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The Effectiveness of an Educational Program Based on Generative Learning in The Development of Classroom Interaction Among Fourth-Grade Students in the Subject of Sociology

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Abstract

The goal of the current research is to identify the effectiveness of an educational program based on generative learning in developing classroom interaction among fourth-grade literary students in sociology. The two researchers used the experimental research approach to achieve the research goal. The research sample consisted of two groups (experimental and control), each group of (30) female students, and the research tool was the Flanders Decimal Card. The results showed the superiority of the experimental group that studied using the educational program in the level of classroom interaction over the control group that studied in the usual way, and the superiority of the post-application of the experimental group in classroom interaction over the pre-application. The two researchers concluded to a set of recommendations and proposals in light of the research results.

Keywords: *Effectiveness, Educational Program, Generative Learning, Classroom Interaction*

INTRODUCTION

RESEARCH PROBLEM

The problem of the current research is determined by answering the following main question:

What is the effectiveness of a proposed educational program based on the generative learning model in developing classroom interaction among fourth-grade female students in sociology?

RESEARCH IMPORTANCE: The importance of the research comes from the following:

The importance of the theoretical basis on which the proposed educational program is based, which is based on the generative learning model, which makes the learner the basis and focus of the educational process.

The importance of the research also lies in its ability to activate the classroom environment and increase the level of classroom interaction among female students in a way that transfers the focus of the educational process from the book or course to the student.

Its importance for researchers also lies in providing information and data that enable them to conduct further research and studies on this topic.

It is the first research in the field of science by the two researchers that aims to address the shortcomings in classroom interaction among female students.

RESEARCH AIMS: The current research aims to achieve the following main goal:

Identifying the effectiveness of the proposed educational program based on the generative learning model in developing classroom interaction among fourth-grade female students in sociology.

RESEARCH ASSUMES: The researchers formulated the following hypotheses:

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There are no statistically significant differences at the level of significance (0.05) in the level of classroom interaction between the average ranks of the experimental group that studied using the educational program and the average ranks of the control group that studied in the traditional way.

There are no statistically significant differences at the level of significance (0.05) in the level of classroom interaction between the average ranks of the experimental group that studied using the educational program in the pre-application and the average ranks of the experimental group in the post-application.

There are no differences between the levels of classroom interaction for the experimental and control groups and the Flanders criteria for classroom interaction.

RESEARCH LIMITS: The search is limited to the following parameters:

Human Limits: A sample of female students in the fourth literary grade from schools in the Basra Governorate Center for the academic year (2023/2024).

Subject limits: Sociology subject for the fourth literary grade, scheduled to be taught for the academic year 2023/2024.

Spatial boundaries: Basra Governorate Center Schools - Public Education Department.

Time limits: The first semester of the academic year 2023-2024

DEFINITION OF TERMS

EFFECTIVENESS

Definition of effectiveness as a language: "The verb is universal for every transitive verb or transitive verb, verb, does, verb, verb. The noun is the verb and the plural is verb. The verb is generosity, and the verb is a noun for a good deed of generosity, generosity and the like." (Ibn Manzur, 2003: 115).

EDUCATION PROGRAMS: Known as

A teaching system consisting of a number of study units grouped around a topic designed to achieve specific goals and whose teaching continues for an entire semester. (Zaytoun 746:2001).

GENERATIVE LEARNING: Known as

A model for generating answers to a problem that does not have a ready solution, especially if the problem is unfamiliar, and learners do not have the ability to recall facts that are related to the problem. (chin & brown, 2000: 114).

The researchers know it practically: It is an educational model that makes the learner the focus of the educational process in producing correct information by linking his previous experiences with his new experiences acquired in learning skills. It is based on the application of four phases (introductory, focused, challenging, and applied).

CLASS INTERACTION: Known as

The interaction that occurs between the teacher and students together inside the classroom to stimulate intellectual and practical activities and achieve development in the educational process. (2002:186, (Hall.

The Researchers know it Procedurally However, it is: all behaviors and movements issued by all parties to the educational processes, male and female students, which were recorded by the two researchers in the Flanders Classroom Interaction Card, which consists of 10 levels, consisting of direct behavior, indirect behavior, silence, and chaos, which determine the form of the teaching method followed, whether it is democratic or authoritarian.

THEORETICAL BACKGROUND

GENERATIVE LEARNING MODEL

THE CONCEPT OF THE GENERATIVE LEARNING MODEL

The generative learning model is the means and content of education, and it includes all educational and pedagogical experiences and activities, and through it the learner's educational goals are achieved through his comprehensive growth and building and modifying his behavior. The generative learning model is primarily concerned with the influence of the ideas present in the learners' cognitive structure, on the basis of which Choosing the tangible input and paying attention to it, as well as the links that are generated between the stimuli that the learners are exposed to and the aspects of their storage in the learners' cognitive structure and the formation of meaning from the tangible input and the information that is retrieved from the learners' cognitive structure (Ismail, 2011: 45).

CHARACTERISTICS OF THE GENERATIVE LEARNING MODEL

The generative learning model is characterized by certain characteristics that emerge from the classroom environment in which it exists, and these characteristics include:

Active circulation of ideas among learners.

Recalling information from the learner's long memory.

Integration of the learner's old information with new information.

Forming new knowledge that has been built in a way that is easy to remember and understand in any new educational process.

The learner connects previous knowledge with current knowledge in innovative ways of analyzing ideas, summarizing, classifying, and grouping.

The teacher and students communicate with each other to achieve the best learning.

The generative learning model involves elaborating on creating mental images and meaningful sentences. (Al-Awamleh and Abu Loum, 2019: 171).

THE CONCEPT OF CLASSROOM INTERACTION

Classroom interaction means all the events that take place inside the classroom between the elements of the classroom environment, including a teacher, a learner, a subject, and the available physical conditions. These events shape the learning that takes place inside the classroom, and greatly affect the level of learning and teaching, and the level of the teacher's success in achieving the desired educational goals. They include: These events are based on actions issued by the teacher himself, whether direct or indirect, as well as actions issued by the learner, whether due to learning or due to other influences, and the cases of chaos and calm occurring in the classroom, and these events are controlled by the teacher and managed in a way that is consistent with the goals of education. (Ali and Al-Dulaimi, 2006: 37).

THE IMPORTANCE OF CLASSROOM INTERACTION

Classroom interaction is of great importance in increasing the effectiveness of the educational process and is one of the means of learning at all educational levels. Its importance can be determined as follows::

Classroom interaction helps plan learning and teaching, evaluate and implement what is planned.

Its importance lies in the formation of the teacher. After he was the possessor of knowledge and the task of teaching and instructing students fell upon him, he became a guide, guide, and organizer, and the learner became a participant after he was only a recipient..

It helps the learner to form positive concepts about himself, his abilities, and his mental potential.

Stimulating discussion and dialogue by the teacher, providing the learner with the opportunity to participate effectively in the educational situation, strengthening human relations between the teacher and learners, and turning the classroom into an environment that encourages learning." (Qatami and Qatami, 2005: 822).

Raising learners' achievement levels and strengthening their education, by explaining some points to learners who are less capable, and giving them positive attitudes towards school, towards the teacher, the subject, and towards their colleagues (Al-Asadi and Ibrahim, 2007: 63).

Research methodology and procedures

Experimental research method

It is an approach that uses experiments to verify the hypotheses set by the two researchers, and experimental research is characterized by high accuracy and applicability ((Al-Nahi and Al-Shammari, 2019: 131).

And the two researchers relied on the experimental research method with partial control to verify the research hypotheses, due to the difficulty of achieving complete control due to schools being subject to administrative systems and rules that make it difficult to achieve randomization and reshape samples to achieve complete control.

EXPERIMENTAL DESIGN

The two researchers adopted an experimental design with two groups (experimental and control) with a pre- and post-test for the level of classroom interaction and a post-achievement test only. The two researchers sought to establish parity between the two research groups, and the design was as in the following table:

Table 1 shows the experimental design

Posttest	Independent variable	Pretest	the group
Class interaction	education programs	Classroom Interaction (Flanders Card)	Experimental
	The usual method		The female officer

RESEARCH COMMUNITY

The two researchers identified the research problem in the fourth literary grade female students. Thus, the research community consisted of all girls' schools that had a literary branch for the academic year (2023-2024) affiliated with the Basra Education Directorate. Their number was (45) schools, and the total number of female students was (1499) students. In the fourth literary grade.

THE RESEARCH SAMPLE

Conducting the research requires selecting a sample from the entire community in order to apply the experiment to it. The researchers chose the school (Al-Miqat Preparatory School for Girls) intentionally, for several reasons, including the proximity of the school to the researchers' residence and the students' belonging to one environment, and this facilitates the continuity of work. The researchers also chose the experimental group and the control group was drawn by drawing paper slips. The research sample for the experimental group consisted of (30) female students and the control group consisted of (30) female students, as in the following table:

Table (2) shows the sample of female students

Number of students	the group	Division	The School
30	Experimental	a	Al-Miqat Preparatory School for
30	Officer	B	Girls

EQUIVALENCE BETWEEN THE TWO RESEARCH GROUPS

The two researchers conducted equivalence procedures on variables that previous studies had indicated could affect the results of the experiment. They conducted equivalence and were as follows:

CHRONOLOGICAL AGE

The researchers calculated the chronological age of the female students, estimated in months, up to the date (10/1/2023), using the information card that they distributed to the research sample. The researchers used a testt-test for two independent samples and the results were as follows:

Table (3) shows the parity between the research samples in the chronological age variable

indication	T value		Freedom	standard deviation	SMA	the number	the group
	Tabulation	Calculated					
Non-functional	1.96	0.278	58	3.616	184.60	30	Experimental
				3.623	184.86	30	Officer

The arithmetic mean of the chronological age of the female students in the experimental group was (184.60) As for the arithmetic mean of the control group(184.86), and using the t-test for two independent samples, the researchers found that the t-value was (0.278)It is smaller than the tabular T value of (1.96) at a significance level of (0.05) with a degree of freedom (58), and thus the differences are not statistically significant.

PARENTS' EDUCATIONAL ATTAINMENT

The researchers obtained information about the parents' achievement through an information form. The researchers used the Chi-square test and the results were as follows:

Table (4) shows the parity between the research samples in the father's achievement variable

indication	Chi square		Primary	Medium	Preparatory school	Bachelor's degree	Master's	Ph.D	the group	variable
	Tabulation	Calculated								
Non-functional	3.86	0.681	3	2	14	8	2	1	Experimental	Father's achievement
			3	4	13	7	1	2	Officer	
Non-functional	3.86	1.906	2	3	6	16	3	0	Experimental	Mother's collection
			1	4	4	17	3	1	Officer	

It is clear from the table above that the Chi-square value for the father's achievement variable was (0.681), which is less than the tabular value of (3.86), and it is not significant, meaning there are no statistically significant differences between the two groups in the father's achievement variable, and the Chi-square value for the mother's achievement variable was (1.906). It is also less than the tabulated value of (3.86) and is not significant, meaning there are no differences in the mother's achievement variable between the two groups. Thus, the two groups are equivalent in the cultural environment variable.

Class interaction: The researchers applied the Flanders Card[3]To measure the equivalence between the two research groups, the two researchers monitored, in two lectures before implementing the program, all activities and activities taking place in the classroom, using a test (K-Squire) and the results were as in the following table:

Table (5) shows the pre-test lessons in the experimental and control group

[3] It is an observation card used to measure the level of classroom interaction among female students. It consists of (10) axes that are divided into direct classroom interaction and indirect classroom interaction. All movements and activities taking place in the classroom are counted and classified to identify the type of interaction prevailing in the classroom.

Table (5) shows the pre-test lessons in the experimental and control group

the total	Learner's speech			Direct interaction			Indirect interaction				the group
	Calm and chaos	Extermin ate	Response	Criticism and power	Orders and directions	the explanat ion	ask question	Accept opinions	Appreciation and encouragem ent	Accept feelings	
	10	9	8	7	6	5	4	3	2	1	
123	2	1	13	5	23	51	11	6	8	3	Experimental
100%	0.02	0.01	0.11	0.04	0.18	0.41	0.09	0.05	0.07	0.02	The ratio
125	2	0	9	12	19	50	13	7	9	4	The female officer
100%	0.02	0%	0.07	0.10	0.15	0.40	0.10	0.06	0.07	0.03	The ratio

indication	Tabular value	Chi-square value calculated	Freedom	Number of cases	the group
Non-functional	16.919	5.430	9	10	Experimental
			9	10	The female officer

It appears from the table above that there are no statistically significant differences between the experimental and control groups in the level of classroom interaction, as the calculated Chi-square value (5.430) was less than the tabulated value of (16.919), significance level (0.05) and degree of freedom (9), i.e. the two groups are equivalent in the level of classroom interaction.

RESEARCH TOOLS

Flanders Class Interaction Card: The two researchers relied on the Flanders grid for classroom interaction, which consisted of (10) vertical fields and (10) horizontal fields, and therefore it is called the Flanders decimal system. Class interactions in the Flanders grid indicate that (70%) of classroom interactions are verbal interactions. And (30%) are non-verbal interactions, as shown in the following table:

Table 6 shows the class interactions identified by Flanders

Source Of Interaction	Direction Of Interaction	Interaction Framework	Type Of Interaction	Seq.
The Teacher	Direct	All The Questions That Are Asked In The Classroom That Pushes The Students To Think.	Asking Questions	1
		Explanation Of The Scientific Material For The Academic Content	Lecture	2
		All Instructions, Directions And Orders Given By The Teacher And Implemented By The Learners.	Guidance And Giving Instructions	3
		All Criticism Directed By The Teacher To Modify The Behavior Of Learners	Criticism	4
	Not Directly	All Situations In Which He Accepts The Learners' Feelings, Whether Negative Or Positive, And Shares Them.	Accept Feelings	5
		It Is All Situations In Which The Teacher Uses Words Of Thanks And Encouragement To Reinforce The Learner's Behavior	Praise And Encouragement	6
		All Situations In Which The Teacher Accepts Learners' Ideas And Uses Them In The Classroom.	Accept Ideas	7
Learner		It Is The Learners' Response To The Questions Posed By The Teacher.	Response	8

Common Behavior	These Are All Situations In Which Learners Take The Initiative To Present Ideas And Opinions That Are Not Related To Explaining The Material.	Initiation	9
	All Situations In Which Communication Between The Teacher And Learners Is Interrupted, Whether In Cases Of Calm Or Chaos.	Silence And Chaos	10

(Hamid and Hamdi, 2009: 135)

Defining and judging classroom interaction: Flanders set criteria for judging the type of classroom interaction, after collecting and recording all observations and behaviors produced in the classroom and including them in the Flanders decimal grid. The following table shows how to judge Flanders' classroom interactions:

Table (7) shows Flanders standards for classroom interaction

Limits of governance	Source	Interaction	Seq
It should not exceed 68%	the teacher	Teacher behavior (direct and indirect)	1
It must not be less than 25%	Learner	Student speech	2
not less than 2%	the teacher	Accept feelings	3
The teacher uses about 4%.	the teacher	Praise and encouragement	4
The average teacher spends 10%.	the teacher	Accepting students' ideas	5
Between 12% to 15%	the teacher	Asking questions	6
From 35% to 40% and not more than 50%	the teacher	Present and deliver information	7
From 5% to 6%	the teacher	Giving directions and orders	8
From 2% to 4%	the teacher	Criticizes behavior	9
3%	the teacher	Answering students' questions	10
25%	Learner	Students answering the teacher's questions	11
15%	Learner	Students' questions and their answers to their colleagues	12
6%	subscriber	Calm down	13
5%	subscriber	Chaos	14

(Hamdan, 2001: 53)

RESEARCH RESULTS

Verifying the first hypothesis: Which stated: "There are no statistically significant differences at the level of significance (0.05) in the level of classroom interaction between the average ranks of the experimental group that studied using the educational program and the average ranks of the control group that studied in the traditional way. To verify this hypothesis, the two researchers used the Mann equation." Whitney to find differences between the two independent groups and the results were as in the following table:

Table (8) shows the Mann-Whitney test for differences between the experimental and control groups in classroom interaction

Sig	Z value	Wilcoxon value	Mann whitney value	Total ranks	Average rank	the group
0.000	3.924	55,000	0.000	155.00	15.50	Experimental
				55.00	5.50	Officer

It is clear from the table above that the average rank for the experimental group was (15.50), the average rank for the control group was (5.50), and the U value was (0.000), meaning that the differences were statistically significant, as the U value was less than the tabulated value of (18) for the significance level (0.05). The significance value was (0.000), which is less than the value (0.05) in favor of the experimental group with the highest average ranks. Thus, we reject the null hypothesis which indicates nothingness and accept the alternative hypothesis which states: "There are statistically significant differences at the significance level (0.05)." At the level of classroom interaction between the average ranks of the experimental group that studied using the educational program and the average ranks of the control group that studied in the traditional way, in favor of the experimental group.

VERIFYING THE SECOND HYPOTHESIS

Which states that there are no statistically significant differences at the level of significance (0.05) in the level of classroom interaction between the average ranks of the experimental group that studied using the educational program in the pre-application and the average ranks of the experimental group in the post-application. The two researchers used the Wilcoxon equation for interconnected groups and the results were as follows: In the following table:

Table (9) shows the Wilcoxon test to find differences among the experimental group in classroom interaction

Statistical significance (0.05)	Sig	Wilcoxon value	Total ranks		standard deviation	Arithmetic mean	the test	the group
			T+	T-				
Statistically significant	0.005	2.803	0.00	55.00	25.583 41.441	36.60 70.40	Tribal Al-Baadi	Experimental

It is clear from the table above that the differences were statistically significant, as the Wilcoxon value was (2.803), which is greater than the tabulated value of (1.96), and the sig value was (0.005), which is less than the value of (0.05), in favor of the post-application of the classroom interaction scale with an arithmetic mean of (70.40). Thus, we reject the null hypothesis, which indicates nothingness, and accept the alternative hypothesis, which states: "There are statistically significant differences between the average ranks of the experimental group on the pre- and post-application of the classroom interaction scale, in favor of the post-application."

VERIFYING THE THIRD HYPOTHESIS

Which states, "There are no differences between the levels of classroom interaction for the experimental and control groups and the Flanders criteria for classroom interaction." The two researchers transcribed all types of interactions into a Flanders decimal matrix. The two researchers extracted the total interactions for each type of interaction for all classes for the experimental and control groups. The researchers extracted the behavioral categories for the two research samples, as in the following table:

Table (10) shows the behavioral categories for the experimental and control groups

total summation		Total sub-behaviors		Sub-behaviours	Category name	Category
The female officer	Experimental					
468	704	322	Experimental	1-2-3-4	Indirect interaction	The first
		137	The female officer			
		113	Experimental	5-6-7	Direct interaction	the second
		175	The female officer			
		239	Experimental	8-9	Learner behaviour	Third

	109	The female officer			
	30	Experimental	10	Silence and chaos	Fourth
	47	The female officer			

The two researchers extracted the interactions and compared them as follows:

Indirect interaction: The two researchers used Flanders' law[4]For the indirect behavior of each group and comparing it with the Flanders standard, the results were as indicated in the following table:

Table No. (11) Shows the indirect interaction

Flanders standard	Reaction coefficient	Indirect interaction	ask question	Accept opinions	Appreciation and encouragement	Accept feelings	the group
0.31	0.45	322	91	86	84	61	Experimental
	0.21	98	39	21	26	12	The female officer

It is clear from the table above that the value of indirect interaction in the experimental group that studied using the educational program was (0.45), which is greater than the value of indirect interaction in the control group that studied in the traditional method, which was (0.21), and by comparing these results with the Flanders standard for indirect classroom interaction. In which he indicated that the level of interactions should not be less than (0.31), we find that the experimental group exceeded the standard with a value of (0.45), which is an acceptable value, while the control group did not exceed the standard with a value of (0.29), which is an unacceptable value.

DIRECT INTERACTION

The two researchers did Using Flanders' law[5] For the direct behavior of each group, the results were as indicated in the following table:

Table No. (12) Shows the direct interaction

Flanders standard	Reaction coefficient	Direct interaction	M7	M6	M5	the group
Does not exceed 0.42	0.16	113	3	35	75	Experimental
	0.45	214	76	53	85	The female officer

It appears from the table above that the direct interaction values for the experimental group were (0.16), which is acceptable according to the Flanders standard, and the direct interaction level for the control group (0.45) is unacceptable according to the Flanders standard, which specified that it should not exceed a percentage of (0.42).

The words of the educated the researchers used: Flanders Law[6]For the behavior of the learners, the results was as follows:

Table No. (13) Shows the behavior of the learners

Flanders standard	Reaction coefficient	M total	M9	M8	the group
not less than 25%	0.34	239	86	153	Experimental

[4] Flanders' law for calculating nonverbal interaction is m1 + m2 + m3 + m4/total m, where m is the behavior in the Flanders network.

[5]Flanders' law for calculating verbal interaction is m5 + m6 + m7/total m, where m is the behavior in the Flanders network.

[6] Flanders' law to find learner behavior is m8 + m9 / grand total

	0.23	109	24	85	The female officer

It is clear from the table above that there are differences in the level of female students' interaction with learners' behavior in favor of the experimental group. The percentage of female students' behavior in the experimental group was (0.34), which is acceptable according to the Flanders standard, which stipulates that it should not be less than (25%). As for the control group, it was Learners' behavior rate (0.23), which is unacceptable according to the Flanders standard.

SILENCE AND CHAOS

The two researchers used Flanders Law[7]To silence and chaos, the results were as follows:

Table No. (14) Shows silence and chaos

Flanders standard	Reaction coefficient	Silence and chaos	The Group
	0.04	30	Experimental
No more than 6%	0.10	47	The Female Officer

The results showed that there were differences between the two groups in the level of interaction in silence and chaos in favor of the control group, as the value of the chi-square was (3.953) greater than the tabular value of (3.86) with a significance level of (0.05) and a degree of freedom (1), and the level of silence and chaos among The experimental group was (0.04), which is an acceptable percentage compared to the Flanders standard, which stipulates that it should not exceed (0.06). As for the control group, it was higher than the established standard, which is an unacceptable percentage, meaning that the experimental group enjoyed a high level of control and engagement with the lesson, as for the control group. She was suffering from chaos and lack of discipline in the classroom environment.

INTERACTION EFFECT COEFFICIENTS

The two researcher's did Using Flanders's law of effect coefficient[8]It was as follows:

Table No. (15) Shows the values of the impact coefficients for the two groups (experimental and control)

Impact factor	Mug (M5+M6+M7)	Mug (M1+M2+M3+M4)	the group
2.85	113	322	Experimental
0.64	214	137	The female officer

It is clear from the table above that the value of the interaction effect coefficient for the experimental group was greater than (1), which is a percentage that indicates indirect interaction, meaning that the interaction in the classroom environment was democratic. As for the control group, the value of the interaction effect factor was less than (1), which indicates Direct interaction, meaning that the classroom environment was a dictatorship centered around the school, as indicated by the Flanders criterion[9].

CONCLUSION

In light of the research results, the two researchers concluded the following:

The educational program based on generative learning made the focus of the educational process shift from the school and the book to the female students, and the female students became responsible for their own learning.

[7]Flanders' law for creating chaos and silence is m10/the total

[8] The impact factor for Flanders is m1+m2+m3+m4 / m5+m6+m7

[9] The Flanders criterion for impact coefficients is that if the value of the impact coefficient is greater than (1), then the impact is indirect. However, if it is (1), then it is unbalanced, and if it is less than (1), this means that it is direct.

The educational program based on generative learning is effective in increasing the level of classroom interaction among female students with various behaviors such as response, initiative, and others.

The educational program achieves a democratic atmosphere within the classroom, and limits the school's roles to guidance and guidance.

The educational program based on generative learning focused on activating the roles of female students in the educational process by allowing female students to participate in the activities it provides and have positive discussions within the class.

The educational program based on generative learning provided the qualities of organization and careful planning for the educational process.

FOURTH: RECOMMENDATIONS

In light of the research results, the researchers make the following recommendations:

It is necessary to train female teachers on how to measure levels of classroom interaction (Flanders Card) in an attempt to determine the type of classroom interaction within the classroom and control it to transfer the learning process from teacher to student.

Urging female teachers to stay away from taking on all the roles and focus on the students and move them from being receptive to being creative.

It is necessary for every teacher to rely on a guide that paves the way for him to take organized steps away from randomness in implementation during the lesson.

FIFTH: PROPOSALS

The researchers proposed the following:

Applying the educational program based on generative learning to other variables such as creative thinking, scientific enlightenment, critical thinking, etc.).

Conducting a descriptive study to identify the prevailing levels of classroom interaction in other samples.

Conducting a descriptive correlation study on the relationship of teaching methods to prevailing classroom interaction.

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