EVOLVING A STRATEGY FOR DEVELOPING SELF-MANAGED LEARNING (SML) SKILLS AMONG STUDENT-TEACHERS

A Synopsis Submitted to
The Maharaja Sayajirao University of Baroda
For the Degree of

DOCTOR OF PHILOSOPHY IN EDUCATION

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AUGUST 2013

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1.1 INTRODUCTION

Education has always been important, but perhaps never more so in man's history than today. "Education for All" and "Lifelong learning" has become the catch cry of the new millennium. It is increasingly being accepted that we have entered an information era or a knowledge society. Only by continued learning through the life span will it be possible to maintain knowledge and skill currency. (Candy et al., 1994). Moreover, education today has become more dynamic and changing very fast in terms of structure, curriculum, technology, pedagogy and even semantics. These changes are the consequence of the industrial revolution, the space revolution, the chip revolution, nanotechnology, robotics and convergence technology. Due to the continuous changes in technology and the volumes of new information generated through the internet and other information technologies achieving quality education for all has become more difficult. What is now required in the knowledge society, more than in previous eras, is the ability to learn more quickly to cope with the increased volume of information and to process information more effectively. Knowledge is not possession of certain facts and figures but the ability to sift and filter relevant information from heaps of data and to put it to use for an appropriate purpose. This shows that there is an urgent need to equip people with learning skills so that they can mange to learn on their own.

1.2 BACKGROUND OF THE STUDY

Nothing is so natural to us as learning and accomplishment. We hunger for it from our first breath. Although learning is one of the most important topics in present day psychology, it is an extremely difficult concept to define and understand due to its inherently complex nature. Many theories have evolved in order to explain the process of learning or to understand what happens when learning takes place. There are three main categories or philosophical frameworks under which learning theories fall: behaviorism, cognitivism, and constructivism. Behaviourism focuses only on the objectively observable aspects of learning. Cognitive theories look beyond behaviourism to explain brain based learning. And constructivism views learning as a process in which the learner actively constructs or builds new ideas or concepts. The behavioralist approach is the oldest of the three, while the constructivist

approach is a newly emerging theory. According to Hill (2002), learning theories have two chief values. One is in providing us with vocabulary and a conceptual framework for interpreting the examples of learning that we observe. The other is in suggesting where to look for solutions to practical problems. The theories do not give us solutions, but they do direct our attention to those variables that are crucial in finding solutions.

The aim of the present study was to develop a strategy for enhancing self- managed learning skills or learning to learn skills. Therefore, it was important to know how learning takes place and what are the components of effective learning. The answer to the first question was given by the learning theories while the answer to the second question was given by Garry. D. Borich (1996), according to whom effective learning involves three elements viz. cognitive strategies, meta-cognition and knowledge. Successful learners in any field of study possess these three characteristics. According to Chamot et al. (1988), cognitive strategies involve interacting with the material to be learnt, manipulating the material mentally or physically or applying a specific technique to a learning task. Hence the application of cognitive strategies helps the learners to process instruction in a systematic way and to tune the mental activities performed by the learners and thereby increases the efficiency of learning and cognitive processing. Meta-cognition refers to awareness about the learning content, the on-going performance of the learning process and the cognitive control measures to monitor, regulate and evaluate one's own cognitive process. Systematic application of meta-cognitive strategies enables the learners to move from dependence to independence in learning by generating intrinsic motivation and continuous self-generated feed back. In essence cognitive and meta cognitive skills focus upon the actual, basic learning processes used and controlled by the individual learner. This explains in part why cognitive and meta cognitive learning strategies are often referred to more generally as learning to learn skills. Effective learners not only possess cognitive and meta cognitive skills, but also have extensive knowledge of the area they are learning about.

It is also important to understand how the brain deals with the information it gets from its surrounding as this would help in determining how one can teach or prepare

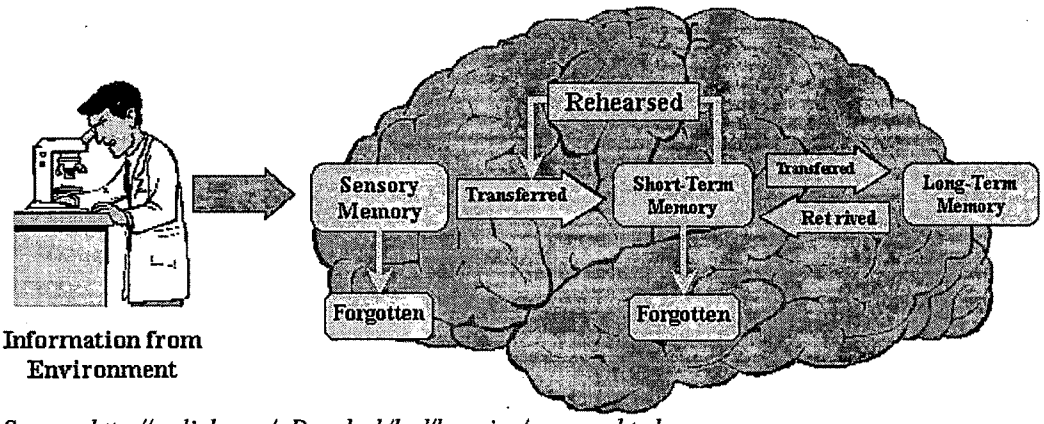
a strategy so that the learners are able to make the maximum benefit from their learning experiences. One such model which tries to explain the workings of human mind is the information processing model. According to this model there are mainly three types of memory viz. Sensory Memory, Short- Term Memory and Long- Term Memory

Sensory Memory

Information from the environment enters our brain and reaches the sensory memory through our five senses viz. sight, hearing, smell, touch and taste. The sensory memory filters this information in just milliseconds using our past experience to determine the data's degree of importance. If the data signals are found unimportant they are dropped out of the processing system while the remaining information enters short term memory.

Short -Term Memory

Short- Term Memory is a place where conscious processing of information takes place. The information processing model represents it as a place of limited capacity where we can build, take apart, or rework ideas for eventual storage somewhere else. Information in the short- term memory can come form the sensory memories or be retrieved from long- term memory. According to this model, without a conscious effort to work with the recently received information we forget 82% of the information within 24 hours and almost all of it within a few days. The advantage of this process is that it helps us to avoid being overloaded with too much irrelevant information. The disadvantage is that the short- term memory may also discard important information thinking that it is irrelevant.



Source: *http://nwlink.com/~Donclark/hrd/learning/memory.html*

Long- Term Memory

Information having strong emotional impact and information that we want to remember are usually transferred from our short term memory to our Long- term memory. This is how we remember many of our childhood memories and whatever we learn in school or college. Long- term memory contains tremendous amount of information that was acquired through years and years of formal or informal education.

Transfer of Information from short- term memory to long- term memory

According to the Information processing theory information is most easily transferred to long- term memory if there is a strong emotional association or if it is strange or unique, or if the information is associated with some of our critical needs. The other way to transfer information to long- term memory is to repeat information so that slowly and gradually it is transferred to long- term memory. This implies that if we do not revise enough times much of our hard work will be wasted. The information processing model of how the mind works is a metaphor. This model helped a lot to understand what can be done during the process of learning so that the learners can better understand and retain what they learn.

1.3 NEED AND SIGNIFICANCE OF THE STUDY

It has been universally accepted that education and continuous learning through life span are the only means of overcoming the many problems being faced in an age of uncertainty where the only two seeming constants are continuous change and growth in bodies of knowledge. Life long learning and development has become an indispensable part of today's living. This change is a result of explosion of knowledge which has brought about drastic changes in all spheres of human life. The people of today have to process more information, cope with social developments & critical situations & make more decisions. Thus, twenty-first century requires the development of highly sophisticated skills so that people are able to follow the social & economic changes and influence them.

Moreover, in the present world scenario where it is predicted that knowledge is getting doubled at a very fast rate, it is important that students develop the ability to

handle the vast amount of information coming from various sources. It is not possible for any individual to pick up all these knowledge, nor is it humanly possible to do so. In that case, one has to be selective and be able to process the information which he/she requires. Unfortunately, the education process carried out in our schools and colleges invariably lag behind the advances in information & communication technology. Due to this, the vast majority of products, come out of these institutions, perhaps with a little more of book learning and of course a degree, but with very little capacity for self-study. As a result, after coming out of these institutions, the students find themselves handicapped because the knowledge that they gained in these institutions become outdated by the time they enter a job and start living an active social life. Thus, it is increasingly being recognized that children need to "learn how to learn", so that they can continue learning throughout their life. This view has been highlighted by UNESCO in its report on education according to which education should help students acquire the instruments of knowledge: the essential learning tools of communication & oral expression, literacy, numeracy & problem-solving; to gain both a broad general knowledge & an in-depth knowledge of a few areas: to understand rights & responsibilities; and most importantly, to learn how to learn." Since education is a man-made process, designed to serve our changing needs, it is in need of creative invention to make it work better. More than ever before it has become important to equip the students of present system with the skill of learning to learn. Although the students of today have vast amount of readily available information, they have not enough knowledge about how to process this information & retain & retrieve it as and when required. In an age where everything is constantly changing, constantly evolving, the one technology, the one ability that would never turn obsolete is to learn how to learn. This one ability will make a person able enough to cope with the changing demands of the society & thus contribute effectively towards its development. Thus, it is very important that every single individual, young or old, take responsibility of his/her own learning.

Although everyone manages their own learning to some extent, it is clear that just telling people to take charge of their own learning can be very inefficient. This

means that a well structured & well-planned strategy needs to be developed so that individuals are well equipped with a number of learning skills so that they can manage their own learning throughout life. Self-Managed Learning (SML) is a strategy which is made up of a number of skills. The students will be equipped with a number of skills so that they can decide the goals & objective of what they are learning, gather information, process and store it & finally retain and retrieve the information as and when required. A number of techniques will be used in order to achieve these skills. As a result of which not only will the students learning be enhanced, but also the creative ability of the students will be developed. Moreover, the students will develop confidence to cope with the changing demands in their area of work and life at large. By taking responsibility of their own learning they will be able to keep themselves abreast of time. However, since our education system has hardly made any attempt in this direction and further since there is no scientific process to develop the skill to manage one's own learning, the researcher felt an urgent need to make attempts to bridge this gap.

Further, there is no doubt that the quality of a nation depends upon the quality of its citizens and the quality of its citizens depends more than on any other single factor, on the quality of their teacher. The teacher is the living ideal, the fountain head of knowledge & the potential guide to provide directive growth and development of the students of today as worthy citizens of tomorrow. However, in the course of time, need and importance of education has also changed and as a result the role and function of the teacher is also changing. Today teachers are considered as facilitators of knowledge and not dispensers of knowledge and skills. This implies that teachers are supposed to help learners to learn on their own, so that they can become independent learners and thus take responsibility of their own learning. Moreover, the curriculum in each discipline is vast and teachers may not be able to cover the entire content in a short period of time. The solution to this problem lies in equipping the students with self managed learning skills so that they do not have to entirely depend on their teachers to cover the syllabus. If the teachers can help students acquire self- managed learning skills the students will turn out to be good learners not only in schools and colleges but also throughout their life, thus enabling

them to become life long learners. However, SML skills are not formally taught in the classrooms of today. This may be because the teachers themselves are not aware of such skills. Moreover, this aspect of self-learning is not given due importance in the teacher training programs.

Teacher education program is quite different from the other academic programs as the students enrolled in these courses not only have to make efforts to gain specific knowledge and skills but also have to ready themselves for shouldering a responsibility which matters to the society. To become effective teachers they need to gain a lot of understanding about the scope and dimensions of their profession, about the different roles they have to play in their professional and social life and competencies, attitudes and skills they need to develop. However the relatively shorter duration of the course has become a major factor for not being able to produce effective teachers. One way to overcome this drawback of the teacher education program is to supplement the formal study with a lot of self-study. Many efforts have been made by various institutions to initiate the students in this direction. One such programme viz. Zero Lecture Programme (ZLP) was conducted at IASE, Devi Ahilya Vishwavidyalaya, Indore in which the students themselves had to decide and evolve the way in which the expectations of the prescribed syllabus could be fulfilled. A similar program viz. 'Anweshana' was carried out at the Faculty of Education, Banasthali Vidyapith, Rajasthan. It was found that the most challenging task for the teacher educators in this program was to motivate the learners and keep them going on their own, since the student-teachers were products of an educational system which is teacher dominated. Due to the common tendency of students to be spoon fed they do not make any efforts in the direction of self-managed learning. These studies show that there is an urgent need to equip learners with self-managed learning skills so that they do not become handicapped in the absence of teachers. This will not only enable the student- teachers to manage their own learning during their training period but will also help them to become life long learners. Moreover, they will be better equipped to transmit the same knowledge and skills to their students and thus turn out to be producers of life long learners. Hence, it is felt that it is necessary to train instructors & trainees to become capable &

efficient designers of SML strategy so that they can in turn produce individuals who can manage their own learning. Moreover, if such a strategy is made available it can serve as a ready to use reference material for the teacher education program so that the future teachers can be equipped with such skills.

From the review of related literature it was found that no such study has been conducted in India for the development of self- managed learning skills among student- teachers or at any other level. Although the researcher did find some studies related to development of remedial instructional strategies aimed at improving certain language skills in students. The researcher spotted a few studies conducted abroad related to self- managed learning and learning to learn skills. However, researches done in the area of self- managed learning abroad have tried to find out the perception of students regarding self- managed learning and the difficulties they face in the process of self- learning. The studies were mostly conducted on self-managed learning groups that were already present in different institutions. Hardly any study has been found in which efforts have been made to develop a strategy to enhance self- learning skills. The investigator therefore feels challenged to explore the possibilities of such a study.

1.4 THE SELF-MANAGED LEARNING STRATEGY

A strategy may be defined as a planned approach to any task. In other words, a strategy is an art of handling any task to the best advantage. It refers to a series of well planned actions for achieving an aim. The self-managed learning strategy is an attempt by the investigator in developing learning-to-learn skills among learners in general and student-teachers in particular. Learning to learn skills or the self-managed learning skills are skills that a learner might find quite useful while going about a learning task. It will not only enhance his learning but will make the learning process an enjoyable one.

1.4.1 Assumptions of the Present Study

From the study of literature related to learning and from the researcher's own experience there are three basic assumptions based on which the present strategy has

been developed. The three assumptions on which the self-managed learning strategy is based are as follows:

(i) Self-managed learning skills exist to some extent among all learners.

(ii) The Self-managed learning skills are not sufficient or have not been properly developed among learners to overcome the challenges they face.

(iii) Self-managed learning skills can be enhanced so that the process of learning becomes more efficient and enjoyable.

1.4.2 The Modules

The self-managed learning strategy has been prepared by the investigator by taking into consideration the different theories of learning, the components of effective learning and the theory of how people learn or the information processing theory. The investigator prepared the strategy in the form of self-instructional modules. Modules or self- instructional materials are based on the principles of learning in general and self-learning in particular. Textual material in the modular form is self-contained, sequentially arranged and consists of activity packages. The text is presented in a simple language with cues to facilitate self-learning. It also includes in text exercises to promote motivation to learn, which is also helpful in making learning interactive. A module provides opportunities for self-assessment and continuous feedback. Modules or self-instructional materials have been defined in many ways. They enable learners to learn independently, unaided and at their own pace. It has its own structure. It is theme based and self-contained. It includes objectives, learning exercises, in text assessment for offering continuous feedback. There is a built-in flexibility in the text which promotes interaction. Therefore, self-instructional material or modules consists of self-contained learning activity packages which promote self-learning, self-evaluation and self-enhancement through continuous feedback. It thus effectively helps in achieving the predetermined objectives. In the present study, the investigator prepared the self-managed learning strategy in the form of six modules in order to achieve the aim of developing learning to learn skills or self-managed learning skills among student-teachers. The six modules of the strategy pertain to the six different skills which has

been identified and included in the present study by the investigator. The self-managed learning skills which have been included in the present study are as follows:

(i) Goal setting skill

(ii) Information location skill

(iii) Information processing skill

(iv) Information storing skill

(v) Information retention skill

(vi) Information retrieval skill

1.5 RESEARCH QUESTIONS

(i) What skills are required to manage ones own learning?

(ii) Which are the different techniques required to master the skills of self-managed learning (SML)?

(iii) Can a well structured and well planned strategy be prepared to equip an individual with self- managed learning skills?

(iv) How far will such a strategy help an individual to manage ones own learning?

(v) What will be the opinion or reaction of the learners towards the prepared strategy?

1.6 STATEMENT OF THE PROBLEM

Evolving a Strategy for Developing Self-Managed Learning Skills (SML) Among Student-Teachers

1.7 OBJECTIVES OF THE STUDY

The study has been designed to attain the following objectives:

(i) To identify various skills, sub-skills and techniques required for managing one's own learning.

(ii) To develop a strategy for enhancing self-managed learning skills among student-teachers.

(iii) To evaluate the effectiveness of the strategy in terms of

(a) Student-teachers' performance in the achievement test.

(b) Student-teachers' reaction towards the SML strategy.

(c) Expert's opinion towards the strategy.

1.8 HYPOTHESIS OF THE STUDY

The prepared strategy will enhance the self-managed learning skills of the student-teachers.

1.9 OPERATIONAL DEFINITIONS OF THE KEY TERMS

Self- Managed Learning (SML) skills

Self-managed learning skills are a set of six skills viz. Goal Setting Skill, Information Location Skill, Information Processing Skill, Information Storing Skill, Information Retention Skill and Information Retrieval Skills. These skills are elaborated further as follows:

Goal Setting Skill

Goal setting skill is a set of skills which include being able to identify one's short term goals and long term goals, carry out SWOT Analysis, set S.M.A.R.T goals, prepare goal maps, set personal goals, identifying one's learning goals, find out how one really spends ones time, use strategies on using time and use some effective aids for goal setting.

Information Location Skill

Information location skill is a set of skills which include being able to analyze the topic of study, being able to identify various search tools and collections for searching information, being able to locate and obtain information using the library and web resources, exploring copyright laws related to computer and software use, reading and evaluating the various resources of information and keeping records of them.

Information Processing Skill

Information processing skill includes a set of skills which include strategies for improving reading skill, KWL strategy, SQ3R strategy, speed reading, finger technique and identifying one's learning style.

Information Storing Skill

Information storing skill includes a set of skills for improving one's note-taking and note-making skill which include using common abbreviations, forming abbreviations, using symbols, suggestions for better listening, the Cornell system of note-taking and mind mapping.

Information Retention Skill

Information retention skill includes a set of skills to improve memory which include being able to identify the structure of human brain, being able to understand the relation between nutrition and memory improvement and exercise and memory improvement, being able to use techniques to improve information retention skill while learning, using systematic revision to improve memory after learning and using chunking to enhance retention.

Information Retrieval Skill

Information retrieval skill includes a set of skills to enable a learner to retrieve information from the long term memory for immediate use, which includes being able to form and use acronyms, abbreviations, acronymic sentence, keywords and peg words.

The enhancement in the self-managed learning skills of the student-teachers will be measured by taking into consideration the difference in scores obtained in pre-test and post-test which are based on the above six skills.

1.10 SCOPE OF THE STUDY

The present study is an attempt towards evolving a strategy for helping student-teachers to pick up learning to learn skills. However, since learning is a life long process, every individual has to continue learning throughout his life span. Everyone irrespective of age, sex, nationality and occupation need to continue learning. So the

study has a widespread relevance for all those who need to manage their own learning.

1.11 DELIMITATIONS OF THE STUDY

Though every effort has been taken to make the study as generalisable as possible it has few minor limitations.

(i) The study was limited to the B.Ed. students of Kerala state.

(ii) The study was delimited to the six skills for self-managed learning, identified by the researcher viz. Goal setting skill, information location skill, information processing skill, information storing skill, information retention skill and information retrieval skill.

1.12 METHODOLOGY OF THE STUDY

Since the nature of the study is developmental cum experimental the methodology of the present study has been divided into two parts namely:

PART-I Methodology of developing the strategy

PART-II Effectiveness of the strategy

1.12.1 Methodology of Developing the Strategy

The major objective of the present study was to develop a strategy for enhancing SML skills among student-teachers. Therefore, in the first phase of the research, the investigator read critically all the available literature related to learning theories and pedagogy. Based on this study, the assumptions of the study, the requirements of the study and the principles based on which the strategy should be developed were determined.

Further, the various skills, sub-skills and techniques required for developing self-managed learning skills among student-teachers were identified and finalized with the help of experts in the field of education. In the next step, each of the sub-skill and techniques were in turn, broken down into its components and presented in a logical order in the form of flow charts. It was decided that the strategy would consist of six units, each pertaining to the development of one of the gross skills

identified by the researcher. The gross skills which were identified for managing ones' own learning are as follows:

(i) Goal Setting Skill
(ii) Information Location Skill
(iii) Information Processing Skill
(iv) Information Storing Skill
(v) Information Retention Skill
(vi) Information Retrieval Skill

Once the components were identified and presented in logical order in the form of flow charts, the instructional objectives in behavioural terms were determined. Finally, the modules were prepared. The prepared material was then reviewed (in the light of the objectives of the study) by experts in the field of education. It was further tested on five student-teachers (different from the sample). The modules were edited and organized keeping in view all the observations made by the experts and the student-teachers and the insight obtained by conducting the pilot study.

The design following which the strategy was finally developed is presented in what follows:

(i) ***Learning objectives***: This section gives an idea about the objectives that need to be achieved by the learner at the completion of the module. It tells about the skills and techniques to be learnt in that particular module.

(ii) ***Introduction***: This section gives an overall idea about what has been presented in the module so that the learner gets a bird's eye view of what he/she is about to learn in that module.

(iii) ***Content with activities and exercises***: In this part of the module, the actual content in the form of the various concepts related to that particular skill along with examples, activities and exercises have been presented. Exercises for practice have been presented after each concept. At the end of each content in every module, some activities have been presented. If the activity

has a specific answer, an answer key has been provided at the end of the activity. The activities which ask about the learner's opinions or situation, do not have answer keys.

(iv) ***Test Yourself***: Throughout the modules, questions to check the understanding of the contents just learnt have been presented in the form of Test Yourself sections. The answers to these questions have been provided at the end of the module.

(v) ***Summing up***: In this section the summary of the entire content presented in that particular module has been presented. This gives an opportunity to the learner to revise the content just learnt.

(vi) ***Reflections***: At the end of each module, there is a section on reflection. A number of questions related to that module are presented here. In this section, the learner writes whatever comes to their mind regarding the question at hand. These questions have no specific answers and are left to the learner's imagination.

(vii) ***References***: Readymade references in the form of books or websites have been provided at the end of each module so that the learner may enrich oneself with extra knowledge regarding a particular skill or concept.

1.12.2 Effectiveness of the Strategy

1.12.2.1 Research design

To find out the effectiveness of the developed strategy the Experimental method of research was adopted. The design selected for the present study was pre-test-post-test equivalent group design.

1.12.2.2 Independent variable

In the present study the independent variable is the experimental treatment i.e. the Self-Managed Learning strategy which was developed by the investigator.

1.12.2.3 **Dependent variable**

In the present study, the dependent variable is the achievement of the student-teachers in the SML skills which will be measured with the help of an achievement test.

1.12.2.4 **Sample**

The sample consisted of forty student-teachers of a co-educational government aided B. Ed college, viz. Titus II Teachers College, from Tiruvalla district in Kerala. The sample were randomly selected on the basis of the 'Table of Random Numbers' and were systematically divided into two groups: Experimental Group (EG) and Control Group (CG). Each group consisted of twenty students.

1.12.2.5 **Materials and tools used for the study**

For the purpose of the present study the investigator used the following materials and tools:

(i) The Self- Managed Learning (SML) strategy, in the form of six self instructional modules, each covering a different aspect of learning viz. Goal Setting Skill, Information Location Skill, Information Processing Skill, Information Storing Skill, Information Retention Skill and Information Retrieval Skills.

(ii) An opinionnaire for each of the six modules to find out the reaction of the student- teachers towards each module.

(iii) An opinionnaire for the entire strategy to find out the opinion of the student-teachers towards the strategy as a whole.

(iv) Pre-test based on the Self- Managed Learning strategy.

(v) Post-test based on the Self- Managed Learning strategy.

1.12.2.6 **Procedure for validation of the strategy in brief**

The experimentation phase consisted of a pre-test, implementation of the strategy, post-test and collection of data regarding the reaction of student-teachers and experts towards the prepared strategy. After the pre-test was taken to find out the student-

teachers level of achievement with regard to knowledge, understanding and skill about self- managed learning, the student- teachers were given orientation regarding the content of the prepared strategy and the procedure to be adopted while using the strategy. Then each student- teacher was given a copy of the prepared material to enable them to work independently. In this way each of the unit was completed. At the end of each unit, before passing on to the next unit, a unit test for that unit was taken. After completion of all the units, a post- test was taken to find out the achievement of the student- teachers. This was followed by collection of data regarding the opinion of the student- teachers and experts regarding the strategy.

1.13 DATA ANALYSIS AND INTERPRETATION

The data collected for finding out the effectiveness of the strategy was analyzed using qualitative and quantitative methods.

Statistical techniques used for data analysis

Statistical analysis of the data collected was undertaken using procedures appropriate for the purpose of the study. The statistical techniques used for the analysis of the data for the present study were:

- Mean
- Standard Deviation
- 't' test

The above statistical techniques were used to evaluate the effectiveness of the strategy in terms of the student-teachers performance in the achievement test. i.e. objective 3(i)

- Percentage analysis was carried out to find out the percentage of students attaining mastery level.
- The data collected from the opinionnaire was analysed through frequency distribution and percentage analysis. i.e. objective 3(ii)
- The data gathered through interview of experts were analysed using content analysis. i.e. objective 3(iii)

1.14 TENABILITY OF THE HYPOTHESIS

The tenability of the hypothesis is tested by considering the experimental hypothesis on the basis of the scores obtained in the achievement tests by the Experimental Group and Control Group.

HYPOTHESIS

The hypothesis of the study states that there will be a significant improvement in the self- managed learning skills of the student- teachers of the Experimental Group after the intervention of the Self- Managed Learning strategy.

This hypothesis is fully substantiated as the obtained 't' value (21.702) is significant at 0.01 level.

Hence the hypothesis titled "The prepared strategy will enhance the self-managed learning skills of the student-teachers." is accepted.

1.15 MAJOR FINDINGS OF THE STUDY

The major findings of the study are as follows:

(i) Six skills were identified for developing self-managed learning skills among student-teachers. These were: Goal Setting Skill, Information Location Skill, Information Processing Skill, Information Storing Skill, Information Retention Skill and Information Retrieval Skill.

(ii) The sub-skills and techniques that were identified for developing Goal Setting Skill were: differentiating long-term goal from short-term goal, use of SWOT analysis, use of SMART acronym, identifying ones' life-time goals, identifying ones' learning goals, goal mapping, time-management techniques, preparing activity logs, preparing term calendar, weekly schedule and daily to-do-list.

(iii) The sub-skills and techniques that were identified for developing Information Location Skill were: identification of range of institutions where relevant information could be found, analyzing the topic to be learned, breaking the topic of study into searchable key-words, refining the key-words to obtain

relevant results, using library catalogues, using web-resources, evaluating the resources and keeping records.

(iv) The sub-skills and techniques that were identified for developing Information Processing Skill were: using different strategies for reading, using KWL strategy, SQ3R technique, speed reading and identifying ones' learning style.

(v) The sub-skills and techniques that were identified for developing Information Storing Skill were: identifying common abbreviations and symbols used while taking notes, forming new abbreviations while taking and making notes, forming new symbols while taking and making notes, listening skill, Cornell system of note-taking and mind mapping.

(vi) The sub-skills and techniques that were identified for developing Information Retention Skill were: identifying nutrients which nurture brain function, using techniques for improving memory, systematic revision and using the principle of chunking.

(vii) The sub-skills and techniques that were identified for developing Information Retrieval Skill were: forming new acronyms, forming new abbreviations, forming new acronymic sentences, using peg-word and using key-word.

(viii) A modular strategy was developed using the above mention skills, sub-skills and techniques for enhancing the self-managed learning skills of the student-teachers.

(ix) The self- managed learning (SML) strategy was found to be effective in enhancing the learning to learn skills or Self- Managed Learning skills of the student- teachers.

(x) Most of the student- teachers i.e. 75% of them were able to perform at mastery level in the achievement test after the administration of the self-managed learning strategy.

(xi) The student-teachers had a positive opinion about the six skills taken up in the strategy viz. Goal Setting Skill, Information Location Skill, Information

Processing Skill, Information Storing Skill, Information Retention Skill and Information Retrieval Skill. Moreover they felt that the strategy as a whole was very useful in improving their learning skills.

(xii) They found the strategy very interesting and felt that such strategies should be implemented from the school level itself.

(xiii) The experts had a highly favourable opinion towards the self-managed learning strategy.

1.16 SUGGESTIONS FOR FURTHER RESEARCH

- The present study can be conducted in the schools at the secondary and higher secondary level.
- A similar study can be conducted among the students studying at M.Ed level.
- The strategy can be used for the students of other faculties also with necessary modifications if required.
- A strategy for developing self- managed learning skills taking into consideration a different set of skills can be undertaken.
- The present study was meant for students having an English medium background the same can be done for students of other vernacular medium background.
- A similar strategy using the same skills but different sub-skills, techniques and methods may be developed.
- A similar strategy can be prepared and taught to the students by using power-point presentation and workshop method.
- The improvement in the performance of the student-teachers in their college examinations before and after the learning of the self- managed learning skills can be found out.

- An in depth study of the study skills used by bright students at varying levels of education can be found out.
- A strategy for enhancing study skills of bright students may then be developed.
- A strategy for developing study skills of below average students may also be developed.
- The study skills used by primary school students may also be determined.
- A strategy may then be developed for introduction of study skills at this level.

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