

# Skinner's Reinforcement Theory: Its Application to Teaching and Learning in Education

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## Abstract

Skinner is a famous contemporary psychologist and educator, this paper introduces his reinforcement theory, including reinforcement theory, classification of reinforcement, positive reinforcement and reward, negative reinforcement and punishment, etc., and discusses the application of reinforcement theory in education and teaching, including cultivating students' good habits, stimulating learning interest and motivation. Skinner's reinforcement theory provides a psychological basis for cultivating students' good learning habits and provides meaningful insights for better school education.

**Key words:** Skinner; Reinforcement theory

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## 1. SKINNER'S THEORY OF REINFORCEMENT

Skinner is a famous contemporary American psychologist and educator, the main representative of the neo-behaviourist psychology and neo-behaviourist education school. Reinforcement theory is the most important part of his learning theory. The reinforcement theory advocated by Skinner is a doctrine about understanding and modifying human behaviour based on the principle of reinforcement for learning. Skinner's reinforcement

theory provides a psychological basis for developing good learning habits in students and provides meaningful insights for better school education.

### 1.1 Enhanced theory

In Skinner's operant conditioning, reinforcement is an event that follows a behaviour and contributes to an increased probability of its recurrence. That is, reinforcement occurs when a behavior is followed by a stimulus, which increases the likelihood of that behavior recurring. There are four main points: the subject of reinforcement, there is a stimulus; reinforcement object, there is a behaviour; reinforcement features, the stimulus is located after the behaviour; reinforcement results, the stimulus to make the probability of repetition of the behaviour increases. After clarifying the above four points of reinforcement, it is possible to analyse whether a behaviour has been reinforced or not. In Skinner's theory, reinforcement is the main independent variable, he believes that behaviour changes because of reinforcement.

A behaviour may reappear if it is reinforced, and if it is not reinforced, the likelihood of it appearing will decrease or even disappear, so the control of reinforcement is the control of behaviour(Wei & Pang, 2000).

### 1.2 Classification of reinforcement

In Skinner's theory of reinforcement, he had classified reinforcement into different types based on different criteria.

#### 1.2.1 Classification according to the nature of the reinforcer

In the concept of reinforcement, the stimulus that "follows the behaviour and increases the probability of its repetition" is the reinforcer in Skinner's theory of reinforcement. Skinner classified reinforcement into positive reinforcement and negative reinforcement based on the nature of the reinforcer.

### 1.2.2 Classification according to the degree of human behaviour which is influenced by reinforcement

Skinner classified reinforcement into primary and secondary reinforcement based on the degree to which human behaviour is affected by reinforcement. Primary reinforcement is reinforcement that satisfies the basic physiological needs of humans and animals such as survival and reproduction. Primary reinforcers include food, water, safety, warmth, sex, etc. Secondary reinforcement is any neutral stimulus that acquires its own reinforcing properties if it is repeatedly combined with a primary reinforcer. Secondary reinforcers include money, academic attention, approval, etc. These secondary reinforcers are not initially reinforcing but become reinforcing because they are matched with primary reinforcers such as food and sexual desire.

### 1.2.3 Classification according to behaviour and reinforcement intervals

Skinner and colleagues, in their study of the conditions under which reinforcement works best, classified reinforcement as continuous (also known as immediate reinforcement) and spaced (also known as delayed reinforcement), based on the amount of time that elapsed between the onset of the behaviour and the appearance of the reinforcer.

### 1.3 Positive reinforcement and incentives

Among Skinner's theories, reinforcement and reward are distinct. While reinforcement can be either positive or negative, the term generally refers to positive reinforcement. Positive reinforcement and rewards are the same at the operational level, in that they both affirm behaviour by giving the actor a favourite stimulus, but they are different at the outcome level. Firstly, The behavior that is reinforced is more likely to be repeated, while rewarded behavior may not necessarily be reinforced. In this regard, Skinner explains: "We call a thing a reinforcer when it is capable of reinforcing a behaviour in reality, i.e. we define a reinforcer in terms of what it does to a behaviour." The term "reward" does not include the reinforcing effect that the term "reinforcement" encompasses, and rewards such as prizes, money, honours, and the like can be called reinforcers only if they increase the probability that the behaviour they reward will be reproduced. However, not all rewards lead to reinforcement of behaviour, i.e. a reward may or may not be a reinforcer. And conversely, not all reinforcers are rewards.

### 1.4 Negative reinforcement and punishment

Punishment, according to behaviorists, is also a method of controlling behavior and can be implemented in two ways. One way is to present negative reinforcers after the emergence of the behaviour, this kind of punishment is very common, such as students who do not complete their homework will be punished to clean up or copy

a few times; the other way is to withdraw positive reinforcers after the emergence of the behaviour, this kind of punishment relative to the former kind of harm to be a little bit less, so the use of the more and more, such as parents often threaten their own children if they do not have a good exam result, they will not give to buy a gift or the weekend not to take go out to play and so on. Deprivation punishment is less physically harmful but more psychologically damaging.

Skinner argues that punishment is not an ideal behavior control method, as its effects are limited. Firstly, punishment most commonly results in the (at least temporary) suppression of the behaviour being punished, yet many punishments do not have the desired effect. Second, punishment is simply an attempt to eliminate a behaviour, whereas negative reinforcement involves the removal of a negative stimulus, which distinguishes it from punishment. Many classrooms misuse negative reinforcement in the name of punishment, and instead of being suppressed, the behaviour being punished intensifies (Xian, 2011).

## 2. APPLICATION OF REINFORCEMENT THEORY IN EDUCATION AND TEACHING

In the process of education and teaching, teachers need to reinforce positive behaviours and correct negative behaviours of students, and the theory of reinforcement plays a great role in this process, providing meaningful insights and lessons for better school education in the future.

### 2.1 Specific categories of reinforcement in education

Some scholars have categorised reinforcement into the following types based on the specific implementation of reinforcement in the current classroom teaching process:

#### 2.1.1 Social reinforcement

Social reinforcement refers to the teacher's use of language, text, expression, body language and other ways to communicate with students, in the classroom to form a good teacher-student relationship and teaching atmosphere, so that the desired behaviour is encouraged and reinforced. For example, teachers praise students for listening carefully, studying hard, answering questions correctly, nodding or smiling at students, gently patting students on the head or back, etc., all of which convey to the students a kind of teacher appreciates his behaviour information, students will produce a strong sense of pride and satisfaction.

#### 2.1.2 Reinforcement by example

Role model reinforcement means that the teacher provides students with some specific example of behaviour and students learn the role model behaviour through imitation. For example, if an individual student is making small

movements and not paying attention to the lecture, the teacher can correct his own problematic behaviour by praising a particular student who is listening attentively, so that the inattentive student can correct his own problematic behaviour by observing, imitating and learning from the exemplary behaviour in this particular situation. When using this method, the teacher should be aware that the student learns primarily from observing others, especially those who are important to him.

### **2.1.3 Activity Enhancement**

Activity reinforcement, that is, allowing students to participate in their favourite activities or providing better opportunities and conditions when they demonstrate the behaviour expected by the teacher during teaching and learning activities. Examples include allowing participation in club activities, providing preferences and access to equipment, providing leadership roles in classroom activities, and so on. Teachers should consider a variety of factors such as students' age, motivation to engage in activities, interests, hobbies, strengths, and ability to do the actual activity when using activity reinforcement.

### **2.1.4 Deed of mutual covenant**

In the 1980s and 1990s, this approach was successfully used in the United States in the management of student behaviour. A contract of reliance is a prior agreement between a teacher and a student that encourages and reinforces the desired behaviour in the classroom, which may be verbal or written, but must be mutually agreed upon by the teacher and the student and, once established, must be followed through. Although it is informal, it can be helpful in disciplining the behaviour of students who are playful and disengaged. For example, some students are very active in answering questions in class, but when it comes to completing class exercises, they are uninterested and quiet. In this case, the teacher can make an agreement with the student that if the classroom exercises are completed carefully, the student will be given more opportunities to answer questions in class.

### **2.1.5 Token Rewards**

The essence of a token reward is to quantify the outcome of the reward in a virtual currency, whereby a specified number of tokens are rewarded for completing a specified task, and students can exchange the tokens they receive for their favourite prizes. The "tokens" are temporary substitutes for the real reward. When a student demonstrates correct behaviour, he or she is given one or more tokens, which can be actual objects such as a red flower, a small card or a small five-star, or points or marks, and through the accumulation of these substitutes, they are eventually exchanged for the physical rewards that the student really likes. Token rewards are a common method of reinforcement that can create a certain internal motivation for students' behaviour, and are most effective with younger primary school students.

## **2.1.6 Self-reinforcement**

According to Bandura, self-reinforcement is also the result of the influence of patterns of social learning. Self-reinforcement is when society transmits a certain standard of behaviour to an individual, and when the individual's performance meets or even exceeds that standard, he rewards his self for the behaviour. Self-reinforcement is based on the standard of external reinforcement as a reference. When the teacher reinforces a student's behaviour, he also transmits the evaluation standard of that behaviour to the student, who gradually grasps the evaluation system of the behaviour and internalises it to form his own evaluation system (Yu, 2001). For example, teachers ask students to use record books to write down meaningful things that happen every day and their own progress. Students can see their own growth from the records, which is a powerful impetus to behavioural improvement (Wang, 2010). At the same time, this approach encourages students to develop good habits of self-examination and self-reflection, which can turn reinforcement into habitual and sustained behaviour.

## **2.2 Strengthening the role of teaching and learning**

### **2.2.1 Reinforcement provides a variety of information about students' behaviour**

After birth, in order to adapt to the ever-changing environment and maintain a dynamic balance with the environment, human beings have to acquire complex and advanced behavioural experiences through learning and complete the transformation from natural to social beings. Human learning is conscious; a person not only reacts with a certain behaviour, but also pays attention to the consequences of the behaviour. One of the criteria children use to determine the appropriateness of a behaviour is the reinforcement the behaviour receives. Reinforcement lets the student know if the behaviour is appropriate and if it will be accepted by the group. If the student's behaviour is evaluated negatively (criticism, punishment, seriousness, indifference, etc.) and repeatedly, then the student determines that the behaviour is disapproved of and gradually diminishes or eliminates it. Conversely, if the student receives positive comments (praise, encouragement, smiles, thumbs up, etc.) frequently, then the student determines that the behaviour is approved of, gradually strengthens it and maintains it. Therefore, reinforcement provides information about the student's behaviour that enables the student to learn about himself, society, adapt to the environment and continue to gain individual experience.

### **2.2.2 Reinforcement influences students' attitudes towards learning**

Attitude towards learning is an organised psychological quality, which consists of a variety of factors such as cognitive, emotional and affective learning behaviours and

habits. Some kind of learning behaviour is repeated many times and solidified into an attitude, once the attitude is formed, it is quite solid. If the first few homework scribbles are not too standardised, the teacher acquiesces and does not pursue, students may form a sloppy, hasty learning attitude. Properly and appropriately providing students with behavioural feedback will enable them to reflect on themselves, reassess themselves, further consolidate and develop good learning behaviours, and modify or change bad behavioural habits.

### **2.2.3 Reinforcement affects students' motivation to learn**

Reinforcement is one of the important causes of motivation because it satisfies the desire to learn, i.e., motivation is enhanced by obtaining a learning outcome. Reinforcement in the form of praise and criticism, awards and punishments, marks, grades, etc. becomes an inducement to learn. Reinforcement provides information that allows students to see their own progress, and the way they already learn is affirmed, which stimulates a higher desire to learn and enhances the probability of good learning behaviours occurring; similarly, appropriate feedback on shortcomings and deficiencies in assessment allows students to understand the gaps, and to be spurred on, which diminishes the probability of undesirable student behaviours occurring.

### **2.2.4 Reinforcement affects students' emotional feelings**

Different kinds of reinforcement always cause different emotional-experiences of students, generally speaking, affirmative evaluations such as rewards, praise, smiles and so on can cause pleasant emotional experiences of students, while negative evaluations such as punishments, criticisms, harshness and so on can cause tense and unpleasant experiences of students. In addition, the educator's own personality power also plays a role in the conduct of reinforcement. The educator's sincere love, good expectations, conscientious way of learning, tenacious will set an example for the students, their personality influence penetration in the specific reinforcement passed to the students, which increases the credibility and influence of the reinforcement. Therefore, teacher-student reinforcement promotes emotional exchanges and deepens students' emotional experiences.

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## **3. ENHANCED PRINCIPLES**

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For reinforcement to play a positive role in promoting student behaviour, attention needs to be paid to the basic principles of effective reinforcement.

### **3.1 The principle of consistency**

It means that the content, nature and standard of teachers' reinforcement of students should adhere to the principle of consistency, and the various kinds of

feedback information provided by reinforcement should be consistent and avoid contradictions. Such as a teacher to make a positive evaluation of the students' behaviour, while another teacher to make a negative evaluation of the student's behaviour, and so on, so that the students are at a loss, do not know what to do, so reinforcement should adhere to the principle of consistency. Teachers should strengthen communication between the link to determine the common standard of reinforcement, the formation of education "synergy", to avoid inconsistency caused by the confusion and chaos of students.

### **3.2 The principle of objectivity**

It means that reinforcement should be objective, fair, scientific and reasonable, and should not be subjective, so that it does not correspond to the actual situation. Emphasis on the principle of objectivity, firstly, to improve the evaluation level of teachers, in order to achieve the accuracy and appropriateness of reinforcement; secondly, to avoid the interference of subjective factors, in particular the stereotyping effect, teachers can not be their own subjective will and prejudice to evaluate students; thirdly, to guide the reinforcement of the developmental point of view, the reinforcement of the targeted, focusing on the dynamic development of the students; and fourthly, love for the students, love for the work of education.

### **3.3 The principle of timeliness**

It means that teachers give timely feedback to students after their behavioural responses in order to improve students' knowledge and understanding of reinforcement. A large number of scientific experiments and practical experience has proved that the more timely, specific and clear feedback provided by the teacher, the better the effect of reinforcement on students' behaviour. Timely reinforcement is conducive to the establishment of a direct link between student behaviour and reinforcement, avoiding the interference of irrelevant factors.

### **3.4 The principle of effectiveness**

It refers to teaching in which teachers make full use of the positive and effective impact of reinforcement on behaviour and minimise the negative impact on students' development(Wu, 2001). Whether affirmative or negative evaluation of students have both advantages and disadvantages, too much affirmative evaluation can enhance the confidence of students and the corresponding behaviour, but also born arrogance, complacency; too much negative evaluation, can weaken or change certain behaviours, produce negative psychology. Therefore, teachers should pay more attention to find the correct learning behaviour of students to be strengthened, to be used to violate the discipline to attract the attention of the behaviour of the neglect and pay attention to the positive direction to guide.

## 4. REINFORCEMENT MEASURES IN TEACHING

### 4.1 Routine reinforcement

Lectures, exercise classes and laboratory sessions are the regular part of teaching. After the lesson, students have the psychological requirements of digestion, verification, depth and application, which can only be realised in the cycle of the students' learning process. For this reason, teachers should strengthen the content of the course through the regular aspects of teaching, one after another. In particular, it is necessary to seize the students' feedback information, adjust the teaching content and teaching methods, correct the students' mistakes, so that the students in the experience of the effect of the formation of the more they learn, the more they are willing to learn the real state of consciousness.

### 4.2 Instant Reinforcement

On basic concepts and methods of analysis, not losing time to answer students' doubts and correct their errors and tendencies to think can not only help students to correctly grasp the content of the course, but also strengthen the motivation for further study. Students in the learning process, a kind of their own initiative, when the teacher must give timely and satisfactory explanation or enlightening guidance to meet the urgent need for students to understand the mechanism of the problem of the mood, so as to stimulate students' learning enthusiasm. One is the teacher according to the students' feedback information put forward by the guiding questions. In this regard, the teacher should first of all to the students in the lecture, self-study, homework, experiments in the advanced thinking and wisdom of the sparks of management science in the "appreciation" of positive reinforcement means, to be timely affirmation, praise, in order to strengthen the students to strive to make their own better behaviour.

### 4.3 Reinforcement by metaphor

Metaphor has its own special charm. Appropriate use of metaphors in the teaching process, not only can make the content of the image and interesting, but also to attract the attention of the students drift to the content of the course. An appropriate and vivid metaphor, can give students a deep impression, and in the minds of students continue to emerge and dazzle, the formation of associative memory effect - a metaphor surfaces, can be associated with the relevant principles, a principle can be encountered from the corresponding vivid metaphor to understand and remember.

### 4.4 Pulsed reinforcement

Important principles and their application, due to a certain degree of difficulty, students are not easy to master and proficiency at once, can be in accordance

with the internal logic of the curriculum, a certain time to strengthen, and then a certain time to strengthen, which is in line with the human brain to understand and remember the mechanism of knowledge and information. Experience tells us: " 'Information' can only be stored if it stays in the brain for 8 to 20 seconds under conditions of total concentration(Lapet, 1987)." If this knowledge is not applied, after three to five days, the brain will move it to a corner of the inhibitory zone to become a latent memory. Once this knowledge signal motivates the brain again, due to the special function of the brain's thinking, it will be able to arouse the vigour of the original latent memory and make it strengthened, so that this kind of knowledge can be understood and consolidated more thoroughly.

### 4.5 Spiral Reinforcement

The basic content and analytical methods of operation, often throughout the course, but its principles are often concentrated in a certain chapter, the teaching and learning of it can not only stay in the general expression and application, must take a spiral approach to strengthening.

The so-called spiral reinforcement is a continuous deepening and broadening around the basic content. The process is like a spiral, whereby a certain pitch is used vertically to continuously delve into new areas of knowledge, and a certain radius is used horizontally to reach out to the relevant principles around it, combining vertical deepening and horizontal broadening. Therefore, this combination can be called integrated developmental teaching.

### 4.6 Delayed Reinforcement

Many new and difficult concepts and complex analyses and calculations cannot be mastered by students in a timely manner, and must be gradually clarified through a certain amount of self-learning, practice and reflection. Teachers must follow this law, after repeated thinking activities, students have the necessary knowledge to prepare, to be correctly guided.

Skinner's theory of reinforcement is like a bright star in the field of education, emphasising students' subjectivity and initiative, integrating emotional, social and cognitive elements, shaping personality development, resonating with the needs of the times, and playing a lasting and far-reaching role in promoting the effectiveness of education towards greater heights and fostering talents who can innovate and take up responsibilities.

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