

The Education Effectiveness Concerning Different Reinforcement

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Abstract: In psychology, reinforcement refers to all the activities that will increase the probability of a response occurring. Reinforcement tames people's unwanted behaviors or encourages and strengthens an existing one. Given that the role of reinforcement is to affect motivation and determine what characteristics or stimuli will be treated as relevant for the learner, the way of influencing studying by reinforcement can be varied. The reinforcements can be classified into four types due to its own practice: negative reinforcement, positive reinforcement, punishment and extinction. Each type of reinforcement in shaping people's behavior and response can lead different level of accuracy, duration, frequency and persistence. Negative reinforcement usually means "taking away", which is the removal of an aversive event in order to encourage the behavior. Positive reinforcement means "adding up", which a reward or event that increases the likelihood that a particular type of response will be repeated. The punishment and extinction are all involved in the effect in removing certain responses. In light of the current educational beliefs and values, positive reinforcement and negative reinforcement have already become main method of behavior modification to students at the mercy of teacher and school. Although reinforcement and education are not synonymous, successful formal education is virtually impossible without copious systematic reinforcement. This admittedly illustrates that the essential of reinforcement in playing a role in students' learning efficiency. However, education methods are not stable and unitary as mentioned which can be impacted by different. Thus, choosing the types between positive and negative reinforcements to encourage students as motivation will be crucial for students' effectiveness.

Keywords: Learning reinforcement, positive reinforcement, negative reinforcement, punishment, education effectiveness

1. Introduction

The education effectiveness usually ties intimately with the teachers [1], thus it tends to depend on the teaching quality and plan but the truth is more than that. The way of supervision and urging students can also be crucial for students' studying by effect of both teachers and parents. This kind of encouragement and discouragement is known as reinforcement.

1.1. Application in western countries

B.F Skinner and Michael [2] classified reinforcement roughly into positive reinforcement, negative reinforcement and punishment. Those methods of strengthening study were widely conducted in different types of education systems. Especially for western countries like China, above half of the students under the china education system are receiving negative reinforcement for learning, which for example their tedious homework and classwork would be reduced once they get well academic performance. The remaining reinforcements are positive reinforcement and punishment. The positive reinforcement is more likely to observe in the school which is out of education institution's control or some of the top students who can get extra attentions from teachers. For punishment, it also takes a predominant place for teachers to modify their students, which is included physical, verbal and even spiritual. Due to this fact that these different reinforcements are mixed, different teachers may use different reinforcements or even multiple. Once these teachers leave and be removed from their own position, students have to adapt new reinforcements which is hard to say that they will not start to suffer some emotional and psychological problems.

1.2. Reinforcements and memory

Obviously, teaching is directly associated with learning process, similar as receiving actual academic knowledge from teachers, teachers' reinforcements to students tend to relate to their behaviors. It is closely to approach a mechanism that can make student more self-discipline and voluntary in order to improve their studying efficiency. For starters, students learn how to study base on their inherent feature of their cognitive architecture. Similar as Pavlov's dogs, who learned a new stimulus(a bell) could predict food, we assemble information in the world to create knowledge in our minds.[3] And once they learn, what students need to study tend to normally involve in two kinds of memory: semantic memory[4] which is memory responsible for the academic knowledge and fact that students get from their teachers, and procedural memory[5] that relate to habit or routine which will be intimately associated with study skills. And these two types pf memory systems all are involved in the theory of learning reinforcements, the way in which knowledge about action values or world models extracted gradually from many experiences can drive choice.

1.3. Positive and negative effect

Thus, the role of reinforcements will be important to strengthen their desirable responds. Due to fact that making students realize the purpose of study may step up to the topic of cognition, thus we will discuss how learning and reinforcements influence students with different aspects. Referring to Skinner's claim [6], positive reinforcement results in long-lasting behavior modification, especially compared with punishment which can only change behavior in a short period of time. However, positive reinforcement also possesses unavoidable side effects. Referring to Beyond Freedom and Dignity, Skinner warned us to the dangers that may accompany positive reinforcement. Positive contingencies can be dangerous specifically because they do not generate avoidance, escape, or their emotional counterparts, even when the contingencies are ultimately detrimental [7]. For example, teacher who using reinforcement to their students will make students hard to realize that the relevant of their study. It is likely that what students persuade is the reward they get from teacher only. This type of learning reinforcement may finally render students feel confused once the reward disappear. Thus benefits of different reinforcements still remain uncertain.

2. Controversy and practical use

Up until today, research in the field of education focuses on the benefit of media, techniques, and

teaching methods [8]. Few studies are being conducted in the field of student's learning process, their attitudes, or teachers' understanding of students' cognition [9]. According to what Muhammad Fuad wrote about motivation, reinforcement, and punishment have huge significance to the development of learning and students' self-encouragement [10]. Thus, the choices of different types of reinforcements have had a crucial impact on multiple aspects of education. Researchers' views, however, differ from the stake of reinforcement based on the influence of reinforcement in many ways. To be more specific: one single kind of reinforcement can generate diverse effects both on students and teachers, and these effects and functions are usually related to each other. Thus, it is undoubtedly that researchers will have different viewpoints and explanations due to their subjectivity and standpoints. According to this view, it is likely that the mathematical models can be most objective and persuasive.

Animals possessed the ability to "profit and avoid loss" is generally accepted, however, and this can be also applied in reinforcement. Jwaideh and Mulvaney in their research concerning pigeons in choosing different reinforcement plans point out that pigeons tend to choose buttons of certain colors to improve their chance of gaining more food [11]. This research also points out a crucial point that reinforcement can influence each other, or saying that the more favorable reinforcement plan will suppress the less one. In the experiment, the condition of the green button has a shorter interval for a pigeon to get food and the red button is 4 times longer than the green one. After a series of special treatment, they find that the majority of pigeon will tend to choose the button which can generate green, and only a few of them will choose the button that either emit green light or red light. Given this result, Positive reinforcement applied in teacher's education habits doesn't seem feasible if each reinforcement will against each other. In other words, for students who receive reinforcement, their study efficiency will be restricted if they get a reinforcement plan more than once. And the value created by this system will be not worth it.

Punishments, obviously, possess the trait of bringing bad mood and perspective which is undesirable for students' development. The data also somehow prove this noticeable point, Baroncelli's research concerning students' sensitivity. The research workers tested 695 middle school students from different race. It indicates that the higher the punishment activity given by the teacher was, the more positively proportional to the level of dissatisfaction and no moral feeling produced by students would be [12]. This lack of morality and discontent will not only impede students' study efficiency or maybe cause them to withdraw but also may incite them to commit crimes for abreacting their negative mood from class.

In fact, in the field of education, the majority of researchers hold a negative attitude toward the application of reinforcement, especially positive reinforcement. They reckon that punishment is a more acceptable approach for administrating students and its effectiveness can be applied to the majority of students [13]. But simultaneously, they indeed underestimate many advantages of positive reinforcement, like the oft-cited benefit of positive reinforcement, is that people can stay in a positive environment with an optimistic state of mind. Just like what Sidman reckoned, positive reinforcement can liberate us from a miserable society created by punishment and negative reinforcement. He said that people who usually contact people influenced by positive reinforcement tend to have different experiences and feeling compared with those contacting those who suffer from negative reinforcements [14]. Indeed, somehow, his viewpoints are right even in the education field. The energetic emotion generated by positive reinforcement is helpful for school regardless of any point of view. By giving appreciation of what they like to do, it is likely that students' self-confidence will be then enhanced [15]. A good mood can be contagious, and an upward look spreading throughout the whole school may ensue. Admittedly, this atmosphere could be created, but only under an ideal condition in which there is a few "bad students". Most of the students have no interest in studying, they are not born to learn actually. In one class, there are always above half of the students who are

really not into studying and just wandering during class time. Always using positive reinforcement without any practical measure to maintain order, will make students recognize that they can do whatever they want because of the absence of coercion. Without external pressure and restriction, the student's internal motivation may be then distorted into an undesirable mindset.

Reinforcement, from another perspective, is unlikely to conform to human instinct, especially for a more rebellious teenager. Techniques based on positive reinforcement are often perceived to threaten individuals' freedom as autonomous human beings. The irony is that punishment, which is the opposite of positive reinforcement, appears much more acceptable because of the perception that it does not threaten individuals' autonomy-people believe they are free to choose to behave in responsible ways to avoid punishment [16]. Under the situation of reinforcement, It seems that people are strongly compelled to finish some requirement whether they like it or not owing to the reason that the reinforcement only provides them with one way to go. On the contrary, punishment only restricts a path but seems to leave multiple ways.

John Dewey used to say: 'Education is life; school is society' [17]. And the current society is based on a punishment reinforcement to supervise citizens. Society uses rules and laws to regulate people's daily life, and undoubtedly it is easy and simple just as an advertisement. People propagate it as a matter of course. The government does not need to take lots of effect in teaching every citizen individually just make sure they will not break the rule. Similarly, some of the students who are a handful, spend lots of energy in that will be a waste. There are always some people who carry with villainy and are hard to be modified, to make society more harmonious, what society and school can do is to give an appropriate punishment to protect those excellent students being interfered.

And as it proved, Magg claims that punishment often can produce a rapid suppression of most students' inappropriate behaviors, although often temporary suppression [18]. As mentioned, reinforcement usually takes a lot of time and is hard to conduct since its effectiveness will vary with each individual. In contrast, punishment can be implemented easily and quickly owing to its characteristics and simultaneously cover a wide range of students in the class. By sending students out of class, sharp reprimands, and hard labor, teachers can stop undesirable behaviors immediately. Compared with positive reinforcement, it is more efficient though it lasts a short term. Nevertheless, those intense corporal punishments would rather lead to a opposite purpose. These punishment affects to students psychological thinking even their mental health [19]. Besides, the consequences of the punishment given will have an negative effect on children's learning motivation in the classroom [20].

As stated above, judging the interest of each reinforcement seems meaningless, because there are always new evidence and new finding to support each party's advantages or reveal another drawback in the educational field. It is fair to say that the position on reinforcement is as ridiculous as arguing whether gravity is good or bad-both are naturally occurring phenomena. However, Those standpoints still act vitally if we are discussing how each advantage and disadvantage can be utilized in daily teaching [10]. This, in other words, tends to require a teacher to have a clear cognition and understanding of the concept of each reinforcement. In the research concerning the investigation of teachers' concept of reinforcement, researchers used questionnaires and oral interviewing to inquire about the teachers from primary school to high school [21]. The result of students' comprehension is in the medium category with an average value of 2.86 out of 5. It refers 57.2% of the teachers had well understanding of the concept of reinforcement and punishment. In addition, reinforcement application is found to be 63%, and 48% in punishment application. For teachers, it is obvious that there is still quite a space for them to improve their perception level about reinforcement because it will effectively affect students' motivation and achievement [22].

3. Memory and reinforcement

Memory, which have a great impact in students' study effectiveness, also tend to be influence by the

process or result which brings reinforcement. Due to a large part to the fact that study process will require a strong memory strength, thus exploring the side or good effect of reinforcement to memory ability can be crucial in maximizing students' study. Actually, It is obvious that punishment and positive reinforcement have great difference in causing the emotional fluctuation. Punishment usually occurs with the negative mood and positive reinforcement usually appears with positive mood. And the mood they bring will whether improve or hinder the storing of memory. For example, the students who suffer from punishment, they often receive negative feedback, like the affirmation of failure, those children usually are slowly in the later learning [23]. In the contrast, Thorndike's "law of effect," which stated that rewarding experiences were strongly registered in memory, while adverse ones were blocked out. This, however, may implicitly indicates that the application of punishment may just adverse for students to remember the academic knowledge from their textbook [24]. Similarly, some researches compared different tones toward the reaction of people's responses, the result shows that those tone has some associations arise with the reaction time and one's ability to trigger the memory. And Positive associations were slightly preferred and more quickly accessed than negative ones [25].

Furthermore, the positive mood which brings from positive reinforcement also seems more advantageous than sad mood in company with punishment. For example, Teasdale and Fogarty found shorter latency for recall of positive memories in positive moods and longer latency for these memories in grieved moods, but there was no distinction in retrieval time for negative memories in either mood [26]. This means that people with a happy mood tend to be recalled with a positive memory faster compared with the situation that people are memorizing under a sad mood. In other word, it is almost guaranteed that people who gain positive mood via positive reinforcement, once this mood can last long enough or appear during their test, tend to get higher grade at least. Especially for semantic memory, which is the memory part that responsible for absorbing the academic knowledge (Our concepts about objects, states, and events are stored in a cognitive structure termed semantic memory [27].), mood also involve in fact of influencing it. Behavioral studies suggest that, under positive mood, subjects' performance in linguistic tasks includes increased verbal fluency [28], increased production of unusual associations [29], enhanced access to remote associates in semantic memory [30-33], and facilitated implicit judgments of semantic coherence [30].

4. Conclusion

This paper aims to discuss the pros and cons of reinforcements and explore the future direction of education. A view nowadays widely accepted by the public concerning education is that the teacher's main responsibility is to teach student academic behavior and control their socially inappropriate behaviors [10] The significance of this statement is totally admitted and sketch what a school should do. However, this view also distorts educators into a utilitarian. What they want is to maximize their results which means trying to make their school more productive in exporting good students. The original intention of education (trying their best to cultivate students) has been completely lost. To reach their own purposes quickly, punishment was applied in the modern educational style. This obviously helps to save a lot of teacher labor, teacher and students only need to follow the rule and keep the class discipline and thus can keep all the students above a standard level. However, as we had mentioned, punishment and positive reinforcement all have their own stakes. Once the school is full of punishment, students will lack self-motivation. As a result, the lack of motivation will make students less effective in improving their grades [34]. In contrast, if a school only upholds positive reinforcement, it won't make sense either. Positive reinforcement can bring too much freedom and lead students to indulge too much and become difficult to manage. Therefore, how to properly use different types of reinforcement to motivate and encourage students without creating an imbalance in the education system is crucial here. And apparently, teachers act the most important role in this operation. Thus, given that teachers have low mastery in applying reinforcement, expanding the

training of educators' awareness and recognition capacity will be necessary.

As the paper mentioned, most teachers seldom use reinforcement legitimately. What they used normally is the single form of reinforcement which is too general and short of aim. Flexible and targeted reinforcement are rarely applied. For example, Strengthen Students Being Good, looking at and reinforcing students being good is one of the easiest and most effective ways for coping with students with inappropriate behaviors [18]. Students are able to look at their advantages and get reinforced positively, which helps them to be free from prejudice toward their teacher. Teachers, simultaneously, can get rid of the sense that students should all be good and present decently, but to perceive and detect the merit of those mischievous students, and try to magnify it. As a result, the high rates of students' appropriate behaviors can be maintained without bringing any psychological side effects. Also, teachers can try to modify the class climate to take precautions for the happening of misbehavior [35]. Nevertheless, these forms of reinforcement all require teacher to have a high level of awareness of reinforcement.

What is interesting is from the perspective of memorizing academic knowledge, the scale of education quality seems to tip the direction of positive reinforcement. Researches show that in the same circumstance, the memory of positive reinforcement is often recalled faster. In simple terms, if teachers can make a positive and active atmosphere during class by using positive reinforcement during class time, this positive mood that they remember with knowledge in class will be more helpful for retrieving the knowledge when they have a test compared with the negative one. Moreover, this happy mood they get from positive reinforcement also perfects their linguistic system and memory system. Hence, positive reinforcement has an edge over punishment from this point. Given that the current researches are still limited, it is certain that there will be more research findings to contribute for exploiting the most appropriate way of teaching.

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