

Developments in Business Simulation & Experiential Exercises, Volume 11, 1984

A DEMONSTRATION OF THE EFFECTS OF FEEDBACK AS A CATEGORY OF REINFORCEMENT

Clyde E. Newmiller, McNeese State University

Experiential learning, from one viewpoint at least, epitomizes a behavioral orientation. It is, therefore, paradoxical that the vast majority of published experiential exercises have, as their learning objective, non-behavioral concepts, such as perception, power, values, etc. A review of the literature failed to turn up any exercises that were developed to demonstrate reinforcement, one of the cornerstones of behavior theory.

The present paper presents an exercise developed to introduce a class to the concepts of reinforcement and feedback. It has been successfully used with classes of undergraduate and graduate students as well as first-line supervisors and middle-level managers.

INTRODUCTION

The basic model for experiential learning seems to consist of learning by engaging in activity (trial), systematically reviewing the activity (feedback), and; if you are internally oriented, gaining new knowledge, or; if you are externally oriented, gaining improved skills or behaviors. (1, p. 3) Both internally and externally oriented teachers agree with the method (trial and feedback), but perhaps not with the objectives, either changed knowledge or behavior, respectively.

The impact of the behavioral orientation on teaching at all levels has been substantial, and has even resulted in sane substantial revision of management practice. It has yet to significantly impact experiential learning advocates, their publications or the organization of ABSEL. A review of the past three years of ABSEL Proceedings, numerous experiential textbooks offered for various business college courses, and volumes 1 - 11 of A Handbook of Structured Experiences for Human Relations Training revealed no exercises designed to teach or introduce the most basic of intervention strategies advocated by Organizational Behavior Modification (O.B.Mod.), Reinforcement and Punishment (1, pp. 44-49).

As one small, and perhaps initial step toward developing a series of experiential exercises suitable for introducing and/or reinforcing O.B.Mod. based strategies and concepts the following exercise was developed. It has been used in four management development programs (12 groups) twelve undergraduate classes, (36 groups) and five graduate classes (15 groups). Specific results are not available over all these groups, as the exercise has been modified to its present form over approximately one half of all the groups exposed to it.

PROCEDURE

Objectives

1. The lead into the learning of the concept of reinforcement.
2. The demonstrate the advantages of positive reinforcement and of a mixed strategy of providing both positive and negative feedback in a reinforcing manner, leading to improved task performance and higher task satisfaction.

Groups

A minimum of fifteen participants is required, divided into three groups of five members each. The exercise results are most reliable when each group has had a minimum of 2 - 3 hours of interaction prior to the reinforcement exercise. When extemporaneous groups are created for the demonstration, the instructions [Appendix I] should be given to each group with fifteen minutes allowed for the group to discuss a strategy for cooperation during the exercise.

Time Required

Approximately one hour for the exercise and a minimum of thirty minutes for discussion.

Materials Required

1. A set of the Broken Squares Puzzle for each of three groups of five participants.
2. One copy of the Broken Squares Instructions. (Appendix I)
3. A diagram of the Broken Squares Puzzle. [Appendix II]
4. A desk or table large enough where six people can stand and five can work. (An office sized desk is minimum.)
5. A stop watch or watch with a sweep second hand.

Demonstration Procedures

Step 1. (5 minutes)

The facilitator introduces the task to the plenary group as a simulation of any type of work requiring some skill, knowledge and cooperation among the members of a work unit. If the groups have previously formed, and have interacted for 2-3 hours, proceed as follows. If not, see note under Groups, above.

Step 2. (10 minutes)

The facilitator discusses the following points with the plenary session:

- A. That most jobs require cooperation between the supervisor and his/her employees. The essence of this cooperation is that the supervisor's knowledge is used to assist the employees to achieve better task performance.
- B. An essential mean by which the supervisor performs this function is to provide technical assistance by giving the employees feedback concerning their task performance during the actual

Developments in Business Simulation & Experiential Exercises, Volume 11, 1984

work sequence. This is especially critical during the stage where the employee is being trained.

Step 3. (5 minutes)

The facilitator asks two of the groups to leave the room while the first version of the demonstration is conducted. The remaining group is placed standing around the table, with the facilitator occupying the sixth place, preferably at one end of the table. He informs the group that he will play the role of task supervisor during the demonstration, and reads to them the Assembly Task Instructions (Appendix I).

Step 4. (TIME LIMIT 15 minutes)

The facilitator hands to each participant an envelope containing parts of the Broken Squares. He says "start" and simultaneously activates the stop watch. DURING DEMONSTRATION CONDITION ONE, THE FACILITATOR IS RESTRICTED TO GIVING NEGATIVE FEEDBACK IN THE FORM OF POINTING TO AN INCORRECT ASSEMBLY AND SAYING "THAT ASSEMBLY IS BAD." Whenever a violation is observed, say "violation" and record it.

Step 5. (TIME LIMIT 15 minutes)

The second task group returns to the demonstration area and assembles around the table exactly as was done for the first task group. The first group can be allowed to remain and observe, but it should be stressed that they should not stand and look over the shoulders of the group performing the second version of the demonstration. All procedures are performed exactly as they were for steps 3 & 4 except that:

THE FACILITATOR WILL PROVIDE ONLY POSITIVE FEEDBACK BY POINTING AT THE FIRST (AND EVERY SUBSEQUENT CORRECTLY ASSEMBLED SQUARE AND SAY "THAT ASSEMBLY IS GOOD."

Step 6. (TIME LIMIT 15 minutes)

Identical procedures should be followed as were for steps 3-5 except that the facilitator provides both POSITIVE and NEGATIVE feedback, saying "THAT ASSEMBLY IS GOOD" or "THAT ASSEMBLY IS BAD" at appropriate times during the third feedback condition.

Step 7. (5 minutes)

Post the recorded times for each group, the number of violations and adjust the time by adding 30 seconds to each group's time for each violation in excess of one.

Step 8. (A minimum of 30 minutes)

The facilitator next leads a discussion of the exercise with the plenary group by asking someone from each group, in turn, to describe and label the type of feedback that was received from the facilitator during the exercise. The facilitator should post the name of the feedback condition employed at the top of each group's data (time to completion and number of errors.) At this point a discussion should revolve around several

learning points:

What variables account for the differences in the amount of time taken by each group to complete the task? There is a good chance that the results will be as follows:

Fastest Group - Group 3, Positive and Negative Feedback

Intermediate Group - Group 1, Negative Feedback

Slowest Group - Group 2, Positive Feedback

- How did the members of each group feel about and react to the type of feedback received? There are generally numerous visible reactions, especially to the negative feedback condition, including failing to coordinate by passing parts, freezing, attempting to quit, etc.
- A final point should be brought out, if it has not previously been mentioned. This is that feedback when presented in a timely fashion and in a proper context, such as when balanced with positive feedback, REINFORCES DESIRABLE BEHAVIORS even when the feedback is negative ("that assembly is bad").
- At this point in the discussion, the group is most receptive to a presentation of the concept of Organizational Behavior Modification [1].

APPENDIX I

BROKEN SQUARES INSTRUCTIONS

The task for your group consists of the assembly of five equal sized squares from component parts. Each member of the group has some of the component parts in his/her envelope. The task will be completed when each individual has before him a perfect square of the same size as those in front of the other group members. It is important to complete the task in as short a period of time as possible.

The following specific limitations are imposed upon your group during this exercise:

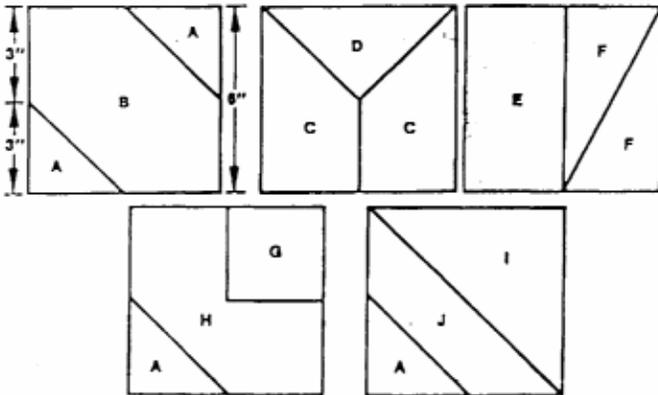
1. No member may speak.
2. No member may signal another member for a component part. (Any member may, however, voluntarily give components to other members)
3. Components must be handed directly to another member. Do not place them on the work he/she is doing.
4. The facilitator will fill the role of group supervisor. It is his task to assist you in performing your task, but he is limited by the conditions of the exercise. It is also his responsibility to enforce the work rules.
5. For each violation of these work rules in excess of one (1), a 30 second penalty will be added to the group's time.

REMEMBER, IT IS IMPORTANT TO COMPLETE THE TASK IN AS SHORT A PERIOD OF TIME AS POSSIBLE.

Developments in Business Simulation & Experiential Exercises, Volume 11, 1984

APPENDIX II DIRECTIONS FOR MAKING A SET OF BROKEN SQUARES [2, p. 28]

A set consists of five envelopes containing pieces of cardboard cut into different patterns which, when properly arranged, will form five squares of equal size. One set should be provided for each group of five persons. To prepare a set, cut five cardboard squares each exactly 6" X 6". Place the squares in a row and mark them as below, penciling the letters lightly so they can be erased.



The lines should be so drawn, that when the pieces are cut out, those marked A will be exactly the same size, all pieces marked C the same size, etc. Several combinations are possible that will form one or two squares, but only one combination will form all five squares, each 6" X 6". After drawing the lines on the squares and labeling the sections with letters, cut each square along the lines into smaller pieces to make the parts of the puzzle.

Label the five envelopes 1,2,3,4, and 5. Distribute the cardboard pieces into the five envelopes as follows: envelope 1 has pieces I,H,E; 2 has A,A,A,C; 3 has A,J; 4 has D,F; and 5 has G,B,F,C.

Erase the penciled letter from each piece and write, instead, the number of the envelope it is in. This makes it easy to return the pieces to the proper envelope, for subsequent use, after a group has completed the task.

Each set may be made from a different color of cardboard.

RESULTS

Due to the limited number of management groups who have participated in the present version of the exercise, it is not possible to confidently project what will be the results of the exercise. However, three out of four management development programs conformed to the following expected outcomes; (expected outcomes are based upon data collected from all levels of participants).

TABLE I
EXPECTED OUTCOMES

<u>Feedback Condition</u>	<u>Approximate Time</u>	<u>Rank</u>
1) Positive & Negative Feedback	4 Minutes	1
2) Negative Feedback	6 Minutes	2
3) Positive Feedback	9 Minutes	3

Condition number one receives the most feedback (both positive and negative feedback) and thereby RECEIVES THE MOST REINFORCEMENT.

The groups receiving only positive feedback (being told "that's good" when an assembly is correct, generally will lose two or three minutes at the start because of a lack of extrinsic reinforcement. In addition, participants in this condition receive the least amount of reinforcement, which caused their completion time to be longer than either condition 1 or 2. Several groups have performed this task with no extrinsic reinforcement, and have taken in excess of fifteen minutes to complete it. As a means of balancing the amount of feedback, the criteria for receiving positive feedback could be changed to include a correct assembly of two parts of a square. This condition is currently being tested, and has resulted in a decrease in the completion time for two groups.

CONCLUSIONS

The exercise has always achieved its stated objectives. On the occasions where a workshop or class results were atypical, it was generally obvious to the observers and the participants that some extraordinary behavior within the affected group had contributed to the results. The points that are generally of interest to the plenary session discussion include:

- That both positive and negative feedback operate to reinforce behavior.
- The impact of extrinsic, social reinforcement.
- The relationship between reinforcement and punishment.
- The amount of satisfaction experienced under the different conditions, and the reactions to them.

REFERENCES

- [1] Luthans, Fred and Robert Kreitner. Organizational Behavior Modification. (Glenview, Ill: Scott, Foresman and Company, 1975).
- [2] Pfeiffer, J. William and John E. Jones. A Handbook of Structural Experiences for Human Relations Training. Vol. I (revised), (LA Jolla) University Associates, 1977).