

Developments in Business Simulation & Experiential Exercises, Volume 8, 1981

AN EMPIRICAL ANALYSIS OF EXPERIENTIAL LEARNING FOR LEARNING REINFORCEMENT

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INTRODUCTION

The focus of this research study is the assessment of particular experiential learning techniques that have been used for learning reinforcement. Experiential learning techniques, which are also referred to as simulation, are operating models of ... social situations ... containing only those elements of reality that the designer deems relevant to his purpose [12, pp. 4-5]. Learning reinforcement is being defined as the stimuli that are needed to ensure the performance of any learned behavior.

The value of assessing an experiential learning situation designed for learning reinforcement is two-fold. First, from the student's perspective, with some background knowledge in the subject, he or she might be able to gain more from an experiential training session than from a non-experiential approach. Second, an employer's interest might be better served in allocation of training funds by his being able to assess if an employee could gain the most from experiential vs. non-experiential training media.

The objective of this study is to determine the extent to which learning is reinforced as a result of a structured learning situation. The study makes a contribution in that while the learning theory literature is replete with citations on the value of reinforcement in learning from as early as Thorndike (1898), Tolman (1932), and Blodgett (1929), and as recently as the 1970's [Estes (1972), McKeachie (1974) and Howell (1976)], there is very little empirical evaluation reported in the experiential learning literature. Some of the articles in the experiential learning literature deal with how to develop measures of performance in experiential learning settings [9, pp. 61-74; 13; 7; 15, pp. 280-283; 3, pp. 55-71; 16, pp. 211-231; 11, pp. 34-37]. Others report on student attitudes towards the experiential learning situation [12, pp. 4-5; 16, pp. 211-231; 11, pp. 34-37]. However, relatively few are recent empirical evaluations of learning in an experiential setting [14, pp. 75-85; 1, p. 14; 4, pp. 53-65; 8, pp. 13-22], and none of these consider reinforcement of learning rather than the introduction of new concepts. The conceptual issue to which this study is directed is, does experiential learning reinforce the student's knowledge in a classroom situation; and furthermore, does it enhance the students confidence in his or her knowledge?

METHODOLOGY

A questionnaire was administered to two undergraduate sections (N53) of a seminar in personnel administration prior to the entrance into the course. The same questionnaire was administered to the students upon completion of the course.

The one-quarter course was conducted primarily through the use of structured, experiential exercises from Arthur A. Whatley and Nelson Lane Kelley, *Personnel Management in Action*, St. Paul, Minn., West Publishing Co., 1977. Eleven of the books exercises were used as were exercises from other sources.

In addition to obtaining basic demographic information, the following question was asked in order to ascertain the amount of confidence the students had in the extent of their knowledge: 'Evaluate the extent of your knowledge in each of the functional areas of personnel administration.' Eight

subject areas in personnel administration were specified¹ with room for either a response of 'none or a three-part Likert-scaled response.

The extent of the students' knowledge was assessed through the use of the following question: 'List as many terms, concepts and issues as you can under each of the following areas of personnel administration.'² The areas were then named with room for responses.

In addition to basic descriptive analyses, multi-variate analyses were done on the two questions specified above [(1) the confidence the student had in his or her knowledge and (2) assessment of the extent of knowledge]

Means and t-tests were computed in order to determine if there were significant differences in the means of the students' confidence in their knowledge and in the mean number of terms that the students were able to specify in each area of personnel administration pre- and post-course. Additionally, some correlation analysis was done on the pre- and post-confidence and knowledge scores.

DATA ANALYSIS AND RESULTS

The first analysis which was carried out was done to get a description of the subjects. As is summarized in Table I, the subjects are primarily management majors (50.9%) or double majors, one of which is management (30.2%). They are primarily day students (69.8%) with senior status (83.0%). A little more than half (56.6%) had the prerequisite course in personnel within the last two quarters. And relatively few had either a related course not including the prerequisite course (7.6%) or work experience in the personnel department (13.2%).

In Table II, there is portrayed the means and standard deviations for each of the confidence scores and each of the knowledge scores, both pre- and post-course. The most interesting finding in this table is that while all the means of the confidence in knowledge scores went up from pre- to post-course, only some of the knowledge scores went up. All would have been expected to go up. Some of the knowledge scores actually decreased in the post-course test. The fact that

¹ Manpower planning, recruitment and selection, job design and analysis, compensation, training and development, performance evaluation, labor relations and current issues in personnel.

² Ibid

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TABLE I
DESCRIPTION OF SUBJECTS

Percent of subjects with management major	50.9%
Percent of subjects with double major including management	30.2%
Percent of day (vs. evening) students	69.8%
Percent of students with senior status	83.0%
Percent of students taking pre-requisite course within past two quarters	56.6%
Percent of students with related courses (not including pre-requisite course)	7.6%
Percent of students with work experience in personnel department	13.2%

N = 53

TABLE II
MEANS AND STANDARD DEVIATIONS PRE- AND POST-COURSE

	Pre-Course		Post-Course	
	Mean	Std. Dev.	Mean	Std. Dev.
<u>Confidence In Knowledge</u>				
Total	13.06	4.18	15.32	3.99
Manpower planning	1.23	1.03	1.93	.69
Recruitment and selection	1.85	.74	2.11	.70
Job design and analysis	1.58	.72	1.78	.53
Compensation	1.79	.69	2.05	.60
Training and development	1.91	.71	2.07	.58
Performance appraisal	1.79	.72	1.95	.68
Labor relations	1.42	.86	1.71	.74
Current issues	1.49	.80	1.71	.79
<u>Knowledge</u>				
Total	17.58	7.89	17.04	9.65
Manpower planning	1.36	1.35	3.06	1.89
Recruitment and selection	3.42	1.98	3.15	2.65
Job design and analysis	1.96	1.51	1.79	1.31
Compensation	2.96	2.20	2.51	1.95
Training and development	2.38	1.91	2.74	1.94
Performance appraisal	1.72	1.41	2.13	1.80
Labor relations	2.19	1.97	2.28	2.55
Current issues	1.60	1.89	2.11	1.84

N = 53

the standard deviations of the confidence scores decreased is also indicative of the students' increased confidence in their knowledge. That is, there is less variation in their confidence in their knowledge at the end of the course.

Tables III and IV contain the results of t-tests done to determine whether the differences in the scores were significant.

TABLE III
T-TESTS - INCREASED CONFIDENCE IN KNOWLEDGE OF TOPICS - PRE- AND POST-COURSE WITH EXPERIENTIAL LEARNING

Topic	T-Value	P
Total	-3.103	.003
Manpower Planning	-4.35	.000
Recruitment and Selection	-2.083	.04
Job Design	-1.697	.092
Compensation	-1.945	.054
Training and Development	-1.366	.174
Performance Appraisal	-1.293	.199
Labor Relations	-2.115	.037
Current Issues	-1.722	.087

N = 53

degrees of freedom = 52

-t value = pre-score lower than post-score

TABLE IV
T-TESTS - INCREASED KNOWLEDGE OF CONCEPTS PRE- AND POST-COURSE WITH EXPERIENTIAL LEARNING

Topic	T-Value	P
Total	.403	.69
Manpower Planning	-5.670	.000
Recruitment and Selection	.625	.542
Job Design and Analysis	.932	.359
Compensation	1.343	.182
Training and Development	-1.124	.262
Performance Appraisal	-1.586	.115
Labor Relations	-.287	.767
Current Issues	-1.474	.143

N = 53

degrees of freedom = 52

-t value = pre-score lower than post-score

With respect to the confidence scores (Table III), only two were not either significant or approaching significance - training and development and performance appraisal. For all of the other concepts, including the total confidence, the students confidence in their knowledge increased significantly at the end of the course.

In Table IV, however, in only one concept, namely manpower planning, did the students' knowledge increase significantly from the beginning to the end of the course.

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Pearsonian correlations of confidence and knowledge scores are contained in Table V. There are statistically significant relationships between confidence in knowledge and knowledge, both pre- and post-course (1 & 2), and there was a significant relationship in knowledge pre- and post- course (4). In other words, confidence was related to knowledge at both times. Additionally, this relationship was stronger at the end of the course (.357 vs. .2439).

TABLE V
PEARSON CORRELATIONS - CONFIDENCE AND KNOWLEDGE SCORES

	R	P
1. Total Confidence Score and Total Knowledge Score - Pre-Course	.2439	.0374
2. Total Confidence Score and Total Knowledge Score - Post-Course	.357	.0042
3. Total Confidence Scores - Pre- and Post-Course	.157	.26
4. Total Knowledge Scores - Pre- and Post-Course	.379	.005

N = 53

Also, a student's knowledge at the end of the course was related to the student's knowledge at the beginning of the course (4). But because the confidence in knowledge increased significantly, as was previously discussed, no significant relationship existed between these two confidence scores (3).

The general finding of this study is thus that while experiential learning increases confidence in knowledge, it does not necessarily increase knowledge.

LIMITATIONS

The first limitation is the small sample size. For this paper 53 respondents filled Out questionnaires for both pre- and post-analysis.

Secondly, a further research effort would differentiate statistically between a control group and an experimental group - i.e., the experiential learning group. Under a control group, subjects would be exposed to traditional learning concepts. With an experimental learning group, cases, exercises, role playing and other forms of innovative learning devices could be utilized. The two groups could be matched on relevant variables.

Another limitation of the study may be that the instruments used to measure the students' confidence and knowledge are not sufficient. For example, the authors are viewing confidence as the student's certainty that he or she has depth and understanding of the subject matter. However, the frame of reference should be more clearly spelled out. The students should be told to relate their present knowledge either to their peers, to the general public, or to a practitioner in the personnel field.

The extent of knowledge question obtains a breadth of knowledge, rather than a of knowledge, information. For example, a student would get credit for merely marking whether he or she knew of management by objectives as a concept. In future research a post- test would attempt to ascertain if the student could describe MBO in detail and if he or she had sufficient learning experience to actually perform a MBO program in an organization.

The timing of the post-test might be thought of as a fourth limitation. There may have been an element of student stress reflected in their responses due to the post-test being distributed at the end of the quarter. Anxiety over grades, job placement interviewers, and quarter break plans would all contribute to this tenseness. However, the problems of the alternative of contacting students after a class has ended and they have dispersed are formidable.

IMPLICATIONS FOR FURTHER RESEARCH

A specific area for further study would be analysis of demographic differences among the students. Relevant demographic characteristics which might help to explain the findings include student's major, grade point average, class year, day or evening attendance, time of beginning course in personnel, whether he or she had worked in the personnel field, and whether he or she had been enrolled in a related course. This could pinpoint further than time and space constraints allowed for in this paper, the specific relationship between a student's academic major, for example, and his or her responses to knowledge of personnel techniques. Another particularly interesting relationship would be that of measuring retention of information previously learned in the prerequisite course to the time of the post-test.

An expanded study could well investigate whether use of cases instead of exercises would have achieved different responses on the instrument, and therefore different statistical findings. Possibly cases would have increased the knowledge responses more than the exercises did.

Exercises used by students were derived from only one source. Perhaps several sources for exercises would produce different results in the confidence and knowledge levels of the students. This too would be an interesting implication for further research.

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