LEARNING HOW TO LEARN: AN EDUCATIONAL ASSET OR LIABILITY

by
*Abaineh Workie**

ABSTRACT

Rote memorization has been a common method of learning in many Ethiopian schools. This study attempts to examine the conditions under which it can serve as an educational asset, and those under which it can be an educational liability.

I. Introduction

A. The Phenomenon of Learning How to Learn.

The phenomenon of "learning how to learn" has been described by various investigators in the field of psychology of learning. Harlow (1949) regards learning how to learn as a learning set which consists of the elimination of responses and response tendencies inappropriate to a particular learning situation. Travers (1963) describes learning how to learn as learning how to solve a calss of problems so that when examples of this class of problems are presented they are quickly and readily solved. To Carpenter, et al (1962) ,it is an instrumental skill that includes sets and positive attitudes. To Morrisett and Hovland (1959) it is the learning of a single class of habits to solve a complex set of cues. To Stephens (1960), it is a very primitive form of transfer which occurs when the learner works on a series of complex but similar problems. To McDonald (1959), it is familiarity in the learning of generalizations. According to the latter, familiarity is likely to be produced by exposing students to the materials and allowing them to explore and manipulate the materials, and in such exploratory periods an individual learns how to learn.

As the different descriptions of "learning how to learn" by the various investigators presented in the preceding paragraph indicate, there is a general agreement in the conceptualization of this learning phenomenon. Learning how to learn is basically an interproblem learning, interproblem transfer, or generalization from one problem situation to another. It is an interproblem transfer primarily concerned with the transfer of "method" rather than transfer of "content".

B. Learning How to Learn with Meaningful Material.

Woodrow (1972) conducted a study in which one group of college students was taught new methods of "memorizing". Following this

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training the group was compared with two control groups on achievement in new verbal tasks. The trained group was found to be more efficient in transfer or generalizing. These results, which indicate the superior performance of the trained group, have in recent years been attributed to the formation of a learning set by investigators like Crombach (1963). Cox (1933), using motor skills, provided a group of subjects with observation exercises designed to increase attention to cues. All the training was given on a single task and no direct training of sub-skills were provided. Yet this group was found to be more successful on subsequent tasks than either a group trained directly on sub-skills or a group given equal training on the training task itself. Observation exercises on the use of one skill led to much more rapid learning of a dissimilar motor skill, thus demonstrationg learning how to learn.

Reed (1946) reported a study instructions to learn concepts facilitated the learning of concepts. Gormezano and Abraham (1961) found that subjects who were required to name forms, colors, or numbers improved their performance significantly on the last three stages of the training task. Harlow (1949), in his typical study, had a subject presented with a choice between two objects differing along one or more dimensions (color, shape, etc.). When the subject picks up or knocks aside the correct object, he is given a food reward. The pairs of objects presented to the subject are changed throughout the experiment so that the subject may solve two hundred or more problems consisting of a great many different pairs during the course of an experiment. Harlow found that subjects improved greatly in their ability to solve the discrimination problems, frequently reaching a point of near perfection of choice on the last block of trials.

C. Learning How to Learn with Meaningless Material.

Ward (1937) demonstrated that as subjects learned by heart lists of nonsense syllables, their speed of learning became more and more rapid with each successive new list. A few years later, Melton and VonLackum (1941) also showed that such a phenomenon could be demonstrated after considerable practice had taken place.

As the separate survey of the literature on learning how to learn with meanigful and meaningless material suggests there has not been near as many sutdies conducted on the topic using meaningless material as there have been studies which used meanigful material. Furthrermore, since the traditional instructional method of rote memorization still persists in the present educational system of Ethiopia, learning how to learn with meanigless material becomes particularly signficant to Ethiopia. Therefore, a study has been designed by the present author to further

demonstrate the phenomenon of learning how to learn using meaningless material with Ethiopian subjects.

II. Investigation

A. Procedure.

The subjects used in the study were 8th grade students from Atse Naod Junior High School in Addis Ababa, Ethiopia. 75 of these students were divided at random into three groups of 25 subjects each. A list of 9 nonsense syllables of CVC format was presented visually to group of 25 subjects, one syllable at a time. In every case, the syllables in a list were presented serially. Subjects were exposed to each stimulus of nonsense syllables for a duration of about 3 seconds.

The nine nonsense syllables used in the first task were cim, dup faq, gor, seh, kuv, liw, jit, and rax. These are nonsense syllables with J. A. Glaze's association (meaningfulness) values of less than 67 percent except two syllables that have association values of 80 and 73 precent. Each of these nine nonsense syllables was presented 15 times to subjects in Group A, 20 times to subjects in Group B, and 25 times to those in Group C.

Two days later, a different list of nonsense syllables which were unrelated to those in the first list were employed as a second learning task. The second list of nonsense syllables consisted of zoj, xeg, caq, gis, juc, ked, zok, fih, and soz. All these nonsense syllables have less than 47 percent association value except one that has a value of 67 percent.

The second list of nonsense syllables was similarly presented to groups A, B, and C, as a series of visual stimuli, one syllable at a time and with an exposure period of about 3 seconds for each syllable. However, in the case of the second list, each nonsense syllable was presented 15 times to each group.

In the case of both the first as well as the second list of nonsense syllables, each group was tested for the recall of the syllables immediately after the last presentation of the last syllable in the list. The subjects were instructed to list as many of the nonsense syllables as they could remember in any order they wish within a recall time of 8 minutes provided at the end of each session.

Table 1

Recall Scores on the First and Second List of Nonsense Syllables

List 1			List 2		
Group A (15 Stimulus Exposures)	Group B (20 Stim. Exposures)	Group C (25 Stim. Exposures)	Group A (15 Stim. Exposures)	Group B (15 Stim. Exposures)	Group C (15 Stim. Exposures)
2	1	1	1	2	3
2	1	1	2	3	4
2	2	4	2	3	5
3	3	4	3	5	5
3	4	5	3	5	5
3	5	5	3	6	6
3	5	6	4	6	6
4	5	6	4	6	7
4	5	6	4	6	7
4	5	7	5	6	7
5	6	7	5	7	8
5	7	7	5	7	8
5	7	7	5	7	8
5	7	7	6	7	8
5	7	7	6	7	8
5	7	8	6	8	8
6	7	8	6	8	8
6	8	8	6	8	8
6	8	8	7	8	8
6	8	8	7	8	9
7	8	8	7	8	9
7	9	8	8	8	9
7	9	9	8	9	9
7	9	9	8	9	9
8	9	9	9	9	9
Ex=121	152	163	130	166	181
n 25	25	25	25	25	25
Mn=4.86	6.20	6.52	5.20	6.64	7.24

Table 2

Analysis of Variance Summary Table

Source	SS	df	MS	F
Treatments				
Between Groups	54.96	2	27.48	7.49*
Error				
Within Groups	264.32	72	3.67	

*Significant at .01 level

B. Presentation of Results.

The raw scores on recall for the first as well as for the second list of nonsense syllables are given in Table 1. A separate analysis of variance has been carried out for the recall scores on each list. Table 2 presents the analysis of variance summary for the recall data on the second list of nonsense syllables.

On the first list of nonsense syllables, the mean scores for Groups A, B, and C, were 4.84, 6.20, and 6.52 respectively, as shown in Table 1. Since the experimental conditions were the same for all three groups except in the number of practices with which each group had to learn the list of syllables, the mean differences observed were due to the effect of practice. In order to test if the practice effect had resulted in significant differences between the groups, an analysis of variance was carried out. As the F value was found to be significant, F. (2,72)= 3.39, P. 05, a post-hoc analysis using Scheffe's method was made to test the significance of the differences between means. The mean difference between A and C was significant at the .05 level. The mean difference between A and B was close to a statistical signficance but did not quite make it. But the mean difference between groups B and C, though in the right direction, was not significant at all.

In the case of the second list of nonsense syllables, the mean scores for Group A, B, and C were 5.20, 6.64 and 7.24 respectively. Again an analysis of variance was made to test for differences in performance among the groups as a function of the group's differential treatement on the first list of nonsense syllables. Following a significant F in the analysis of variance, F (2,72)= 7.49, P .01, Scheffe's post-hoc analysis was carried out. The post-hoc analysis revealed that the mean differences between A and C as well as A and B were significant at the .01 and .05 level respectively. The mean difference between B and C was not significant, although the difference was in the expected direction.

C. Explanation of Results.

The results generally confirm the expectation that those groups that had greater number of stimulus exposures to the first list of nonsense syllables would perform better on the second list than those who had fewer stimulus exposures while learning the first list, thus demonstrating the occurrence of learning how to learn.

Since the lists of nonsense syllables in the first and second situations were dissimilar, there seems to be very little that could be transferred from the learning situation of the first list to that of the second in terms of "content" of the task. What could be transferred from

the first to the second learning situation and what appears to have actually been transferred is a "method" of learning nonsense syllables. This was a case of learning how to learn.

An explanation seems to be called for the finding of a non-significant difference between Groups B and C. Such a finding had been obtained in the case of learnig the first as well as the second list of syllables. The lack of difference between B and C in the second situation was due to the lack of difference between B and C in the first situation.

The expectation of significant difference between B and C in the second situation was based on the assumption that B and C would be differentially treated in the first situation. Failure to fulfill this later condition removed that very basis on which the expectation had been built. Thus, the observed difference between B and C is in complete accord with the hypothesis of the investigation. In fact, had this difference between B and C been significant, it would have been inconsistent with the position maintained and hypothesized at the beginning of the investigation.

As has just been expressed, since the differential treatement of B and C in the first situation was not significant, an expectation of a significant differential effect of treatment in the second situation would not be warranted because the necessary prerequisite of a significant differential treatment had not been fulfilled. Therefore, the non-significant mean difference observed between Groups B and C could not be justifiably taken as a piece of evidence contrary to the hypothesis of the investigation. However, since the non-significant difference between B and C in the first situation needs an explanation, some of the main reasons for the observed difference will be pointed out.

One of the main reasons for the non-significant difference between B and C in the first situation is the non-linear (non-monotonic) effect of practice on learning. Out of the non-monotonic relationship between practice and learning, which is shown in figure 1, develops the concept of diminishing returns in learning. This essentially signifies that in the process of practice in learning a task, beyond a certian critical point, more practice on the task results in less learning. It was such a phenomenon of diminishing returns in learning that was one of the major factors responsible for the observed small difference between Groups B and C.

In the case of the first list of nonsense syllables, the point of diminishing return in learning seemed to have been approached for a learning task of this size and diffculty when the number of stimulus exposures or practice reached the twenties. Thus, the case of Group C

where the total number of stimulus exposures was 25 and that of B where the number of exposures was 20 was, in reality, not too different at all.

If the stimulus exposure numbers used had been lower, something like 5, 10, and 20 or better still 2, 10, and 20, all mean differences would have probably been significant. These ratios have been suggested where three nonzero levels of learning how to learn are desired. However, with an appropriate control for later comparison among groups, Group A may be given no exposure at all, for the differences to show even more clearly.

III. Discussion

In learning a task, there are two aspects of learning that are simultaneously going on. These aspects have already been referred to and they are the learning of the "content" of the task and the "method" of learning the task. The latter is the focus of attention in this paper. The learning of "method," or the learning about learning a task may be understood in two distinct ways when viewed from the perspective of the nature of the task to be learned is considered. What is to be learned determines, so to speak, the "content" of the "method" of learning- - that is, what the "method" or learning how to learn constitutes.

When learning how to learn constitutes the particularly efficient approaches or modes of attacking the problem of learning meaningful material, it is one kind of learning how to learn, and when the problem of learning is the learning of meaningless material, it is another. The effect of learning how to learn a task on subsequent learning situations, in the case of both meaningful and meaningless material, covers the whole spectrum of positive, neutral, and negative values.

The learning how to learn obtained in connection with meaningful material results in a positive effect on subsequent learning when the latter involves a learning task that is both meaningful and similar. If the second task is meaningful but dissimilar with the first one, interference with learning the second task may develop, and the effect would be negative. Even when the two learning tasks in a series are both meaningful and similar but the learning how to learn skill is misapplied, it may well develop into a case of negative transfer. In short when a skill of learning how to learn is applied to an inappropriate situation, or to an appropriate situation inappropriately, the effect would be negative. However, if one fails to apply or misapply the skill of learning how to learn meaningful material to an appropriate or inappropriate situation of subsequent learning, there will naturally be

neither positive nor negative but neutral or no effect on the latter situation.

Learning how to learn developed in connection with meaningless material has great similarities to and sharp differences from the learning how to learn developed in connection with meanigful material. One major similarity is that learning how to learn meaningless material may also have either positive, neutral, or negative effect on subsequent learning but the conditions under which these varied effects occur differ in many cases.

Learning how to learn meaningless material facilitates subsequent learning of meanigless material. Unlike the case of meaningful material. this occurs whether or not the former task is similar in "content" with the second one. It appears that the "meaninglessness" is all the similarity that is needed for the positive transfer of learning how to learn to take place. When learning how to learn meaningless material is applied to any learning situation of meaningful material, a negative transfer results. Failure to apply or misapply the skill of learning how to learn meaningless material to a second appropriate or inappropriate situation of learning becomes inconsequential to learning in the latter situation.

The foregoing discussions seem to suggest that in order to properly appreciate the "asset" and "liability" aspect of learning how to learn from an educational standpoint, a separate treatement of learning how to learn meaningful and meaningless material is helpful. Learning how to learn meaningful material is more of an educational "asset" than a "liability'. Life is full of meaningful learning situations and many of them are either practically the same or suffciently similar so that learning how to learn a particular type of learning tasks will prove very useful in learning other tasks of a similar type. The "liability" aspect of it lies not in the skill of learning how to learn meaningful material itself but in the application of the skill. If this skill is applied appropriately and to appropriate situations, the "liability" aspect would be removed. But since this is not practically possible, a maximization of its positive value and minimization of its already low negative value would certainly lead to a high educational dividend.

Learning how to learn meaningless material, however, is not as positive in its educational impact as is learning how to learn meaningful material. In fact it has at least as much undesirable educational impact as learning how to learn meanigful material has a desirable one. Learning how to learn meaningless material has a limited value as an educational "asset" particularly in learning situations beyond the early childhood period of the learner. Such a skill is useful

in subsequent learnings of only meaningless material. A practical case in point is the early learning of a child who mostly learns by rote. One instance of a child's rote learning facilitates subsequent instances of his rote learning because in addition to learning the "content" of the material that was then meaningless to him, he learns how to learn or how to deal with the problem of learning meaningless material. This seems to be then the only major aspect in which learning meaningless material may be regarded as a significant educational "asset".

Learning how to learn meaningless material is by far more of an educatonal "liability" than an "asset" because it could lay a formidable obstacle in the educational development of an individual beyond the period of his early childhood. Learning how to learn meaningless material may develop to be a strong learning habit inappropriately generalized to all learning situations including situations of learning meaningful material. Thus the young learner will develop a tendency to approach all types of learning problems with this generalized habit which is inappropriate to most learning situations in life. By so interfering with the child's learning with understanding, learning how to learn meaningless material may prevent the normal occurrence of meaningful learning, delaying the child's dvelopment and preparedness for learning with understanding.

IV. Implications

The findings reported and the discussions made in the foregoing paragraphs seem to have some significant implications for educatinal theory and practice. At the theoretical level, due recognition should be given to the nature of learning how to learn is a skill with two sides to it. It could be an important asset in many educational endeavors. It could also be a formidable obstacle in the realization of certain important educational objectives. The educator's responsibility is not only to understand the phenomenon of learning how to learn but also to have a clear differentiation between the conditions under which it serves as an educational asset and these under which it is an educational liability. The undesirable consequences of the latter should be prevented as much as possible. This is a case of simple but significant educational economics where the educator maximizes the asset and minimzes the liablity aspect of learning how to learn to obtain the highest possible educational dividend.

At the practical level, the creation or maintenance of educational systems and institutions should be seen in the light of these facts and their theoretical implications to educational practice. The practical implication of these discussions appears to be of paramount importance to the existing educational system of Ethopia today.

When viewed from these theoretical perspectives, the traditional and church schools may actually do more harm than good, if they continue with the method of rote learning. This is particularly so when such a method of learning is hammered into the child long after he is past the age of developmental maturity when he can understand with little guidance many of the things he is led or even forced to learn by heart. Unfortunately, the strength of this learning habit is so high that the deeply instilled response tendency does not seem to completely wear off in many cases even during the high school and college years of the learner. A situation of this kind leads one to believe that such schools should be either revolutionized in the line of modern advances in educational theory and practice or discontinued as an outdated and impractical educational system whose value lies only in the history of the past.

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COMMUNICATIONS

Research Topic: A Survey of the Problems and Prosepects of the Shift System as Applied to Ethiopian Schools.

Principal Investigator: Amberber Mengesha *

Date of Research Commencement: 1977

I. Introduction:

Providing functional education to its youth is a formidable task for a developing country such as Ethiopia. Lack of the necessary budget seems to be at the root of the problem, because of the limited money to be shared among priority areas. The main justification for the introduction of the shift system, therefore, appears to be financial consideration. It was thought that by adopting the scheme, money which other would be allocated fo building construction could be saved.

The purpose of this study is to investigate through a survey the problems and prospects of the shift system as they affect the Ethiopian schools. The study focuses on the following questions:

1. Does the shift system deprive students from getting a balanced education?
2. Is the curriculum suited to the shift system?
3. Does the shift system encourage students develop u habits?
4. Does the existing shift system constrain the de of co-curricular activities ?

The importance of this study mainly lies in its attempt to explore the possiblity by which the shift system could contribute to the integration of the teaching learning process with productive labour.

Methodology

A questionnaire on the shift system was administered randomly to groups of 400 students, 300 teachers, 250 parents and 200 school administrators of selected Addis Ababa Comprehensive High Schools

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II. Findings:

The major finding of the study indicate that the shift system:

1. Leaves students with ample time to study on their own.
2. Promotes the participation of students in community activities.
3. Limits the opprotunity of students to get in depth knowedge.
4. Exhausts teachers physically.
5. Obliges teachers to concentrate only on the lecture method in an effort to cover the course content in the limited time period.

As for the implications of these findings and the recommendations made please try to get hold of the complete study.**

**The original research study will be available at the Educational Research Center library for those who are interested in obtaining detailed description of the study.