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THE EFFECTIVENESS OF REINFORCEMENT AND PUNISHMENT IN LEARNING ENVIRONMENT

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Abstract

The present research is focused on the study of effectiveness of reinforcement and punishment in learning environment. The total number of research participants was 135. The age range of the people who participated in the study was 13 – 18 years. Results showed that participants when got reinforcement and punished, performed better than when they were not given reinforcement and punishment and that reinforcement proved to be more effective than punishment in improving the student's performance.

Keywords: reinforcement, punishment, learning environment

Modern day researchers have made an attempt to bring about change in behavior of children in the classrooms as well as homes by applying techniques based on learning theory. These techniques are based on the principles laid down in the learning theory are called operant conditioning. The modification in behavior is intended to improve the quality of life of the children (Miltenberger, 2008)

Skinner one of the leading researchers in this field enlarged the field in 1930, whose foundation was laid down by Watson (Labrador, 2004). Watson was the first man to form the standards of operant condition which expresses that consequences of conduct shape future behavior (Miltenberger, 2008)

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Skinner's work created extraordinary impact on the area of psychology which co- relates consequences of one's behavior to regulating his future behavior (Management Study Guide 2013).

Skinner's ideas can benefit business ventures, governmental educational institutions, and even mental hospitals. In understanding behavior pattern of an individual Skinner viewed that the goals and the reason shaping the behavior were immaterial (Banaji, 2011).

E .Rolls (2001) opined that reward and punishment had close connection to the functioning the brains.

Skinner's work consists of research on relevance between consequences and behavior in attaining the objectives (Zirpoli, 2005).

Reinforcement is used by teachers to discipline students in the classrooms with a purpose to develop their skills, how to imbibe innovative ideas and learn directions (Charles & Senter, 2004).

In operant conditioning there are two types of reinforcers i.e., positive, and negative. Positive reinforcer is a reward or stimulus by giving food etc. to living being after he/she comply with what we want them to do (Deese & Hulse, 1967).

Negative reinforcers are stimuli which are given to the subjects if they do not comply with the behavior pattern set for them i.e., electric shock etc. which the subjects will avoid. Food and water are primary reinforcers which do not require special training. Secondary reinforcers require some training which are used by teachers i.e., giving badges, stickers and tokens etc. Besides there is social reinforcer of appreciation of one's work and extending affection and warmth in recognition of his good work.

Several forms of reinforcements might be used to encourage schoolchildren and the students should be kept informed about the conditions under which a reward would be given.

Punishment implies entailing physical pain, reprimand and the loss of material things which the affectee does not like but is used to control the recurrence of undesirable incidence (Feldman, 2005; Lefton, 2002; Kosslyn & Rosenberg, 2002).

Punishment is used by schoolteachers for regulating the behavior of students who do not perform well in the tests or come late to schools (URT, 2006).

Mather and Goldstein (2001) opine that principles of punishment and reinforcement should be strictly followed. Punishment and Reinforcement should immediately follow the behavior.

Many reinforcers, punishment if applied in combination are more useful than a single reinforcers or punishment. Reinforcement and punishment both can be used to discipline students, but reinforcement is more effective in teaching to adopt more desirable behavior (Mather & Goldstein, 2001). According to Chitiyo and Wheeler (2009) teachers can usefully employ reinforcement to discipline students and improve the environment of the

classrooms but Lannie and McCurdy (2007) are of the view that many teachers have no skills to manage the classrooms.

Moor and Partin (2010) concluded that by extending accolade to students their behavior can be greatly improved. Positive reinforcement has also been found to be useful in improving behavior of the students (Lepper et al., 2005).

Social reinforcement is also believed to be more rewarding and effective in improving behavior of the students which includes praises, complimentary such patting shoulders etc. (Michigan Team Nutrition, 2004).

In recent years, educationists have focused attention on reinforcers in the classroom and the success rate academically. Hardman et al (1990) research showed that the use of reinforcers applied to students with intellectual inadequacy produced better results in improvement of academic skills.

Kord conducted research in 2003 on the effectiveness of feedback on the 5^{th} grade student's performance in science course including verbal and written but the written feedback was found to be more effective in improving their academic skill.

Cameron et al. (2001) conducted research and presented his analysis on the research conducted during the past thirty years to find out its efficacy on giving stimulus for improvement of skills, he concluded that reinforcers produced spectacular results on motivation of low and exorbitant interest errands when these were linked to conduct and achievement.

Numerous research have convergency on one point that rewards are useful in bringing discipline to classrooms (Befile, 2005).

Objective of the Study

1. To investigate the effectiveness of punishment and reinforcement in learning environment.

Hypotheses

1. Students would perform better after having been subjected to punishment or reinforcement.
2. Reinforcement will be more effective than punishment in improving students' performance.

Method

The repeated measure design was used to conduct the present study i.e., same participants participated in all the conditions. The data was collected

from two different schools. A government girls' high school and a private school in Charsadda. Students from 7th, 8th, 9th, and 10th grade were taken as participants. The goal of this research was to assess academic performances of the students based on tests designed by the researcher and to find out whether academic performance would improve with reinforcement or punishment.

Total 4 tests were conducted in one school and 4 in the other school. All 4 tests were made from the science book of grade 7th, 8th, 9th, and 10th for the students of those classes respectively. The tests were designed by their science teacher and all the tests were equally difficult. The test pattern was such that it consisted of one long question of 10 marks and two short questions of 5 marks each. The time given for solving the test was 30 minutes. Two reinforcing strategies and one punishing strategy was used in this study, the reinforcing strategies were appreciation and giving a box of candies as a reward while the punishing strategy used in this study was that all the students who didn't pass the test were made to write the test questions 20 times or they will not be allowed to sit in the class. These reinforcing and punishing strategies were suggested by the schoolteachers.

Sample

Sample of 148 female students were taken from two schools in Charsadda, those students were selected who were mediocre, the reason was that students who are above average would try to give better performances even without being given any kind of punishment and reinforcement and those students were also excluded from the study who were below average because the chances are that the teachers usually use different strategies for such students to improve their performance. 135 students completed the study and participated in all the tests conducted. The remaining 13 students were excluded from the study due to their absence in any of the four tests conducted. All the respondents were female, and their ages ranged between 13 to 18 years, age group of 41 participants was 13-15 years and 91 participants fell within age group of 16-18. The reason behind selecting individuals of this age group was that they were sensible enough to understand the instructions given to them and act upon that. 33 participants belonged to 10^{th} grade, 37 participants were from grade 9^{th}, 36 participants from grade 8^{th} and 29 participants from 7^{th} grade.

Procedure

The effect of punishing strategy (i.e., writing down the test questions 20 times) and reinforcing strategy (i.e., appreciation and giving candy boxes) on the basis of performance was examined. Two schools were selected for the purpose of data collection and before starting the data-collection procedure

permission was taken from the section-head of both schools and before collecting the data the researcher took permission from the concerned teachers and parents of the students.

The students were selected from four classes (7^{th}, 8^{th}, 9^{th}, 10^{th}) and 4 tests were conducted. All the students agreed to participate in the research study after being informed about the procedure of study and their right to withdraw at any time during the research without any penalty.

The students had to prepare 4 different chapters from their respective science book for all the 4 tests. Total score of the test was 20 and pass marks were 10. The science teachers who conducted the tests were properly guided and informed about the research purpose. Before conducting the 1^{st} test the students were told about the rewards they would get and after that the test was conducted. Students who performed well were given candy boxes by the teacher as a reinforcer and were appreciated in front of the whole class. The second test was conducted two days after the first test and students were well prepared for the test.

After conducting the first two tests the 3^{rd} and 4^{th} tests were scheduled after three weeks. The third test was conducted and students who scored less than 10 marks were punished in such a way that they had to write the test questions 20 times. The last test was conducted two days after the 3^{rd} test just to check the impact of the punishment on student's performance.

Toward the finish of the study all participants were educated with regards to the motivation behind the study exhaustively.

The data collection from one school took two weeks. The data from both the schools was collected in one month.

Results

To compare scores of the students before and after delivering reinforcement and before and after punishment a paired-samples t-test was conducted. There was a significant difference in the scores before delivering reinforcement (M=8.22, SD=3.28) and after delivering reinforcement (M=10.79, SD=3.78) conditions; t=-12.63, p = 0.00. Also, there was a significant difference in the scores before punishment (M=7.54, SD=3.55) and after punishment (M=9.61, SD=3.28) conditions; t=-12.23, p = 0.00. The results showed a clear difference between the scores before and after reinforcement as well as the scores before and after punishment. Specifically, our results suggest that students performed well after the reinforcement and punishment was delivered.

To find out whether reinforcement or punishment resulted in improving the performance, analysis was conducted. There was a critical distinction in the scores of students when were reinforced (M=10.79, SD=3.78) and when

they were punished (M=9.61, SD=3.28) conditions; t(134) =2.63, p = 0.009. Specifically, our results suggest that there is a great improvement in the scores of the students when they were reinforced as compared to the students when they were punished. The results showed that reinforcing strategies turned out to be more effective than punishing strategies in learning environment.

Table 1: Mean Differences between Pre and Posttest on Science Test

	Pre			Post							
Scale	(n=135)			(n=135)				95%CI			Cohen's
	M	*SD*		*M*	*SD*	*t(134)*	*p*	*LL*	*UL*		*d*
Science (Reinforce)	8.22	3.28		10.79	3.78	-12.6	.000	-2.16	-2.16		4.67
Science (Punish)	7.54	3.55		9.61	3.28	-12.2	.000	-2.40	-1.73		5.49

Note: CI = Confidence interval; LL = Lower limit; UL = Upper limit, Science (Reinforce) =Reinforcement strategy used, Science (Punish)=Punishment is given

The table indicates that after the verbal appreciation and a box of candies is given the students' performance on test is improved. The results also indicate that punishment is effective in improving the performance of the students on science test.

Table 2: Mean Differences between after delivering reinforcement and after delivering punishment on Science Test

	Reinforcement			Punishment							
Scale	(n=135)			(n=135)				95%CI			Cohen's
	M	*SD*		*M*	*SD*	*t(134)*	*p*	*LL*	*UL*		*d*
Science test	10.79	3.78		9.61	3.28	2.63	.009	.292	2.06		4.67

Note: CI = Confidence interval; LL = Lower limit; UL = Upper limit,

The table indicates that the students perform better when they were given candies and verbal appreciations as compared to when they were punished.

Discussion and Conclusion

The current study was led to examine the effectiveness of reinforcement and punishment in learning environment. The study confirmed that the reinforced students performed better than unreinforced students, punished

students performed better than unpunished students. The reinforcing technique of rewarding the students with box of candies and praising them for performing well turned out to be very effective and that was clearly shown in the test scores and level of interest the students showed. According to (Kennedy et al. 2008), at the point when a child's current circumstance turns into a positive environment that pays heed to their positive conduct the kid is bound to be actually and intellectually present in the classroom. Additionally, appreciation is critical to the child's conduct. Appreciations to children ought to be "prompt, successive, excited, illustrative, changed, and should include eye to eye connection" (Kennedy et al. 2008). On the other hand, punishing the students also had some impact on their scores but not as much as reinforcing had and the students showed no interest in preparing and attempting the tests. The effectiveness of punishment in this case might be due to the type of punishing strategy used.

Punishment and reinforcement both are effective in improving the students' performance but when we compare them reinforcement proves to be more effective in learning environments than punishment. The understudies who are recognized for their work are more able to invest energy for future tasks (Winter and Bill 2008). Whereas, the effectiveness of punishment in this study might depends upon the type of punishing technique used. The teachers need to be very careful in selecting the punishing techniques because that can in turn cause more problems and instead of showing improvement the student might start disliking the subject and the instructor of that subject. According to (Felker et al. 1971) truly rebuffed understudies generally need self-esteem and certainty. At the point when understudies were approached to rank proclamations that they might want to get after a 'horrible score', understudies showed precisely what was anticipated. Understudies in the study picked kind words that gave the most solace. Also, pupils who lacked a positive relationship with an adult, showed signs of depression and helplessness (Felker et al. 1971).

Instructors keep a positive environment in their classroom and deals with the understudy's undesirable practices by utilizing reinforcers to inspire understudies. These are presented in an assortment of ways, like a treat for finishing task on schedule, appreciation, or additional break for acceptable conduct. Prizes work for the understudies who get them and the individuals who don't for instance seeing a successful understudy partake in an award might inspire an uncontrollable understudy to zero in on his work. When studying understudies with EBD, the understudies who were given positive acclaim for their conduct expanded their understudy consistence. Support for understudies decides a solid impact on reasonable classroom practices (Kennedy et al. 2008) Once more, it is significant that educators remember their conduct influences their understudies' learning.

Also, there are many times when a reinforcement and punishment does not give the planned results. Students are still unruly or irresponsible about completing the task assigned to them. The punishments and reinforcers become greater and greater, as the unwanted behavior increases. Students learn to expect the reward and loses the sight of the worth of the task. Thus, when the prize is removed, the conduct stops. Likewise, the thought of getting punished gets most pupils to observe clearly expressed guidelines. This thought might make an understudy work just to get by as opposed to work at his maximum capacity. For instance, an understudy might act just to keep away from getting punished, without paying attention to the illustration. Therefore, reinforcement and punishment sometimes might not work as effectively as desired, and this is the reason there are no long-term studies available because the methods have not been in use for a long enough period.

Implications

The outcomes of the present research have significant implications for the educationalists to understand the mechanism behind improving student's performance, recognizing those techniques which ended up being compelling for changing the undesirable behavior of students into desirable behavior in a learning environment.

Limitations

The sample size was low therefore the results cannot be generalized.

Suggestions

Future researchers need to focus on the gender difference as it might have any impact on the student's performance.

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