

Efficacy of Skill Development Techniques: Empirical Evidence

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Abstract

Making students skillful is the ultimate aim of teaching. The teacher who feel that their jobs are over once they explain and demonstrates the lesson in the class is certainly on the defective side of thinking. Rather, students must be guided towards the objectives of learning demonstrated through modeling, and given ample practice to handle learning independently. This paper elucidates various techniques available for skill development by studying the case of 75 students. Their views regarding learning were gathered through a questionnaire. A statistical analysis of their views was carried out, after which they were given a skill to practice through a selected technique which they considered as the most effective technique for skill development. It was empirically concluded that students learned the skill more rapidly when they are allowed to use their initiative and judgment in a mutual practice technique of skill development. At the end, guidelines for effective skill development have been suggested which could be adopted by teacher for skill training of students.

Keywords: skill development, teaching techniques, teacher efficiency.

Introduction

Sound application ability is a highly significant aspect that gives confidence to a student in applying theoretical knowledge to practical situations (Armstrong, 1998). It is at the application stage that a student excels in a skill. In teaching a skill, emphasis is on practicing the skills. Skills are not truly learnt until they become a “Habit” (Bass, 1995).

Therefore, students are required to go through a cycle of practices until students become skillful. For this, various techniques are used such as controlled practice, mutual practice and team practice (Dawson, 1992). The efficacy of these techniques was determined based on the opinion of a group of 75 students. The statistical analysis of the data indicated that most of the students were in favor of mutual practice technique of skill development. This paper describes skill development techniques and gives a clear picture of the efficacy of these techniques empirically.

Literature Review

Behavioural and educational scientists agree that skill development is a systematic process comprising definite stages and actions taken within each stage (Dawson, 1992). To simplify the process, we can summarize that there are three basic stages involved in acquiring a skill. Explanation of these stages along with the methods to achieve each is given in Table 1.

Table 1. Three basic stages in acquiring skills

Stage	Methods to Achieve	Desirable Level Involvement of Teacher
Building concept of skill	Explanation. Demonstration. Directing and guiding students to study reference material	Maximum
Developing the skill	Students initiate the demonstration. Student's activities are directed and guided. Teacher's evaluation, encouragement and guidance.	Moderate
Practice for accuracy and perfection	Practice exercises. Guide students to overcome their weaknesses.	Minimum

As shown in the table explanation and showing should take the least time so that maximum time can be devoted to practice. Preferably, the teacher should guide on a requirement basis during the skill development stages. Students should be allowed to exercise their initiative and use their judgment during practice (Elgin, 1980). But, mostly it is not so in reality. Rather, the teacher is still an active part of skill development training which is contrary to the modern approach of teaching and learning. In modern teaching methods, learning is through active participation of students while the teacher acts as a mentor or guide (Ellis, 1997).

The most important thing in developing a skill is to teach how to solve problems or handle a particular situation rather than how to arrive at an approved set of solutions (James, James & Barkin, 1998). The student should use a systematic course of action to solve a problem which is briefly shown in Figure 1.

Figure 1. Sequence of action to handle a problem



There are many techniques for learning a skill; however, the author has taken three major techniques which are being used for skill development in skill training institutes of Pakistan.

Controlled Practice: Students work individually or collectively under the supervision of a teacher. The teacher is the active part of such practice (Jakubowski & Lange, 1978). Students are not allowed to use their judgment beyond limits, and work step by step according to the guidelines provided by the teacher, followed by practice under the supervision of the teacher (Nirenberg, 1976).

Mutual Practice: This method is particularly useful when the class has learnt sufficiently and they acquire capability of supervising each other's

work under the limited guidance of the teacher. The students alternatively act as coach and pupils (Nichols, 1995). This method teaches the students to think as well as “to do”. It stimulates interest and builds up a sense of responsibility and spirit of cooperation. In this method of skill development, the teacher is passive and the students are active (Piaget, 1991). Here the students are allowed to initiate their actions and use their judgment (Schunk & Gunn 1985).

Team Practice: At this stage students are first trained individually and then made part of a team. In this method, they learn how to work with others. Team practice is done in two phases, the technique phase and the practical phase (Kouzes, 1987). In the technique phase, the members of the team master the technique of their task without applying it to a practical situation. In the practical phase, the whole team does the same task in realistic conditions under a practical scenario. The teacher remains active in technique as well as in the practical phase (Peters, 1982).

Method

Study design

Essentially, it was not a simple task to determine the best technique for skill development. Educationists have given different verdicts about the suitability of various skill development methods; however, no serious attempt by the researchers could be sighted which describes students’ opinion about different skill development techniques. To accomplish this task, a thorough research methodology was used which comprised the following steps. Survey through questionnaires is one of the appropriate methods for research in social sciences. It is a method used to collect information from a sample of individuals in a systematic way. In this research, a survey was conducted to know about the best skill development technique based on the opinion of students. An interactive and easy to follow questionnaire was designed. Each student was required to answer four simple questions about each technique, whether that technique was slightly effective or moderately effective.

Participants

A simple random sample of 75 students was selected as respondents regardless of any gender, caste and creed bias. Selection of this size of sample was based on the premise that generally for computing averages. A sample of this size is adequate. Moreover, sample configuration was kept mixed. It included students from all categories regardless of gender, caste and creed bias. The mixed representation in the sample catered for bias and error in the sampling. The level of awareness in the respondents about skill development techniques suggested that 75 respondents could effectively represent the opinion of the complete school. The average age of the students was 20 years.

Measures

The students were given full liberty to rate the skill development techniques as per their own assessment. No tampering was done to achieve a natural response. Questionnaires were distributed among a sample of 75 students. The data obtained through the questionnaire was statistically analyzed. To validate the results, students' favourite technique in the art of presentation was given to a group of 15 students to practice. At the end of this process students were found more skilled. Thus, their opinion was validated practically.

Procedure

A comprehensive procedure was adopted to obtain the data. Starting from the formulation of an easy questionnaire till validation of the results obtained, a systematic process was adopted as shown in Figure 2. The process was first explained to the students and then they were asked to respond to the questionnaire as per their own judgment.

Results

The feedback obtained from students indicated a strong tendency towards mutual practice method as 35 out of 75 students declared it be a very effective method of skill development. On the other hand, 25 students were for team practice and only 10 were for controlled practice as the best technique of skill development. This shows that students like initiative

and use of judgment which is optimally available in mutual practice method. Students learn better when they are on their own, with least involvement, though under the guidance of a teacher (Phelps, 1987). In the modern scenario a teacher should act as a mentor and guide the students, rather than controlling them to an extent that they are not able to practice their judgment the data obtained along with descriptive statistics is shown in Table 2.

Table 2. Summary of the data obtained through questionnaire

Student Response	Techniques		
	Number of students for Controlle Practice	Number of students for Mututal Practice	Number of students for Team Practice
Not effective	10	5	26
Slightly Effective	15	15	24
Moderately Effective	25	20	15
Very Effective	25	35	10
Descriptive Statistics			
Average	18.75	18.75	18.75
Standard Deviation	7.50	12.50	7.54
Kurtosis	-3.90	0.93	-3.64
Skewness	-0.37	0.56	-0.31

Table 2 reflects a very interesting scenario of the student's opinion. Few statistical conclusions from the data shown in Table 2 are as under.

The standard deviation value for mutual practice was high (12.50), followed by team practice (7.54) and then controlled practice (7.50). Statistically it means that for mutual practice technique, the change in opinion occurred after every 12th student, whereas, in the case of controlled and team practice techniques, every 7th or 8th student changed his opinion. The values for all the three practices lied within 68 to 95 % of the area under normal distribution curve (on either side of the mean).

Data set of mutual practice had positive skewness which meant that its data set contained few small values. This again proved that students are satisfied with mutual practice. On the other hand, controlled and team practice methods had negative skewness, which indicated that its data set contained few high values. It reflected that students were not satisfied with controlled practice and team practice.

Data set for mutual practice had positive kurtosis value, indicating that the curve represented by data set was steeper than the normal distribution curve which was an indication that most of the observations were clustered near the average and fewer on the extremes. On the other hand, data set for controlled and team practice had negative kurtosis value indicating a flatter curve than normal distribution curve. In other words, fewer observations clustered near the average and more observations populated the extremes.

Discussion

After determining the best technique based on students' opinion, students were given practice in the skill of presenting a topic of their choice by adopting mutual practice approach. Students were divided into 5 groups of 15 students in each. In each group, every student was asked to present the topic of his own choice for 10 minutes, and the rest of the 14 fellows were asked to correct him for errors. When this practice was repeated by 15 students of the group, students were found much skilled in the art of presentation. 15 rounds of this activity were conducted.

During the skill development activity, the teacher observed the students closely, without directing, and controlling. The teacher just mentored. During this process students were observed for improvement in skill after each practice. Thus, the study showed a very definite relationship between the number of practices and level of skill development as shown in Figure 2.

Figure 2. Relationship between number of practices and skill development

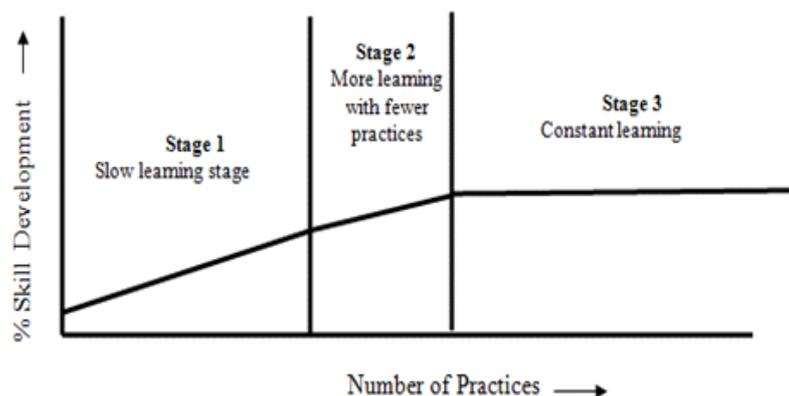


Figure 2 shows the three distinct stages of skill development and its relation to the number of practices observed during the students' activity. In stage 1, the students learnt slowly, as the numbers of practices were more than the corresponding percentage of skill development. In stage 2, the students learnt more with fewer practices and in stage 3, there was a consistent level of skill development and no worthwhile increase in skill learning occurred with an increase in the number of practices. At the end of stage 3, students were found skillful in the presentation skill (Bandura, 1993).

The time required for skill development was observed after each practice round to draw a relationship between time required for skill development and number of practices. This again had three distinct stages as shown in Figure 3.

Figure 3. Relationship between time and number of practices

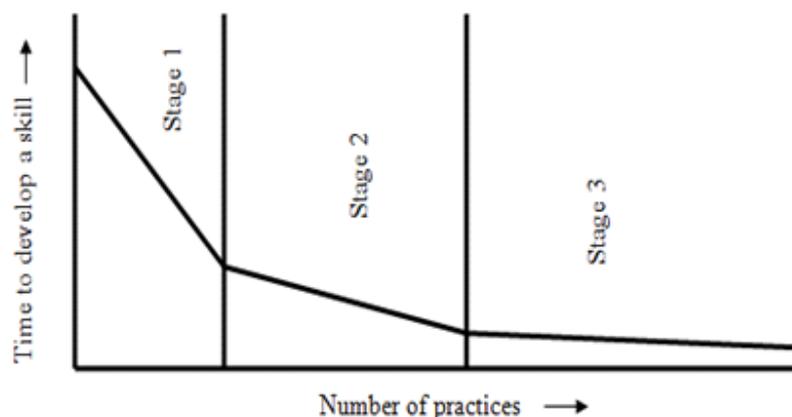


Figure 3 shows that initially students took more time and only fewer practices could be conducted (stage 1), but as the learning progressed, they started taking lesser time and consequently, more practices could be conducted (stage 2). Finally, they reached to a stage (stage 3), where time could not be reduced further with increased number of practices. At this stage, students were skilled in the skill of presentation.

Application stage for skill development requires greater imagination and ingenuity by the teacher. The teacher has to decide how to institute a systematic process whereby the students are allowed to use their initiative and judgment and at the same time they are guided and mentored (Smith & Stiff, 1993). This depends on the subject curriculum which a teacher is teaching. The teacher needs to take care of necessary equipment and aids required so that the practice can be conducted in a meaningful way (Mirza & Hussain, (2014). And more importantly, he should be sure about the time the practice should last, depending on the mental and physical capacity of students. Also, the number of practices for skill development depends on student's learning capability.

Conclusions

Making students skillful is a skill and a teacher needs to learn this skill. The study was conducted to know about the response of students about different skill development techniques and to determine the best technique as per their opinion. The following conclusions can be drawn from the study:

1. Mutual practice is the most effective method of skill development. It is because students learn better and fast when they are allowed to use their initiative and judgment.
2. As the number of practices increases, the time to learn a skill reduces.
3. Initially more practice is required to learn the basics of skill, after which the speed of learning increases, unless it reaches a stage of consistency where no increase in learning occur with additional number of practices.
4. Teacher should act as guide and mentor during skill development; but he should allow students to exercise their initiative and judgment.

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