RESEARCH ARTICLE

STUDENTS' METAPHORICAL PERCEPTIONS RELATED TO REWARD AND PUNISHMENT IN EDUCATION.

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Manuscript Info	Abstract
	This study aims at exhibiting prospective biology teachers' perspectives of reward and punishment in education. The study group was composed of 99 pre-service biology teachers attending the Biology Education Department of Hacettepe University in the 2015-2016 academic year. The participants were given a semi-structured questionnaire form containing the statements "reward/punishment in education is just like…. because….", and "a teacher giving reward/punishment in education is just like…. because…." The participants were also asked to answer the question "what three things does reward/punishment in education remind you of?" The technique of content analysis was employed in this study in analysing the data obtained. The data were analysed through MAXQDA12 - a program for qualitative data analysis - and then were interpreted. Accordingly, students perceive reward in education as a positive element whereas they perceive punishment as a negative element.

Introduction:-

Reward and punishment in education is an issue in need of further research. One of the most important issues in education is, undoubtedly, discipline and reward/punishment used to establish discipline (Calik, 2016). Both methods provide teachers with a lever in education, and they can lead to positive or negative results. Teachers employ methods of psychological or social reward and punishment in classroom management (Yilmaz&Babadogan, 2013). Studies have shown in general that reward has positive effects on students (Navaro, 2009; Nuttin& Greenwald, 2014; Yaman&Guven, 2014) whereas punishment has negative effects (Dokmen, 2005; Nuttin& Greenwald, 2014; Swanson, 2001; Yaman&Guven, 2014). Punishment is not influential in changing behaviors in the long term (Aydin, 2006). As Hoffman, Hutchinson and Reiss (2009) also point out, educational systems use reward and punishment in conducting effective educational activities and in establishing discipline for the purposes of controlling students' behaviors; and the feelings, thoughts and behaviors of students who are exposed to reward and punishment are shaped accordingly.

Reward and punishment should be purposeful, they should not be given without a reason, and students should be informed of any potential consequences beforehand. Students who are not informed in advance do not take on responsibility, and make accusations towards their teachers (Romi&Roache, 2012). It is obligatory that any reward or punishment be purposeful, meaningful, proportional to behaviors, and appropriate to students' development to obtain effective results in the use of these strategies (Aydin, 2000). The practice of rewarding and punishment which is not proportional to behaviors and which is not announced beforehand can yield negative results. Punishment given in aggressive and hostile manners leads to negative results and causes deterioration in students' behavior. A

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combination of rewards and punishments directing students towards correct behaviors, on the other hand, will encourage students to take on responsibility and will reduce their incorrect behaviors. The "carrot and stick approach" is a term referring to offering a combination of reward and punishment in order to stimulate good behavior (Roache& Lewis, 2011).

Using metaphor to understand students' approaches to reward and punishment can offer important benefits. A metaphor is a way of understanding or experiencing a phenomenon according to another phenomenon (Lakoff& Johnson, 2005). Thus, metaphors enable us to understand complex and difficult issues and to interpret them (Moser, 2000). They are effective instruments in describing a complex and abstract issue (Wahyudi, 2007). They are also instruments enabling us to map an experience and to understand complex subjects and new situations (Vosniadou, 1989). The most important tool improving problem solving and creative thinking skills is the use of metaphors (Arslan&Bayrakci, 2006). Use of metaphors can be explained with a system involving linguistic, semantic, and cognitive dimensions (Charteris-Black, 2004).

Metaphors are very strong instruments for learning and teaching (Vadeboncoeur& Torres, 2003). They develop and increase students' thinking skills and creativity, and they also increase students' participation. Metaphors are used in many fields in educational research in order to determine students' and teachers' perceptions in other words (Aydin and Pehlivan, 2010).

Several studies analyzing metaphorical perceptions (Abril& Bannerman, 2015; Alger, 2006; Arik&Ozdemir, 2015; Aslan, 2016; Ekiz&Kocyigit, 2013; Eren, Celik&Akturk, 2014; Gamlem& Smith, 2013; Ibret&Aydingozu, 2011; Kaya, 2014; Koc, 2013; Leavy, Mcsorley&Bote, 2007; Martinez, Sauleda& Huber, 2001; Nikitina&Furuoka, 2011; Tannehill&MacPhail, 2014) are available in the literature. However, the number of studies analyzing perceptions of reward and punishment on the basis of metaphors is very small. Turhan&Yaras (2013), for instance, describe students' and teachers' thoughts about the concepts of discipline, school director, classroom rules, and reward and punishment through metaphors.

Purpose of the Research:-
This study aims to demonstrate prospective biology teachers' perceptions in relation to "reward and punishment in education" and "teachers giving rewards and punishment in education" through metaphors.

Research Problem:-
1. In what metaphors do prospective biology teachers describe their perceptions of "reward and punishment in education" and of "teachers giving rewards and punishment in education"?
2. Into what conceptual categories are prospective biology teachers' metaphors about their perceptions of "reward and punishment in education" and of "teachers giving rewards and punishment in education" divided according to their similarities?

Method:-
Research Design:-
This study uses the design of phenomenology - one of qualitative research methods. Because phenomenology is used to focus on phenomena of which we are aware but do not have in-depth and detailed understanding (Gocer, 2013), this method has been selected.

Study Group:-
The study group was composed of 99 pre-service biology teachers attending the Biology Education Department of Hacettepe University in the 2015-2016 academic year.

Data Collection:-
The participants were given a form containing the statements "Reward/punishment in education is like…. because….", "Teachers giving rewards/punishment are like…. because….", and "Three things reward/punishment in education brings into mind" within the scope of the research, and they were asked to complete the semi-structured form. No comments were made about the content during the applications so as to prevent misleading in relation to the concepts.

Data Analysis and Interpretation:-
This study analyzes the metaphors developed by prospective teachers through content analysis. Deductive method is used in content analysis and primarily relevant categories are distinguished (Ozdemir, 2010). A five-stage process of evaluation which was used by other researchers (Ates&Karatepe, 2013; Aydin&Unaldi, 2010; Saban, 2008) was used in the content analysis. The stages undertaken were as follows: (1) coding/eliminating; (2) classifying; (3) categorizing; (4) validity and reliability study: the data obtained, how the data were reached, and the results obtained from the data were described clearly in this study, and the metaphors categorized were revised again by consulting expert opinion at the stage of reliability attainment. The results obtained with the help of experts was calculated with the formula "Reliability = agreement/agreement + disagreement X100". Consequently, agreement between the researcher and the expert was found to be 91%. In cases where agreement between researchers and experts is 90% or above, reliability is considered to be adequate (Saban, 2008; Saban, 2009; Saban, Kocbeker&Saban, 2006); (5) putting the results into the computer and calculating the number of metaphors as well as the frequencies (f) and percentages (%). The data were coded using MAXQDA 12.

Findings:-
99 university students included in the research created metaphors about "reward and punishment in education" and about "teachers giving rewards and punishment in education" via six semi-structured questions. They were also asked to specify three things reward/punishment brings into their mind. Conceptual categories were formed with the metaphors created, and they were tabulated. Then the data in the tables were analyzed and interpreted.

Table 1:- Findings about the statement "Reward in education is like…. because…."

Categories	Reward in education is like…. because….	Number of metaphors	Frequencies	Percentages
Reward as an encouraging/illuminating element	Reinforcement (17), Food (17), Gift (6), Achievement (4), Motivating (4), Happiness (4), Cure (3), Habit (2), Courage (2), Feedback (2), Necessary (2), Money (2), Sport (2), Supportive (2).	14	69	**88.5**
Reward as a negative element	Punishment (2), Blind alley at two ends (1), Bribe (1), Cigarette (1).	4	5	**6.4**
No answers	No answers (4).		4	**5.1**
TOTAL		**18**	**78**	**100**

Reward as an encouraging-illuminating element: Some of the statements in this category are shown in the following:-

> *"Reward in education is like reinforcement because it increases the desire to learn."*
> *"Reward in education is like food because it makes an individual happy."*
> *"Reward in education is like a gift because it increases motivation."*

Reward as a negative element:-
Some of the statements in this category are shown in the following:
> *"Reward in education is like punishment because it causes addiction."*
> *"Reward in education is like a cigarette because it becomes a habit by arousing desire to succeed."*

Table 2:-Findings about the statement "Teachers giving rewards in education are like…. because...."

Categories	Teachers giving rewards in education are like.… because….	Number of metaphors	Frequencies	Percentages
Teachers as an encouraging/illuminating element	Conscious (4), Successful (4), Creative (3), Educated (2), Encouraging (2), Guide (2), The Sun (1).	7	18	**24**
Teachers as a need	Food (12), Family (9), Friend (3), Water (2), Tree (2).	5	28	**37**
Teachers as the owners	Justice (2), Ambitious (2), Employer (2),	6	10	**13**

of power and as the leaders	King/Queen (2), Bank (1), Power (1), Referee (1), Authority (1), Hero (1).			
Teachers as an emotional expression	Angel (5), The best teacher (3), Affectionate (2), Beloved (1).	4	11	**15**
Teachers as a negative element	Unsuccessful (1), Ignorant (1), Inexperienced (1), Apple polisher (1).	4	4	**5**
No answers	No answers (4).		4	**5**
TOTAL		**26**	**75**	**100**

Some of the statements in this category are shown in the following:

Teachers as an encouraging-illuminating element:-
Metaphors in this category are prominent from the aspect of being encouraging and illuminating. Some of the statements in this category are shown in the following:

> *"Teachers giving rewards in education are like someone who is conscious because they try to encourage students."*
> *"Teachers giving rewards in education are like the sun because they always shine and they both heat and illuminate us."*
> *"Teachers giving rewards in education are like a guide because they aim to show students positive behaviors."*

Teachers as a need:-
This category is mostly composed of students' statements perceiving teachers giving rewards in education as an entity that we need. Some of the statements in this category are shown in the following:

> *"Teachers giving rewards in education are like food because they motivate students into the lesson and they make students love them."*
> *"Teachers giving rewards in education are like a family because they feel happy and they make students happy when they have achievement in return for their efforts."*
> *"Teachers giving rewards in education are like water because students need such teachers."*

Teachers as the owners of power and as the leaders:-
It may be said that students' statements in this category consider teachers giving rewards in education as people holding the power and as the authority. Some of the statements in this category are shown in the following:

> *"Teachers giving rewards in education are like justice because they give what is needed in return for achievement."*
> *"Teachers giving rewards in education are like referees because they are liked by supporters if they decide on a penalty."*
> *"Teachers giving rewards in education are like heroes because it is important to respond to people's efforts."*

Teachers as an emotional expression:-
This category contains students' statements which consider teachers giving rewards in education as an emotional expression. Some of the statements in this category are shown in the following:

> *"Teachers giving rewards in education are like angels because they provide students with an angel's wing by giving a reward."*
> *"Teachers giving rewards in education are like someone affectionate because they assure that achievement is long-lasting/permanent."*
> *"Teachers giving rewards in education are like the beloved because you love more once you love them."*

Teachers as a negative element:-
The metaphors in this category indicate that students perceive teachers giving rewards in education as negative. Some of the statements in this category are shown in the following:

"Teachers giving rewards in education are like unsuccessful individuals because students do not want to study harder unless they are given a reward."
"Teachers giving rewards in education are like inexperienced people because they have not faced the impacts caused by a reward before."
"Teachers giving rewards in education are like someone ignorant because they do not know how to make students dependent on them."

Table 3:-Findings about the statement "Three things reward in education brings into mind"

Categories	Three things	Number of metaphors	Frequencies	Percentages
Reward as an encouraging/illuminating element	Words of appreciation (38), Food (30), High marks (26), Achievement (24), Motivation (12), Gift (8), Encouragement (8), Books (6), Positive behaviors (6), Pencil (6), Competition (3), Behavior (3), Interest (3), Homework (3), Gain (6), Having benefits (2), Supporting (2), Classical conditioning (2), Pavlov's dog (2).	19	190	**71**
Reward as an emotional expression	Happiness (23), Ambition (8), Joy (6), Desire (6), Trust (4), Excitement (4), Flower (2), Entertaining (2), Peace (2), Passion (2), Surprise (2), Enjoying going to school (2).	12	63	**24**
Reward as a negative element	Choosing the easy way (2), Decrease in success (1), Disappointment (1).	3	4	**2**
No answers	No answers (9).		9	**3.4**
Total		**34**	**266**	**100**

Table 4:-Findings about the statement "Punishment in education is like.… because.…"

Categories	Punishment in education is like…. because….	Number of metaphors	Frequencies	Percentages
Punishment as a negative element	Bad behavior (17), Bad (6), Negative reinforcement (4), Having a vaccination (4), Crime (3), Undesired dish (3), Bitter food (3), Prison (2), Wall (2), Mistake (2), Diet (1), Responsibility (1), Pain (1), Traffic accident (1), Making someone give up (1), Cracked nail polish (1), Dangerous (1), Nightmare (1), Boring (1), Handcuffs (1), Slavery (1), Barriers (1), Referee (1), Germs (1), Method with no solutions (1), Monster (1), Summer heat (1), Getting lost (1), Imitation jewelry (1), Captivity (1), Failure (1), Unnecessary (1), Moving away from school (1), Difficult to implement (1), Cooler (1), Silence (1), Demotivating (1), Horror film (1), Discouraging (1), Whip (1).	40	**77**	**86**
Punishment as a positive element	Being motivated (1), Reward (1), Training (1), Necessary (1), Normal (1).	**5**	**5**	**6**
No answers	No answers (8).		8	**9**
Total		**45**	**90**	**100**

Some of the statements in this category are shown in the following:

Punishment as a negative element:-
Metaphors in this category indicate that students perceive punishment in education as negative. Some of the statements in this category are shown in the following:

> *"Punishment in education is like a bad behavior because punishing students alienates them from a course."*
> *"Punishment in education is like having a vaccination because it hurts."*
> *"Punishment in education is like bitter food because it alienates students from school and from school subjects."*

Punishment as a positive element:-
Metaphors in this category indicate that students perceive punishment in education as positive. Some of the statements in this category are shown in the following:

> *"Punishment in education is like a reward because it prompts one to find ways not to face the same punishment again."*
> *"Punishment in education is like being motivated because it is the criterion obtained-gained as a result of the wrong behavior."*

Table 5:- Findings about the statement "Teachers giving punishment in education are like…. because…."

Categories	Teachers giving punishment in education are like…. because….	Number of metaphors	Frequencies	Percentages
Teachers as a negative element	Having strict attitudes (11), Bad person (11), Prison officer (3), Soldier (2), Nurse (2), Doctor (2), Police officer (2), Manager (2), Someone who is not an educator (2), Incompetent (2), Frightening (2), Cold (2), Dictator (2), Unsuccessful (2), Bitter (2), Woodcutter (1), Dream never coming true (1), Agony (1), Ex-darling (1), Criminal (1), Failing (1), Unfair (1), Stick (1), Whip (1), Virus (1), Hangman (1), Angry (1), Robot (1), A tasteless meal (1), Pawnbroker (1), Pirate book (1), Queue in a bank (1), Individual with no communication (1), Referee (1), Cook (1), Love (1), Watchman (1).	37	71	**74**
Teachers as a positive element	Food (5), Family (4), Educator (4).	3	13	**13.5**
No answers	No answers (12).		12	**12.5**
Total		**40**	**96**	**100**

Teachers as a negative element:- Some of the statements in this category are shown in the following:
> *"Teachers giving punishment in education are like prison officers because they always keep their eyes on you."*
> *"Teachers giving punishment in education are like an ex-darling because you want to get them out of your life."*
> *"Teachers giving punishment in education are like dictators because they oppress others and make them feel bad."*

Table 6:-Findings about the statement "Three things punishment in education brings into mind"

Categories	Three things	Number of metaphors	Frequencies	Percentages
Punishment as a negative	Negative reinforcement (72), Bad behavior (22), Violence (14), Failure (12), Unhappiness (12),	**23**	**224**	**93**

element	Reluctance (11), Getting low marks (10), Fear (7), Reducing motivation (6), Discipline (6), Learning in ambition (5), Reduced marks (5), Fear (5), Being isolated (5), Giving up (4), Having to do (4), Tension (4), Sadness (4), Not allowing a student to join classes (4), Sending away (3), Demoralizing (3), Wrong method (3), Disappointment (3).			
Punishment as a positive element	Achievement (2), Cure (1).	2	3	1
No answers	No answers (14).		14	6
Total		25	241	100

Discussion and Conclusion:-

Students were asked to complete the statement "reward in education is like…. because….", as is seen in Table 1. The students completing the statement divided reward in education into two categories as "reward as an encouraging/illuminating element" and as "reward as a negative element". Accordingly, students perceiving reward in education as an encouraging/illuminating element matched reward mostly with the concepts of reinforcement (17) and food (17). Turhan and Yaras (2013) also found that students perceived reward as reinforcement and that they identified it with such food as chocolate, ice cream, and dessert - which all children love. According to Table 1, it may be said that reward given to students served to make students successful, to make them happy and to motivate them. Rewards give psychological satisfaction and they increase efficiency and motivation (Armstrong &Murlis, 2004; Wong & Wong, 2005; Yildirim, 2008).

According to Table 2, students distinguished five categories in relation to "teachers giving rewards in education" – namely: "teachers as an encouraging/illuminating element"; "teachers as a need"; "teachers as the owners of power and as the leaders"; "teachers as an emotional expression"; and "teachers as a negative element". On examination of the table of teachers giving rewards in education, we find that those teachers are perceived by students as people who have certain power and who are affectionate. This is a positive perception, and students who accept their teachers with positive properties are expected to display such behaviors as concentrating on those teachers' lessons more, participating more in those classes, and being prepared for exams. Rewards have positive effects on developing teacher-student relations (Jong, Mainhard, Tartwijk, Veldman, Verloop, &Wubbels, 2014). Besides, receiving a reward results in an increase in an individual's efficiency (Adu, 2015).

As is clear from Table 3, students identify their teachers' words of praise and approval such as "yes", "good", "well-done", and "go on", and food such as candy and chocolate, with the concept of reward as in Table 1. Turhan and Yaras (2013) also found that students associated reward with chocolate, ice cream, candy, and dessert. This indicates that students consider primary and secondary reinforcement most important. In addition to that, elements such as high marks, achievement, motivation, gifts, and encouragement were also found to be connected with reward. Based on the table, it may be stated that receiving a reward triggers such feelings as happiness, ambition, joy, willingness to learn, self-confidence, and excitement in students.

According to Table 4, students divided punishment in education into two categories: as a negative element and as a positive element. The majority of the participants perceived punishment as a bad behavior or as a bad situation. As Dogan, Ugurlu and Karakas (2014) also point out, punishment is a negative element and it has limited and temporary effects. It does not cause the expected effect in changing behavior (Kaya, 2007). Punishment is a pedagogically negative situation which can cause blind obedience and reduction in self-esteem and in self-confidence, and which intends to eliminate the undesired behavior in a hurtful and unpleasant way (Zakaria, Reupert& Sharma, 2013). Besides, punishment is also an undesired situation, putting those who give it and those who are exposed to it into a difficult situation, hurting their feelings, and affecting their academic achievement in negative ways (Bulut, 2008; Mahiroglu&Buluc, 2003). For this reason, punishment should not be employed by teachers who wish to have positive effects on - or to make positive contributions to - their students. Boyaci (2009) also obtained similar results and found that students perceived the concept of punishment as negative. Punishment does not correct undesired behaviors, but it causes the emergence of new problems, the development of negative attitudes, and harm to students.

According to Table 5, students perceived teachers giving punishment in education as a negative element. Thus, they perceived teachers giving punishment in education as bad people, and they identified them with negative elements. The fact that a teacher gives punishment indicates that he/she is incompetent and weak in practice. It seems impossible for a teacher who is incompetent and weak in the classroom to create a successful classroom atmosphere. A teacher who chooses to give punishment very often in the classroom is highly likely to become a negative figure who students do not like, who students hate, whose classes are not enjoyable, and whose students experience academic failure. In addition to yielding negative results, strict discipline and punishment which is non-proportional to behaviors cause cold and hostile behavior on the part of students towards teachers (Pala, 2005). In conclusion, giving punishment should be avoided when possible for effective and successful learning. Due to the above-mentioned reasons, teachers should avoid giving punishment in learning environments.

According to Table 6, students were found to distinguish two categories - namely, punishment as a negative element and punishment as a positive element. Punishment in education contains several negative factors for students. The table also shows the destruction that punishment causes for students. Studies conducted have shown that punishment - and especially physical punishment - can increase aggressiveness, and it can also influence mental health (Gershoff, 2002; Gershoff, 2017; Ghosh& Banerjee, 2016).

Recommendations:-
1. Correct and appropriate behaviors displayed by students should be reinforced, but they should not be made addicted to reward.
2. Punishment should be used carefully, since it can cause anger, hatred, and a desire to take revenge on the part of students.
3. Experimental studies demonstrating the ties that reward and punishment have with the brain and nervous system could be performed.

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