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## Comparison of Group Discussion and Lecture on the Social Skills of High School Students in Chemistry for the Academic Year 93-92

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### Abstract

The aim of this study was to compare the group discussion teaching method with lecturing teaching method on social skills growth rate of high school girls. Research method, semi-experimental, includes two types (experimental and control). In experimental group, the group discussion teaching method and in the control group, the lecturing teaching method was used. At the end of each teaching method, a test had been taken with a questionnaire about social skills rate. The evaluation instruments in this study were Matson et al social skills rate measurement. According to the studies of Yousefi and Kheir (2002), the reliability of Matson social skills measurement with the use of Cronbach's alpha ratio and Classification method in the total scale was reported as 0.86. Two levels of descriptive level (frequency, average standard deviation) and Inferential (Levin and Shapiro examination – Vikez and covariance analysis) were used for data analyzing. Results show that in level of  $p < 0.01$ , there had been a great difference between social skills' grades. The average of experimental group was more than control one. Therefore, group discussion teaching method increased the students' social skills.

### Introduction

#### Statement of the Problem

The method used by teachers in sharing knowledge with students is factor influencing learning

achievement of students at all tiers of the education system. While appropriate instructional methods are likely to enhance learning achievement, inappropriate approaches are known to stifle knowledge retention and realization of learning objectives (Brown et al., 1982; Henson, 2004; Chang, 2010). Consequently, aligning instructional methods with the needs and

preferences of students is considered important for higher learning achievement (Zeeb, 2004).

Similarly, Zeeb (2004) indicate that students whose styles are not matched with instructional methods that are chosen by teachers are less likely to develop interest in learning. In the absence of learner interest in a subject, concentration level drops and learning achievement is greatly impaired (Odundo, 2003).

### **Theoretical Context**

Instructional methods can be teacher-centered, learner-centered or mixed approach. Quite often, teachers prefer methods that make their work easier based on their beliefs, personal preferences and norms of their disciplines (Watson, 2003). In this regard, some teachers believe that lessons should be teacher-centered, where the teacher is the expert and the authority in presenting information (Ahmad & Aziz, 2009). Nevertheless, teacher-centered methods are associated with inadequate stimulation of students' innovative capacities, intellectual thinking, memorization, cramming of facts, poor knowledge retention and high dependency among graduates (Adeyemi, 2008; McDowell, 2001; Tanner, 2009; Tella, et al., 2010).

### **Teacher-centered Instructional Methods**

Teacher-centered methods are also known as traditional instructional methods, where teachers are at the center of classroom activities, including explanations and discussions (Ahmad & Aziz, 2009). Teacher centred method is behaviourist in nature. Teacher-directed learning that follow the instructivist approach which involves careful and meticulous planning of the curriculum and

purposeful instructional procedure employed by the teacher. Under such circumstances, students

have a definite and fixed perception of their roles as listeners, while teachers are expected to be the talkers and 'custodians of knowledge'. This implies that students' active participation is minimal, until the teacher authorizes them. Tanner (2009) found that teachers dominated classroom talk and students talked only when called upon to answer questions.

Teacher-centered methods are however, associated with a number of shortcomings. For instance, Adeyemi (2008) notes that lecture, which is the most common method, does not stimulate students' innovation, inquiry and scientific thinking but rather encourages students to cram facts, which are easily forgotten. McDowell (2001) notes that instructional methods that encourage memorization and reproduction are short of knowledge that can be used to solve problems in new situations. Tella et al (2010) noted that teacher-centered methods often result to students not enjoying lessons and missing the benefits of intellectual discovery.

### **Learner-centered Instructional Methods**

Learner-centered methods actively engage students in the learning process for effective mastery of the subject matter and promotion of a positive attitude towards the subject. In a learner-centered class, students take a participative role by leading discussions and teachers become facilitators in this regard, teachers facilitate student's discussion and interject only when necessary, allowing students to put the language to use and explore aesthetics of learning materials (Eken, 2000; Ahmad & Aziz, 2009).

According to Froyd (2007), the standard features of a learner-centered pedagogy include

collaborative learning, connecting new information to previous knowledge and critical thinking.

Some scholars refer to learner-centered pedagogy as interactive learning. According to Dufresne,

Gerace, Leonard, Mestre and Wenk (2010), interactive learning process within classrooms involve facilitating presentation of questions for small group work. Interactive pedagogy may also include the use of media and involvement of students in fieldwork activities. Furthermore, interactive teachers allow for diverse learning styles among their students and encourage active involvement of all students, while helping them to improve in individual weaknesses (Curtin, 2005). Students are also encouraged to ask questions, define problems and lead conversations (Chika, 2012). Besides, such methods connect students' world with learning pursuits in the classroom (Bush, 2006; Kumar, 2006). However, it is not sufficient to have an experience, if such is not discussed and shared, they may be forgotten rapidly. Sharing of experiences through group discussions improves the application of acquired knowledge and skills (Kumar, 2006).

Learner-centered methods are advantageous in a number of ways, for instance, they promote democratic participation in the learning process, encourages critical thinking, meets student's communication needs and improves performance (Cummins, 2007). The positive impact of such

methods have also been documented by Chika (2012), who indicate that interactive methods are

more powerful in enhancing learning achievement than teacher-centered pedagogy. Kumar (2006) also indicates that interactive methods have higher impact in overall learning achievement than didactic classrooms. As noted by Arends (1997), learner-centered methods can be used to teach complex academic materials and can help teachers accomplish important social learning and human relations goals.

### **The Constructivist Method**

Constructivism, drawing from cognitive and behavioural psychology, is a theory that the individual learner processes stimuli from the environment and the resultant cognitive structures that the learner builds produce adaptive behaviour. As noted by Roblyer (2006), constructivists believe that knowledge is generated by students through experience-based activities rather than directed by instructors. Advocates of a constructivist approach suggest that educators first consider that the knowledge and experiences that the learner brings to the learning tasks are paramount. It is such knowledge, skills and attitudes that is built upon and expanded by connecting them to new learning (Huitt, 2003). In the process, the learner attains a level of self-regulation, which surpasses mere memory recall and explanations and fits the conceptual framework of the learner. This is done by providing the learner with opportunities to uncover facts and discover ideas in either a real world setting or case-based environment through own efforts in a regulated manner. Cummins (2007) found that when constructivist approaches are employed in learning, students post an improvement in their academic performance. The teacher's role is facilitative, coaching, stimulative and provocative in ways that allow the learner to engage in critical and creative thinking, analysis and synthesis of ideas during the learning process as the teacher assumes the role of a co-learner. The constructivist teacher provides learning tools and activities that encourage problem-solving and inquiry-based learning activities with which students formulate and test

their ideas, draw conclusions and inferences, and convey and pool their knowledge in a collaborative learning environment (Sunderman, 2006).

### Purpose

Since research has indicated that adult learners become more self-directed in their learning, and are more ready to learn when the content has immediate application to real life problems.

(Knowles, 1980, 1984), it is important to involve teachers in planning for staff development programs. Therefore, the purpose of this study is comparison of Influence of group discussion method with lecture method on the social skills growth rate of female students in high school.

### Methodology

This research is one of the problems whose solution needs examination. But as there is no possibility for having a completely experimental method, in this study we used semi-experimental method and pre-exam and post exam plan in which students' social skills will be examined and compared as follows:

1. Experimental group which learns chemistry via group discussion method.
2. Control group which learn the same lesson in the same period via lecturing method.

**Table 1: Chart of Research**

group	Pre-test	Independent variable	post- test	Random selection
Experimental	T <sub>1</sub>	X	T <sub>2</sub>	R
Control	T <sub>1</sub>	-	T <sub>2</sub>	R

The research society includes all the high school girls of Isfahan city in 2013-2014. The sample includes 62 of first year of high school students. They are chosen as the least suggested number of people for comparison groups in experimental groups including semi-experimental studies. The random choice method is cluster method which means that one section is chosen among all six sections of education in Isfahan and one school is chosen among all the schools of that section and then two random classes are chosen among all the first-year classes. According to the subject and research nature and the necessity of teaching in a real class and reducing the interaction, these two classes are almost equal in most aspects such as family social and cultural situation, equity in class level and having the same teacher.

The tool used in this research is social skill evaluation scale of Matson et al. Matson et al scale had been created for 4-18 years skills evaluation in 1983. This scale includes 56 expressions which explain children social skills and is graded from 1-5 according to five level index of likret (never – rarely – sometimes – usually – always) and Yousefi and Kheir (2002) for reliability evaluation of social skill scale of Matson et al used Cronbach's alpha ratio and classification in total scale is reported as 0.86. This questionnaire measures 5 social skills subscales. The first parameter (proper social skills) includes: having visual connection with others, being polite, using others' names, interest in useful interaction. The second parameter (improper or non-social behaviors) includes: telling lie, beating, nagging, making improper sounds and not taking promises. Third parameter (aggressive and impulsive behaviors) includes: rebelling, being defiant. Fourth parameter (arrogance) includes being arrogant, boasting, pretending to know everything, thinking one is better than the others. And the fifth parameter

(communication with peer group) includes: jealousy, isolating, relation with peers and loneliness.

The case study groups are almost the same in variables such as the job of parents, their degrees and number of brothers and sisters. For analyzing the data gathered from the questionnaires, two levels of descriptive and analytic statistics is used. In descriptive level, frequency table and chart and frequency percentage, average calculation and standard deviation with variance and in analytic level the covariance analysis is used. The software used for statistical analysis is *SPSS<sub>19</sub>* software.

### Analysis of Data

For analyzing the data gained from research questionnaires we used descriptive and analytic statistics. In descriptive level, frequency table and chart and frequency percentage, average calculation and standard deviation with variance and in analytic level based on research ideas which is based on experimental and control groups, the covariance analysis is used.

**Table 2: Comparison between average and standard deviation of social skills parameters**

Variables indices	Experimental		control		
	average	standard deviation(S)	average	standard deviation(S)	
proper social skills	Pre-test	69.06	12.06	69.12	9.29
	post-test	69.87	10.39	64.35	11.7
non-social behaviors	Pre-test	41.83	7.98	41.22	7.43
	post-test	46.35	8.91	41.48	8.20
aggressive and impulsive behavior	Pre-test	45.00	6.95	45.64	6.8
	post-test	49.67	8.66	45.70	8.91
supremacy and exaggerated self-confidence	Pre-test	27.83	4.28	27.29	4.10
	post-test	29.74	5.09	27.19	5.36
communication with peer group	Pre-test	39.64	7.19	38.19	5.5
	post-test	39.96	5.13	37.74	5.51

The results Table 2 show that the average grade of proper social skills, aggressive and impulsive behavior, supremacy and exaggerated self-confidence, non-social behaviors and communication with peer group in the experimental group is more than the control group in post exam stage.

For using parametric exams for evaluating the equity of variance of the given grades of social skills and its components, Levin examination is used and the results are shown in tables 3 and 4.

**Table 3: Levin examination about variance equity of social skills and its components' grades**

Variable	Than F	df <sub>1</sub>	df <sub>2</sub>	Significance level
proper social skills	2.044	1	60	0.158
non-social behaviors	1.959	1	60	0.167
aggressive and impulsive behavior	0.047	1	60	0.829
supremacy and exaggerated self-confidence	0.291	1	60	0.591
communication with peer group	2.947	1	60	0.168

The results of Levin examination show equity of social skills and its components' grades. The results show that we have equity in variance for social skills and its components' grades.

**Table 4: Shapiro - Vikez examination, social skills and its components' grades**

Variables	group	statistic	df	Significance level
proper social skills	Experimental	0.843	31	0.001
	Control	0.908	31	0.011
non-social behaviors	Experimental	0.853	31	0.001
	Control	0.914	31	0.017
aggressive and impulsive behavior	Experimental	0.866	31	0.001
	Control	0.941	31	0.086
supremacy and exaggerated self-confidence	Experimental	0.819	31	0.001
	Control	0.903	31	0.008
communication with peer group	Experimental	0.813	31	0.001
	Control	0.923	31	0.028

The results of this examination show the social skills and their components' grades. It shows that there is no normal grade in control group except social behaviors and impulsive and aggressive behavior component.

According to the equity in both groups, using parametric exams is possible.

**The main hypothesis:** Group discussion teaching method has a positive effect on social skills in comparison with lecturing method.

**Table 5: Covariance analysis of social skills' grades in case study groups**

source	Sum of squares	df	Mean of square	F	Significance level	Eta values	statistical power
Pretest	55423.22	1	55423.22	336.06	0.001	0.85	1.00
group	2514.82	1	55423.22	15.25	0.001	0.21	0.97

As the results show, there is a meaningful difference between groups in social skills' grades in  $p < 0.01$  level. It means that the difference between students' social skills' grades in experimental and control groups is meaningful. According to the fact that the average of experimental group in social skills' grades is more than control group, group discussion could have a positive effect on social skills.

**Hypothesis 1:** Group discussion method is more effective on social skills in comparison with lecturing method.

**Table 6: Covariance analysis of proper social skills' grades in case study groups**

source	Sum of squares	df	Mean of square	F	Significance level	Eta values	statistical power
Pretest	302.622	1	302.622	9.780	0.003	0.151	0.867
group	315.596	1	315.596	10.200	0.002	0.156	0.880

As the results show, there is a meaningful difference between groups in proper social skills' grades in  $p < 0.01$  level. It means that the difference between students' proper social skills' grades in experimental and control groups is meaningful. According to the fact that the average of experimental group in social skills' grades is more than control group, group discussion could have a positive effect on proper social skills.

**Hypothesis 2:** Group discussion method is more effective on decreasing the non-social behaviors in comparison with lecturing method.

**Table 7: Covariance analysis of non-social behaviors' grades in case study groups**

source	Sum of squares	df	Mean of square	F	Significance level	Eta values	statistical power
Pretest	152.598	1	152.598	6.833	0.012	0.111	0.728
group	85.020	1	85.020	3.807	0.056	0.065	0.483

As the results show, there is no a meaningful difference between groups in no-social behaviors' grades in  $p < 0.01$  level. It means that the difference between students' non-social behaviors' grades in experimental and control groups is not meaningful. Therefore, group discussion method couldn't change the students' non-social behaviors.

**Hypothesis 3:** The group discussion teaching method is effective on decreasing aggressive and impulsive behaviors of students in comparison with lecturing method.

**Table 8: Covariance analysis of impulsive and aggressive behaviors' grades**

source	Sum of squares	df	Mean of square	F	Significance level	Eta values	statistical power
Pretest	0.846	1	0.846	0.034	0.003	0.854	0.034
group	87.222	1	87.222	3.508	0.066	0.060	0.452

As the results show, there is no a meaningful difference between groups in impulsive and aggressive behaviors' grades in  $p < 0.01$  level. It means that the difference between students' impulsive and aggressive behaviors' grades in experimental and control groups is not meaningful. Therefore, group discussion method couldn't change the students' impulsive and aggressive behaviors.



**Hypothesis 4:** Group discussion teaching method is effective on increasing supremacy and exaggerated self confidence of students in comparison with lecturing method.

**Table 9: Covariance analysis of supremacy and exaggerated self confidence's grade in case study groups**

source	Sum of squares	df	Mean of square	F	Significance level	Eta values	statistical power
Pretest	52.150	1	52.150	7.050	0.010	0.114	0.742
group	31.777	1	31.777	4.296	0.043	0.072	0.530

As the results show, there is a meaningful difference between groups in supremacy and exaggerated self confidence's grades in  $p < 0.01$  level. It means that the difference between students' supremacy and exaggerated self confidence's grades in experimental and control groups is meaningful. According to the fact that the average of experimental group in supremacy and exaggerated self confidence's grades is more than control group, group discussion could have a positive effect on supremacy and exaggerated self confidence.

**Hypothesis 5:** Group discussion teaching method is effective on increasing the communication with the peer group in comparison with lecturing method.

**Table 10: Covariance analysis of communication with the peer group's grades in case study groups**

source	Sum of squares	df	Mean of square	F	Significance level	Eta values	statistical power
Pretest	119.075	1	119.075	18.24	0.001	0.247	0.986
group	27.939	1	27.939	4.229	0.044	0.071	0.524

As the results show, there is a meaningful difference between groups in communication with the peer group's grades in  $p < 0.01$  level. It means that the difference between students' communication with the peer group's grades in experimental and control groups is meaningful. According to the fact that the average of experimental group in communication with the peer group's grades is more than control group, group discussion could have a positive effect on communication with the peer group.

### Conclusion

Regarding that the aim of this project is evaluating the effect of group discussion method on increasing social skills, the main hypothesis according to the results of the chart will be accepted. It says that there is a meaningful relation between group discussion and lecturing methods. It means that the average of social skills' grades in experimental group is more than the control one. Regarding that the case study groups are almost the same in variables such as the job of parents, their degrees and number of brothers and sisters, this effect results from group discussion method; the differences between these two groups show the great effect of group discussion teaching method on social skills of students.

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