of more abstract and useful forms of knowledge- facts, concepts and generalizations (Eggen, et al, 1979)
• **Competencies in the learning**: It refers to the ability of the learner to demonstrate a composite performance which is based on the acquisition, integration and application of a set of specific skills and knowledge. Competency refers to the level of proficiency in the performance in terms of expected learning outcomes. The expected learning outcomes are described as specific instructional objectives expressed in observable behavioral terms. Competencies in learning Geography include knowledge and understandings, skills, and attitudes which can be inferred from the objectives of the Geography Curriculum of the Seychelles.

• **Instructional Programme**: This is based on Hilda Taba’s Inductive Thinking Model of Teaching. It includes the various Teaching-Learning activities which intend to develop knowledge and understandings, and to develop Process Skills and Map Skills in learning selected units on Geography prescribed for the S1 Term 3 syllabus in Seychelles.

• **Expert experienced teachers**: Refer to the teachers who are recognized as good Geography teachers by students and authorities. They are trained in the field and have acquired experience over the years.

• **Understanding** is a product of experience, ideas and mental processes, and the relationships between them. It, therefore, involves much more than ideas.

• **Ideas** can be expressed verbally in a variety of ways, which include concepts, generalisations, and conceptual structures.

• **Concepts** are of fundamental importance, attention should also be given to other ways of expressing ideas, and especially the relationships between ideas

• **Achievement in Process Skills** are the scores obtained in the test prepared by the investigator which includes sub scores on observation skill, classification skill, inferring skill, predicting skill, and total scores on all the sub scores.

• **Achievement in Map Skills** are the scores obtained in the test prepared by the investigator which includes sub scores on the different sections, namely, directions, grid references, map scales, map language and colours, map symbols, distribution, inference, and total scores on all the sub scores.

• **Intelligence** is the score obtained in the standardized Raven’s progressive Matrices (RPM) test, constructed by J.C. Raven.
- **Space Relations** is the score obtained in one of the standardized test of the eight tests in the Differential Aptitude Tests (DAT), designed by Bennett, Seashore and Wesman in 1951.

- **Experimental groups** are the students of the S1\(^1\) of school 1 (Belonie Secondary School), and the students of S1\(^4\) of school 2 (Mont Fleuri Secondary School) in Seychelles exposed to the experimental treatment by the investigator. The experimental treatment involved the use of Instructional Programme prepared by the investigator. This Instructional Programme was based on the Inductive Thinking Model of Teaching by Hilda Taba.

- **Parallel groups** are the students from another section of S1 in school 1 (Belonie Secondary School), namely, S1\(^2\); and the students from another section of S1 in school 2 (Mont Fleuri Secondary School), namely, S1\(^1\) in Seychelles exposed to the existing/conventional approach followed by the Geography teacher of the respective school.

1.14 Delimitations of the Study

The study is delimited to the secondary schools students following CBSE syllabus in the schools of Mysore (a city in India) and following the National Geography Curriculum in secondary schools of Seychelles. The study is delimited to the Geography teachers teaching in the secondary schools of Seychelles.