






## La función de los efectos emocionales en la retroalimentación del aprendizaje

### The role of emotional effects in providing feedback in learning

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**Recibido:** 24 de setiembre de 2021

**Aceptado:** 08 de febrero de 2022

#### Resumen

El presente artículo examina la función de los efectos emocionales en la retroalimentación en el entrenamiento. La investigación se realizó con la participación de 60 estudiantes. Junto con el estudio de los mecanismos psicológicos de retroalimentación, el entrenamiento observó la dinámica de cambios en varios parámetros durante la retroalimentación. La investigación mostró que, según la distribución normal, existe una correlación significativa al nivel de  $p = 0,3$  para apego emocional positivo a la conducta y  $p = 0,6$  para apego emocional negativo a la conducta. Durante las influencias negativas, la motivación, la autoestima y el cambio en los logros de aprendizaje de los estudiantes son más altos que las influencias positivas, y existe una correlación negativa (al nivel de  $p = 0,03$ ). Este hecho confirma que la retroalimentación sufre cambios significativos durante el apego emocional positivo y negativo y que cuanto más persistentes sean estas relaciones, más dinámicos serán los cambios de moderador. En pocas palabras, el apego positivo aumenta los logros de aprendizaje, la motivación y la autoestima hasta cierto punto. Por el contrario, el apego negativo reduce en cierta medida los logros de aprendizaje, la motivación y la autoestima. Al mismo tiempo, crear una retroalimentación positiva en el aprendizaje aumenta la actividad cognitiva, mejora la actitud hacia el aprendizaje, así como las relaciones profesor-alumno.

**Palabras clave:** Educación, aprendizaje, retroalimentación, efectos emocionales, autoestima, psicología

#### Abstract

The article examines the role of emotional effects in providing feedback in training. The research was conducted with the participation of 60 students. Along with the study of the psychological mechanisms of feedback, the training observed the dynamics of changes in various parameters during feedback. The research showed that according to the normal

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distribution, there is a significant correlation at the level of  $p = 0.3$  for positive emotional attachment to behaviour, and  $p = 0.6$  for negative emotional attachment to behaviour. During negative influences, students' motivation, self-esteem, and change in learning achievements are higher than positive influences, and there is a negative correlation (at the level of  $p = 0.03$ ). This fact confirms that feedback undergoes significant changes during positive and negative emotional attachment and that the more persistent these relationships are, the more dynamic the moderator changes will be. Simply speaking, positive attachment increases learning achievement, motivation, and self-esteem to a certain extent. On the contrary, negative attachment to some extent lower learning achievements, motivation and self-esteem. At the same time, creating a positive feedback in the learning increases cognitive activity, improves the attitude to learning, as well as teacher-student relations.

**Keywords:** education, learning, feedback, emotional effects, self-esteem, psychology

### Introduction

In modern times, various processes, including pandemic conditions, reduce the effectiveness of learning activities, delay the formation of necessary knowledge, skills and habits. The facts show that at the heart of the impact of various processes is a reduction in the feedback mechanism or a reduction in its application to learning. It is through the feedback mechanism that it is possible to monitor changes in learning and ensure that conditions are better directed (Aliyev & Jabbarov, 2008). Of course, the creation of feedback in training does not depend only on the level of professionalism of the teacher, his style of communication, his competence. For this, a favourable educational environment must be created.

A favourable learning environment can be understood in different concepts. However, we believe that the basic component of a favourable educational environment is the conditions created for the development of creativity. The training process has a very complex dynamics. There is a wide range of processes going on here, from assessment to communication style and we think that managing these processes unequivocally and subordinating it to the necessary feedback mechanism is a laborious process and requires serious energy from the pedagogue. However, the use of innovations without providing feedback is not understandable. It is necessary to use the emotional effect to create feedback in training activities (Abolina & Akimova, 2012).

For the other hand, the growth of personality-oriented tendencies towards the humanization of modern education requires the establishment of a dialogue between the subjects of education and creates a basis for achieving joint results. Collaborative learning or learning provides the basis for effective outcomes, including the acquisition of more practical skills. However, the mechanism by which this process is carried out raises serious questions. It

is believed that a feedback mechanism based on information exchange and interaction is more appropriate to ensure the optimization of this process (Alizade, 2008). In psychological research, this aspect is dual. On the one hand, the pedagogical communication of educational subjects and their attitude to education is approached as a complex problem, on the other hand, in Western traditions, more attention is paid to the components of communication. Bruner sees feedback as information that reflects the student's adequate understanding of the reality that surrounds him (Bruner, 1961). Such a definition of feedback can be found in the opinions of representatives of constructivism. They noted that the new information provides a basis for the manifestation and development of cognitive structures that allow the reworking of past experience (Brooks, 1967).

The concept of feedback was first used by Watson (1914) in a psychological and biological context. He distinguished two forms of feedback: punishment and gratification (Watson, 1914). In these studies, feedback was presented as the main mechanism of reinforcement during learning against the background of higher nervous activity. Vygotsky's imagines the form of feedback as a genetic origin for a human being, he decides that in the beginning the child's consciousness is formed as congenital feedback. The existing feedback serves as a model for social strengthening and forms the basis for further strengthening. This is how a specific feedback strategy and feedback with other people is formed (Vygotsky, 2002). Therefore, feedback is an important object of study for foreign researchers and they consider it important to create the necessary mechanisms in this area in the research conducted in Azerbaijan. The main purpose of this study is to determine the formation of feedback mechanisms in feedback through emotional effects, to study the impact of the feedback mechanism on students' learning achievements, motivation and self-esteem.

### **Literature review**

The study of feedback mechanisms in training activities has always been in the spotlight. The term "feedback" is presented in different nuances in the linguistic, psychological and pedagogical literature. In this regard, in order to clarify the meaning of the term feedback, it is necessary to pay attention to the historical aspects of its application and the genesis of pedagogical sources. In general, in the theory of communication, feedback is a response to the sender's message. The realization of this activity is not the last chapter of speech activity. Here, as a result, the realization of feedback and the analysis of feedback as a new stage follows the realization. Also, the relevance of the expected outcome and the subsequent impact of decision-making on speech activity and communication as a whole. (Kalashnikov, 2011).

Research shows that the following important aspects of feedback can be noted: feedback is considered in the context of interaction; it is related to the process of reflection of the subject's speech activity; and feedback affects the further development of verbal behavior of the subject of communication (Aliyev et.al, 2008). The aspects “fully reflect the mechanism of feedback and emphasize the need to take into account linguistic points and communicative manners in its study. In this sense, Jabbarov et.al (2020) shows that, the study concludes that high academic performance is associated with the desire to achieve the highest results, develop potential and increase self-esteem through academic achievement. The study concludes that the desire to develop the potential, to achieve the highest results with high academic performance and to increase self-esteem through academic achievement are interconnected. It is the feedback mechanism that can act as a condition for enhancing learning achievements.

Subsequent substantiation of the feedback mechanism was carried out by Thorndike (1931) in accordance with the “law of influence”. He concluded that at the level of satisfaction, the probability of recurrence of reactions increases, while the probability of recurrence of irritants that lead to unpleasant consequences decreases and leads to negative consequences. In this case, positive reinforcement acts as a stimulating potential for feedback. According to him, the impact on behaviour is possible depending on the consequences of this behaviour. He tried to determine the mechanisms of feedback by bringing “positive” and “negative” reinforcement to science.

According to Kluger et al. (1996), various components manifest themselves in the process of forming feedback mechanisms. Estes bases the creation of this mechanism on two components: motivation and information component. It should be noted that these components also act as reinforcing elements. The motivational component refers to the source of reinforcement, which is perceived by the subject as a source of joy or suffering. The information component is aimed at determining the truth or falsity of the answer (Estes, 1967).

By its part, Petreshenko (1967) and Bessonov (2016) link the feedback to the ability of the teacher to independently maintain a normal life process and behavior in changing conditions with the information provided and received from students, understood as the ability to adapt and self-develop. The interpersonal relationship between teachers and students creates a unified whole system, manifesting itself as a manifestation of cause-and-effect relationship. In this process, feedback acts as a cause, conditioning the subject's subsequent actions (Bessonov, 2016). Indeed, the manifestation of feedback in learning activities stems from the level of teacher-student relations. Good relationships create feedback, and uncertain relationships do not create a feedback mechanism.

Lukyanenko's (2007) work examines feedback in a broader sense, emphasizing that all components of the system change as a result of the negative impact of the pedagogical system itself, and emphasizes two functions of feedback (control and corrective): Interestingly, , not studied. In this case, the work on the study of feedback is more focused on the information that teachers receive from students. This notion of feedback corresponds to the notions of “student opinion” or “student voices” found in foreign literature. The feedback mechanism cannot be assessed only as the content of the information provided by the teacher and the information received from the students. Information plays a role in creating a feedback system, as well as changing the main content and building joint activities. A number of studies have discussed the strong positive and negative effects of the feedback mechanism on learning and mastery (Lukyanenko, 2007; Bessonov, 2016; Kukuev et al., 2016). So, feedback cannot be considered as an out-of-learning or immutable process.

Also, research shows that the emergence of reciprocal feedback is more pronounced in the dialogic nature of the learning in which information is transmitted, and characterizes the dynamic nature of this feedback. Sincere, in essence, subject-based dialogue allows for a high level of epistemological trust between teachers and students. In this case, it is important for the informant to consider two key parameters: true knowledge of the subject and the ability to be useful to the recipient (Eaves et.al., 2012). Qualitative feedback forms the basis for the educator to establish an interpersonal dialogue with each student, forming not only the content aspects of learning, but also the correct behavioral orientations and values. However, it should be borne in mind that the optimal manifestation of feedback depends on the conditions under which it is carried out. Due to important features, feedback can be found in the classroom, in the classroom, and out-of-class. These aspects were widely used in traditional teaching.

Numerous studies (Hattie & Timperley, 2007) show that outdated feedback is more useful in classroom communication. Because it is possible to involve more students in the process of checking the work in the classroom, in the analysis of tasks, to communicate with them, to learn their opinions. At the same time, research shows that overdue feedback is more effective in performing complex tasks. In this case, students need more time to process the information. They identified four levels of feedback:

level of tasks

level of performance

level of self-regulation

personality level

They believed that these levels should answer three questions: “What am I trying to do?”, “How can I achieve this” and “What to do next”. From the generalization of the research, it can be concluded that the concept of "feedback" is the information that students receive from the teacher and teachers receive from the students. But what features or tools provide more effective feedback? In this study, we sought to explore the impact of the feedback process on motivation, learning achievements, and self-esteem using emotional attachments. The results will be explained in the following sections.

## **Methodology**

### **Participants**

Sixty participants (60 students) undergoing psychological training at the Center for Psychodiagnostics and Psychoconsulting in Baku were interviewed about the role of emotional impact on feedback in various learning situations. It was attended by students of various specialties (psychology, medicine, sociology, economics). An equal number (n = 15) students in each specialty (total number n = 60) were selected from the number of student participants. Demographic data were not collected in the study. The study was carried out in two stages. At the first stage, only measurements were made. At the second stage, the questionnaires were used in groups, after a month repeated measurements were taken and the results were compared.

### **Instruments**

For this, the study used the “Motivational survey” (2006), “Self-assessment scale” (Motkov, 1979), methods and assessments received by students during training were recorded. An equal number of male and female students were accepted. The training teacher was provided with 8 questionnaires to identify indicators of positive and negative feedback. The following application forms were used to obtain positive feedback:

1. “You are attentive”.
2. “I like your thoughts”.
3. “You are very good at it”.
4. “Your opinion is very smart”.

The following application forms were used to generate negative feedback:

1. “You did not understand me”.
2. “I don't like your thoughts”.
3. “You don't understand this at all”.

#### 4. "Your opinion is unfounded".

##### **Data collection**

The educational process is structured in such a way that each student in the group can express their opinion several times. Three parameters were used to study the impact of this situation on student performance, both positive and negative: academic performance; self-esteem; motivation. After the ethics were approved, the assessment of the participants in the educational process began. At the first stage, a diagnostic survey of students was carried out using pre-prepared tests. Prior to this, the literature was analyzed to study the impact of emotional impact on the feedback process. Having studied the literature, the authors prepared interview questions and supplemented them with the results of a previous study (Rowe, 2017; Bessonov, 2016).

The interview questions focused on assessing the positive and negative emotional state of the students (i.e., the teacher who answered the students' questions graded them on the basis of a prepared standard). In the second stage, the indicators were reassessed and compared. The aim was to focus on changes in learning motivation and feedback mechanism when assessing requirements positively or negatively.

##### **Statistic procedure**

The interview data was coded and analyzed using the SPSS 22 computer program. Nicknames were assigned to all participants. A combination of coding techniques was used. The categories used were predetermined based on theory (e.g., measuring adverse effects based on emotional theory), the results of previous research (Rowe, 2017; Bessonov, 2016), and research questions. The remaining categories were deduced from the data using elementary (eg descriptive) and thematic coding techniques and revised over several periods. Categories were created around the following topics: emotional impact, motivation, learning achievement, feedback, and learning.

Positive additions to the learning process, to some extent, increase academic performance, motivation and the adequacy of self-esteem. This fact is also taken from the analysis of other studies. On the contrary, negative additions to some extent reduce academic performance, motivation and self-esteem. Averages are given with standard deviation and statistical significance is given with average standard deviation and statistical significance is estimated as  $p = 0.3$ .

##### **Ethical criteria**

It should be noted that psychologists discuss the ethics and ethics of experiments, agreeing on a humane approach to the subjects. During our experiment, the following rules were observed:

- Potential study participants were provided with sufficient information to obtain informed consent from the subject.
- Honesty is respected. Possible tactics were used only when they were justified for a meaningful purpose and when there was no alternative. In this case, particular attention was paid to protecting the identity of the participants.
- During the study, students were protected from possible injury and serious fears.
- Information about each of the participants was confidential and they were informed about it.
- Upon completion of the experiment, its purpose and structure are fully stated, except for the misleading words and actions used. The only exception to this rule is that feedback hurts people when they realize they are cruel.

The interviewees participated with the prior informed consent. They voluntarily agreed to participate in virtual interviews

## Results

In the first phase of the research, diagnostic measurements were generally performed with students. The aim was to study the situation before the experiment. Academic achievement was taken into account in the measurement, and methods of motivation, self-assertion and self-assessment were used.

**Table 1**  
*Pre-experimental diagnostic measurements in students*

Methods	Diagnostic levels		N =60 lower
	higher	average	
Self-assessment	38.28	34.17	28.05
Motivation	30.34	35.14	34.52
Learning achievements	33.00	41.72	40.04

As can be seen from Table 1, the measurements without any developmental work showed that the grades achieved by the students without the use of feedback mechanisms are adequate for the initial stage. The average level is higher in both self-esteem and motivation levels. However, we considered it expedient to use amplifying emotional effects to determine the direction of the dynamics of change by creating a mechanism of positive and negative feedback.



**Table 2**

*The effect of changes in self-esteem on feedback when using a positive "Amplifying effect"*

Positive emotional attachment to behaviour	Indicators of self-assessment (N=60)		
	higher	average	lower
"You are attentive"	43.12	34.16	22.72
"I like your thoughts."	41.32	46.82	16.86
"You get it very well"	42.13	41.72	16.15
"Your opinion is a very clever one"	39.14	30.76	30.01

As can be seen from Table 2, the potential feedback changes using the positive amplification effect are significant. Thus, as the level of feedback increases, the use of an emotion amplifiers becomes more effective. In other words, positive emotion amplifiers strengthen the feedback mechanism and create the basis for its optimal manifestation. As can be seen, the phrase "You are attentive" shows that the average level of students has changed by 46.82%, and the high level by 43.12%. The opinion of "You get it very well", creates the basis for the discovery of cognitive abilities, personality opportunities. The effects of motivation and self-esteem increase accordingly. It can be said that the increase of these factors contributes to the optimal organization of training.

**Table 3**

*The effect of changes in learning achievements on the feedback when using a positive "Amplifying effect"*

Positive emotional attachment to behaviour	Indicators of learning achievements (N =60)		
	higher	average	lower
"You are attentive"	41.33	36.12	22.55
"I like your opinions"	40.36	42.18	17.46
"You get it very well" "	42.25	40.66	17.09
"Your opinion is a very clever one"	38.54	35.96	25.05

As can be seen from Table 3, unlike the initial measurements when using the positive amplifying effect, there was an increase in learning outcomes. Thus, 33.00%, 41.72%, 40.04%, respectively, changed to 41.33%, 40.66%, 17.09%. The increase in learning grades proves once again that positive emotion amplifiers play an important role in feedback during training. These changes are long-term, which indicates the validity of our research from a methodological point of view.

**Table 4**

*The effect of changes in motivation on feedback when using a positive “Amplifying effect”*

Positive emotional attachments to behaviour	Indicators of Motivation (N=60)		
	higher	average	lower
“You are attentive”	42.28	38.15	19.57
“I like your opinions”	41.21	42.16	16.63
“You get it very well”	43.36	39.32	14.36
“Your opinion is a very clever one”	39.48	37.81	22.71

As can be seen from Table 4, when using the positive amplification effect, the initial measurements changed from 30.34%, 35.14%, 34.52% to 43.36%, 42.16%, 14.36% respectively. The increase in motivation opportunities proves once again that positive emotion amplifiers play an important role in feedback during training. The facts show that the sustainability of the motivation that arises in this case is higher and more lasting than in other cases.

**Table 5**

*The effect of changes in motivation on feedback when using a negative “Amplifying effect”*

Negative emotional attachments to behaviour	Indicators of self-assessment (N=60)		
	higher	average	lower
“You did not understand me “	28.13	32.74	39.13
“I like your opinions”	31.52	34.66	33.82
“You don't get it at all.”	24.15	27.52	48.33
”Your opinion is unfounded”	34.11	32.92	32.97

As can be seen from Table 5, negative emotional attachments lower self-assessment. As you know, the personality aspect suffers more in self-esteem. The idea that “you don't get it at all” (24.15%: 27.52: 48.33) further lowers students' self-assessment. Therefore, it should be borne in mind that such opinions can completely damage relationships and reduce learning achievements.

**Table 6**  
*The effect of changes in learning achievements on the feedback when using a negative effect*

Negative emotional attachments to behaviour	Indicators of learning achievements (N=60)		
	higher	average	lower
“You didn’t understand me “	31.62	33.12	35.26
“I don’t like your opinions”	29.98	36.17	33.85
“You don't get it at all”	26. 24	31. 68	42.08
”Your opinion is unfounded”	38.11	38.58	23.31

As can be seen from the Table 6, negative emotional attachments lower the learning achievements. However, it should be noted that in the teacher-student relationship, those ideas that are aimed at assessing cognitive abilities are perceived by students as personality-oriented ideas. The “your opinion is an unfounded opinion” clause has less of an impact on learning achievements than others (38.11%; 38.58%; 23.31%). To study the effect of negative opinions on motivation, our research showed that not all thoughts, but only opinions focused on personality, opinions focused on skills, reduce motivation (Table 7).

**Table 7**  
*The effect of changes in motivation on feedback when using a negative effect*

Negative emotional attachments to behavior	Indicators of motivation ( N =60)		
	higher	average	lower
“You didn’t understand me“	31.21	37.15	31.64
“I don’t like your opinions”	29. 18	36.92	33.9
““You don't get it at all””	26. 23	30. 76	43.01
” Your opinion is unfounded”	36.42	35.53	28.05

**Table 8***Correlation of feedback changes during different effects on behavior*

	Number of students N =60		
	Level of feedback		
	Learning	Motivation	Achievements of self- assessment
Negative emotional attachments to behaviour	0,153	0.109	0,156
Negative emotional attachments to behaviour	0,141	- 0.132	-0,744

As can be seen from Table 8, according to the normal distribution, there is a significant relationship at  $p = 0.3$  for positive emotional attachments to behavior and  $p = 0.6$  for negative emotional attachments to behavior. Table 7 shows that during negative influences, ie during negative feedback, students' motivation, self-esteem, changes in learning achievements are higher than positive influences, and there is a negative correlation. (at the level of  $p = 0.03$ ). This fact is confirmed by the fact that during positive and negative emotional attachments, the feedback changes significantly and the more persistent these relationships are, the more dynamically the moderator changes. Simply saying, positive attachments increase learning achievement, motivation, and self-esteem to a certain extent. On the contrary, negative attachments to some extent reduce learning achievements, motivation and self-assessment.

### Discussion

This research is consistent with many studies, including Gross and John (2003). That is, negative or positive emotional attachments used as a form of feedback during learning have a significant impact on student motivation, self-esteem, and academic performance. In our study, creating positive learning feedback increases cognitive performance and improves learning relationships. Such a situation depends only on the context and may not lead to the same results. Research shows that teachers can have a powerful emotional impact on students in the learning process. In other words, teachers' feelings can be reflected in the mood of students. For this reason, teachers must be emotionally intelligent so that their negative emotions do not affect their work (Rudd, 2012). The results of this study are almost the same as ours.

Physical fitness has been found to be the basis of learning and this can be achieved through pleasant physical exercise. Or, conversely, memories of pleasant things can evoke

positive emotions that have a positive effect on health. Such regulation can be a very useful and effective tool for improving learning ability when needed (Rudd, 2012). However, the use of emotional attachments in feedback in this study is not based on specially selected standards. But the content is consistent with our research. Because in this case, there is a good relationship between teacher and student, based on support, which activates the motivational component. In other words, the fact that teachers are fully committed to teaching, doing their job "from the heart" and choosing the right way to communicate with requirements, organize learning using positive emotional influences, increases students' self-esteem.

It should be borne in mind that it is precisely as a result of the education received that student can communicate and understand other people, empathize with them. This means understanding that you are not alone and that you must take into account the feelings of others (Jarvis, 2012). In some cases, this situation implies appropriate behavior that is contrary to the emotional state of the person. For example, take it easy when you feel bad. The results of our study on increasing the positive emotional impact of students and creating feedback mechanisms, although not directly, but indirectly, coincide with the results of many studies (Ermakova, Ivashkin, 2013; Grigorieva, 2011; Abolina, 2012; Amyaga, et al., 2014; Chai, et al., 2017; Elliot, 2000).

However, many studies show contradictions and inconsistencies (Rowe et al, 2012; Nicol & Macfarlane-Dick, 2006). This prevents land valuation, promotes generalization, reveals missing knowledge and prevents deviations from the ideal. This is a kind of research that we consider important to complete the research. Because the use of positive and negative emotional attachments in the learning process indicates the direction of change in the feedback mechanism. However, the presence of such additions in these studies is aimed at increasing the effectiveness of teaching and identifying didactic problems.

According to some researchers, there are two main findings from recognizing and managing the emotional aspects of feedback: the importance of building a positive attitude towards feedback practice and teaching students how to deal with feedback and how to use it effectively. Effective feedback should be seen as "helping learners solve emotional and cognitive problems" (Moore & Kuol, 2007). Some researchers support the idea that encouraging positive emotions in the exchange of ideas will increase the student's ability to pay attention to feedback, accept and understand, and reduce negative emotions (Fredrickson 2001; Fredrickson & Cohn, 2008).

## Limitations and future research

This study has some limitations. First, in January-May 2021, the training was limited to students trained at the Psychodiagnostics Center in Baku. Second, this study is one-way, with no gender differences taken into account. . In other words, future studies can be considered as moderators of gender, age, parents' level of education and economic situation. Third, this research is cross-cutting. Thus, quasi-experimental or longitudinal studies can be performed. Future research can be designed with a different research design, tools, and sampling.

## Conclusion

Much research has focused on social emotions in the formation of feedback and focused on the direction of their formation. Students experience a range of emotions while waiting and receiving feedback. Feedback can foster positive emotions, especially gratitude, appreciation, pride, and happiness. Equally, it can cause negative feelings such as anger, frustration, embarrassment, fear, and sadness. Emotions in the context of feedback can be conceptualized as falling under two broad (and sometimes opposite) goals of feedback: to evaluate and support student learning (Rowe et al., 2008). In general, there is a need for fundamental research in this area, including complex experiments. Summarizing all this, we can conclude that positive emotional effects play an important role in the formation of feedback, and the use of these effects in the learning process increases motivation and learning.

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