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Study of Teacher-Students Interaction in Teaching Process and its Relation with Students' Achievement in Primary Schools

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Abstract: The present research was done to study the interaction among the teachers-primary school students during the Education and its relation with students' achievement of Ardebil. For this purpose, 400 teachers were selected from among 1600 teachers on the basis of Kukran formula using multi stage cluster sampling. Students of classrooms with teachers who were belonged to the statistical sample (10,831 people) were selected as the next sample. Information gathering equipments were documents for recording the achievement marks of the students and Flanders Interaction Analysis categories system. Many researchers have confirmed the validity of content validity of the equipments and have emphasized on the point that the whole relational process of the classroom takes place for itself in one of the decuple codes of Flanders. Reliability of Flanders Interaction Analysis categories system (consistency of recorded data by observers) was also calculated on the basis of Scat formula and the least calculated Scat coefficient for observers was 81% which is a high reliability. Data gathering and research methods were in the form of in presence observation and descriptive-correlation, respectively. Using the regression, obtained data was analyzed after description. Some of the results from the research are as follows: from among the whole relational course in the classroom, the shares of teachers' indirect influence, teaching direct influence and students talk were 16.7, 4104 and 33%, respectively. Regression analysis showed that relational components in the classroom, were significant predictors for students' achievement ($p<0.01$).

Key words: Classroom interaction, FIACS, teaching, classroom observation, sample, students

INTRODUCTION

Teaching is the focus of any curriculum and it is the most prevalent method used by teachers in all of the primary course, high-school and even high education levels. Teaching is a part of experience of all of us that deeply has its roots among the expectations and methods of thinking of not only teachers but also school managers and educational units, parents, compilers of educational, political, cultural, social and schools financial and educational methods, as well as schools architectures and builders and educational equipments. Teaching in the classroom, a combination of the speech, discussion, individual education and other activities contain two basic steps of programming and interaction. Different definitions have been made about the teaching so that severalty in definitions within theoretical realms of has been led to the severalty within practical realms (different teaching methods).

According to Gage (1967) teaching is any form of interaction among individuals, which is meant methods that other people are able to or want to behave through those methods. According to Amidon and Hunter (1967) teaching is an interaction course that includes classroom conversation in its primary form and takes place between the teacher and student and advances during the activity that has fully been defined previously.

Apart from different definitions for teaching and different teaching methods, one of the most basic elements of qualitative teaching is the way in which students' response to teaching activities and on the whole, it is the interaction between the teacher and students (Sahlberg, 2007).

According to Cole and Chan (1994), interaction in teaching is a basic element and it has the fundamental role in efficient teaching and in principal, recognition between being weak or strong in teaching lies behind the way teacher interacts with the student.

Most researchers Needles (1988), Darling-Hammond (2008) and Gordon *et al.* (2006) believe that the teacher's relational quality with students has an important role in effectiveness of his teaching and the

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standard for measuring the effectiveness of the teachers that is creating the learning. On this basis, availability for more efficient teacher for the purpose of creating more required relations with students at school are vital (Luk, 2004; Gibbons, 2003) and such teachers change the school environment so that it can bring hope-inspiring horizons of friendship, equilibrium, support, security, success, honor and prosperity as some gifts (Christie, 2002). According to Thompson and Anderson (2008) and Reynolds and Peter (2009) one of the most basic characteristics of the good teachers is the ability to establish the interaction in the classroom and most of the observed stresses in the classrooms come from lack of desired interaction. Focusing on this issue, Brower *et al.* (2001) remark that teaching takes place when the teacher interacts with one or more learners.

It should be mentioned that talking in itself cannot be considered interaction. Interaction is all of the ways in which action and reaction among individuals is organized and these very action and reaction form a part of individuals' social desirability (Gage and Berliner, 1998).

During the teaching process, interaction between the teachers-students takes place verbally and nonverbally. Individuals such as Flanders (1970) believe that in classroom environments more than two third of the class time is somehow related to the teacher talk and verbal relation and so, it is the teacher's responsibility to facilitate the effective interaction.

Through, relational analysis, Blatt *et al.* (2008) have come to the conclusion that 65.2% of the interactions are related to speech. In contrast, individuals such as Putz and Aertselaer (2008) estimate that about 65% of meaning transfer takes place through nonverbal behaviors.

One of the methods that make it possible to record interaction between the teacher and the students during the teaching process is to use FIACS method that has been used for many years by researchers. In this method relational course has been recorded in the form of tenfold code and according to them components are calculated that show the relational state of the classroom in its better manner. Most researches have shown that the share of teacher talk out of the whole relational course is about 70% and the share of direct talk of the teachers out of the whole of their own talk in normal classrooms is about 55% (Saba, 2007; Wragg, 2002; Fathi Azar, 2003; Hai and Bee, 2006).

Findings by Hafiz-Mahmud *et al.* (2008) using FIACS show that about two third of the relational time of the classroom is devoted to teacher talk (direct and indirect influence). And out of the whole speeches of the teachers, two third is devoted to direct teaching. Following results have come from the research done by Sahlberg (2008) that has taken place using FIACS method.

From among the whole relational course between the teachers and students during teaching process the share of teacher talk including indirect influence (12.1%) and direct influence (60.4%) has been 72.5%. Also, the share of student talk including student response to the teacher's question (22.4%) and student talk in an initiative manner (1.1%) has been 23.5%. And finally silence or confusion share has been 6%.

In the mentioned research 70% of class time has been devoted to the teacher and since the initiative student talk is <5%, relational course of the class has distance from that of democratic classes.

In research done by Mahmoudi (2003) there was positive and significant relation between the variables of ratio of student talk to teacher talk, ratio of teacher's question to his descriptions and ratio of indirect influence to direct influence with achievement variable, differently. But there was negative and significant relation between variable of direct influence and achievement.

In this research relational state between teachers and students during the teaching process in Ardebil city is investigated and the relation between relational components with student achievement is studied. The following questions are answered on the basis of the above said things.

- How was the relational state of teacher-student during the teaching course?
- Is there any relation between the amount of direct influence, indirect influence, the amount of learners talk and silence in classroom with student achievement?

MATERIALS AND METHODS

Population: Statistical population of the present research includes 1600 primary school teachers and 48324 students of those teachers during the academic year 2008-2009 in Ardebil city of Iran.

Sampling: Sampling was done using multi stage cluster sampling method. To do so some schools in Ardebil were randomly selected and then classes were selected from among the selected schools. Size of statistical sample was calculated using the formula:

$$n = \frac{Z_{\alpha/2}^2 pq}{d^2}$$

where, $p = q = 0.5$ (the most possible ratio) and $Z = 1.96$, $d = 0.05$, in case of 400 classes. In order to reduce the effect of troublesome variable third, four and five grade

level of primary schools were selected as selective samples. The students of 400 selected classes were selected as the next sample.

Method and data cumulated process: The method followed in the present research was descriptive-correlation. Data was selected in the form of in presence observation and after being educated and enough practices on tenfold codes and perception of elapsing 3 sec, the observers attended classrooms and according to the checklist recorded the relational events of tenfold codes. In order to record the events of tenfold codes, after elapsing three seconds, code of any behavior relating the mentioned moment that occurred by teachers or students, was recorded.

Research equipments: Data required for the research was gathered using documents (for gathering achievement grades of the students) and observation checklist on the basis of Flanders Interaction categories system (for gathering relational data about the teaching course). In this way, the average of grade-point averages of students in a class was considered as an achievement standard for it. Also, according to table FIACS the whole relational process of the classroom was recorded on the basis of predefined codes beginning from 1-10. Contextual validity of FIACS since 1970 (the time when Flanders has put it forward up to the present time) has been approved by most of researchers and they have focused on the point that different kinds of possible interactions between students and teachers during teaching process are recordable on the basis of FIACS (Saba, 2007; Wragg, 2002; Fathi-Azar, 2003; Hai and Bee, 2006; Mass, 2008).

Reliability of gathered data on the basis of FIACS was calculated using the scat formula:

$$\pi = \frac{P_0 - P_e}{100 - p_e}$$

Where:

$P_e = \Sigma^k_{i=1}$ and P_i = The shares of codes of each group
p_0 = Amount of agreement ratio
K = The number of groups
p_e = Expected agreement ratio or share were calculated

To do so, from among 12 classrooms, two observers began to code and on the basis of the above said formula agreement amount or similarity of the observers was calculated. The least amount among 12 classrooms was 0.81 and the most amount was 0.95 that was an indicative of high amount of agreement and similarity. After descriptive reporting, gathered data was analyzed using regression method.

RESULTS

As data from Table 1 shows, the whole relational events of teaching process 58.1% relates to teacher talk and 33% to student talk. Teacher talk consists of two parts of indirect influence (16.7%) and direct influence (41.4%). Also, student talk consists of the two parts of student respond to teacher's question (28.3%) and student talk in an initiative manner (4.7%). About 8.9% of the relational course has been allocated to being silence in the classroom.

According to Table 2, the adjusted amounts of R = 0.61 and R^2 = 0.37 show that 37% of changes in student achievement is expressible on the basis of different kinds of interaction between the teachers and students in the classroom. The amounts ($F_{(4, 396)}$ = 58.69 and $p<0.01$) showed that indirect influence, direct influence, student talk and silence are significant predictors for student achievement.

According to data from Table 3 shows, the predictor variables, share of indirect influence (B = 3.91,

Table 1: Descriptive state of interaction between teachers and students during the teaching process

Teacher-students' interaction	Frequency	%
Teacher talk		
Indirect influence		
Accepts feeling	1045	0.7
Praises or encourages	5554	3.5
Accepts or uses ideas	3971	2.5
Asks questions	16017	10.0
Total	26587	16.7
Direct influence		
Lectures	51305	32.5
Gives directions	11345	7.1
Criticizes or justifies authority	3345	2.1
Total	65995	41.4
Total	92582	58.1
Student talk		
Responds	45097	28.3
Initiates	7435	4.7
Total	52532	33.0
Silence		
Silence or confusion	14337	8.9

Table 2: Significance of achievement predicting on the basis of interaction between the teachers and the students

Models	Sum of squares	df	Mean square	Adjusted R	Adjusted R^2	F	Sig.
Regression	14868.8	4	3717.2	0.61	0.37	58.69	0.000
Residual	25080.7	396	63.3	-	-	-	-
Total	39949.6	400	-	-	-	-	-

Table 3: Share of student-teacher interactional components in predicting the student achievement

Models	Unstandardized B	Unstandardized SE	Standardized coefficient (β)	t	Sig.
Constant	8.070	2.600	-	3.2	0.002
Indirect influence	3.910	0.730	0.28	5.4	0.000
Direct influence	0.176	0.119	0.06	1.48	0.140
Student talk	5.410	0.710	0.39	7.62	0.000
Silence	-0.790	0.810	-0.04	-0.97	0.330

t = 5.4, p<0.01) and share of student talk (B = 5.41, t = 7.62, p<0.01) are significant in predicting the student achievement. However, share of direct influence (B = 0.176, t = 1.48, p>0.05) and being silent in classroom (B = -0.79, t = -0.97 and p>0.05) are not significant in predicting the student achievement. On the whole, following equation can be considered for student achievement:

Student achievement = 8.07 + 3.91 (Indirect Influence) + 0.176 (Direct Influence) + 5.41 (Student Talk) – 0.79 (Silence)

DISCUSSION

The present research was done to study the relational state between teachers and students in classroom during teaching process. Results showed that teacher talk share during teaching course was 58.1% and student talk share was 33% and in comparison with offered standards related to teacher talk share out of the whole relational course in normal classrooms, which is about 70% (Hafiz-Mahmud *et al*., 2008; Flanders, 1970; Amidon and Hunter, 1967; Fathi-Azar, 2003; Hai and Bee, 2006; Wragg, 2002; Blatt *et al*., 2008), it can be concluded that classrooms have not been in the form of teacher oriented and students have had active roles in this regard. Teacher talk has been composed of the two parts of indirect influence (16.7%) and direct influence (41.4%). Calculations show that direct influence share of teacher talk is 71.3%. In comparison with normal classrooms (55%), this figure shows that during teaching course teachers pay much attention to directly communicate knowledge and educational content.

Also, student talk (33%) consists of the two parts of student response to teacher's question (28.3%) and student talk in its initiative manner (4.7%). This shows that students often answer to teachers' questions and their talk is rarely of initiative nature. In other words, despite the fact that students are active during teaching process in classrooms, their activities are in the course of communicating educational context and less attention is paid to dimensions of creativity, innovation and initiative student talk. Of course, initiative talk share of students in the present research is higher than that of researches such as those done by Sahlberg (2008) (1.1%) and Mahmoudi (2003) (2.3%).

Also, according to results from the research, the adjusted amounts R = 0.61 and R^2 = 0.37 show that 37% of changes in student achievement is significantly expressible on the basis of different interactions between the teachers and students into the classrooms (p<0.01). To put it better, interaction between the teachers and students has significant role in student achievement. Concerning the importance of teacher-student interaction into the classroom, this result is in agreement with opinions of individuals such as Amidon and Hunter (1967), Cole and Chan (1994), Needles (1988), Darling-Hammond (2008), Gordon *et al*. (2006) and Thompson and Anderson (2008).

Among the predictor variables, student talk share (B = 5.41, p<0.01) and share of indirect influence of the teachers (B = 3.91, p<0.01) are significant in predicting student achievement and this result is in agreement with finding by Mahmoudi (2003). However, direct influence share (B = 0.176, p>0.05) and silence in classroom (B = 0.79, p>0.05) are not significant in predicting student achievement and this is not in agreement with finding by Mahmoudi (2003) concerning negative significant relation of direct influence of the teachers with students achievement. The reason for lack of this agreement may be the following: the above said research has been done in high school and in research done by Mahmoudi (2003) on contrary with the present research direct influence has an important role. Between the two significant factors share of student talk is more that that of the other. That is, the more students are involved in teaching course, the better they learn.

CONCLUSION

The present research showed that the involvement amount of students in teaching course and indirect communication of educational concepts are in positive and significant relationship with students learning. Thus, it is recommended to the teacher to make the students participate in activities during the teaching and use indirect talk and speech about the subject of teaching in its fewer manners.

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