

## **Ability Grouping and Teacher-Students Interaction among High and Low Achieving Students in Middle Primary Schools in the United Arab Emirates**

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### **ABSTRACT**

This research investigated teacher-students interaction in various learning settings in middle primary schools in the United Arab Emirates (UAE). These settings include mixed- and same-ability classrooms as well as mixed- and same-ability learning groups within the same classroom. The sample consisted of 16 low-and high-achieving male and female students selected from two middle primary schools from Al-Ain City, Abu Dhabi. The results indicate that high-achieving students in all groups interacted more than low-achieving ones and high-achieving girls interacted more than high-achieving boys. Boys interacted in the same-ability classrooms more than they did in mixed-ability classrooms but girls showed opposite results. Students in the same-ability groups interacted more than those in the mixed-ability groups. The results also reveal that teachers interacted with boys in all groups more than they did with girls and with high-achieving students more than they did with low-achieving ones. They also interacted with low-achieving boys more than they did with low-achieving girls. Teachers interacted with high-achieving boys in the same-ability classrooms more than they did with the boys in mixed-ability classroom. They interacted with low- achieving boys and girls in the mixed-ability classrooms more than they did with these boy and girls in the same-ability classrooms. The patterns of interaction that were used by teachers and all students in all settings were also identified in the study.

**Key Words:** ability grouping, mixed-ability grouping, same-ability grouping, high- achieving students, low-achieving students, teacher-students interaction.

### **Introduction**

#### *Overview of the United Arab Emirates*

The United Arab Emirates (UAE) is a federation of seven semi-autonomous Emirates established in 1971 and situated on the Arabian Gulf, east of Saudi Arabia and North of Oman. In accordance with the 1971 Constitution, the Federal Supreme Council, the highest legislative and executive body, is comprised of the rulers of the seven Emirates. The country has a free-market economy based on oil and gas production, trade, and light manufacturing. The

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economy provides citizens with a high per capita income, but it is heavily dependent on foreign skilled and unskilled workers (Bureau of Democracy, Human Rights & Labor, 2003). According to the Bureau of Democracy, Human Rights, and Labor (2006), the estimated resident population of the UAE is 4.5 million, of which only 21 percent are citizens. Citizens employed by the Government also are eligible to receive aid from the Ministry of Labor and Social Welfare for sons and daughters who are under the age of 18, unmarried, or have disabilities. Women represent most primary and secondary school teachers and health care workers, and make up almost half of all government workers (Bureau of Democracy, Human Rights & Labor, 2003).

#### *Education System in the UAE*

The UAE offers comprehensive education to all male and female students from kindergarten to university, with free education for the country's citizens at all levels. Schools in the UAE public system are gender-segregated. There is also an extensive private education sector, and several thousand students (male and female) pursue courses of higher education abroad, at government expense. The existing educational structure, established in the early 1970s, is a four-tier system encompassing fourteen years of education – kindergarten (4-5 years), primary (6-12 years), preparatory (12-15) and secondary level (15-18 years).

Primary school education is compulsory for all UAE citizens. Government policy is to provide staff/student ratios of 1:20 at kindergarten and primary levels, and 1:15 at intermediate and secondary levels. The existing staff/student ratio is well within this proposed range (Bureau of Democracy, Human Rights & Labor, 2006).

*Teacher-students interaction*

Interaction between teachers and students helps students to learn but usually educationalists argue about the best setting where teachers and students can interact more. Some researchers suggest that grouping students according to their abilities encourages them to interact more with the teachers while others indicate otherwise. *Ability grouping* is the practice, in education, of placing students into groups or classes based on their abilities, talents, or previous achievement. Such grouping may be very fluid and temporary, for instance, when elementary teachers place children into small reading groups whose members may change several times throughout the school year (Ansalone, 2003). The term “ability grouping” in this research refers to the grouping of students in different classes or groups based on their ability. Ability grouping can be carried out between-class or within-class. *Between-class ability grouping* refers to a school’s practice of forming classrooms that contains students of similar ability. *Within-class grouping* refers to a teacher’s practice of forming groups of students of similar ability within an individual class (Gamoran, 1992; Hollified, 1987).

An extensive research has been conducted on ability grouping suggesting that academically, high-achieving students achieve and learn more when they are grouped with other high-achieving students (Gentry & Owens, 2002; Grossen, 1996; Hollified, 1987; Page & Keith, 1996). In mixed-ability grouping it is difficult to provide an adequate environment for teaching to everyone. Since students differ in knowledge, skills, developmental stage, and learning rate, one lesson might be easier for some students and more difficult for the others (Slavin, 1987b). In ability grouping, high-achieving students view their own abilities more realistically and feel that they are appropriately challenged with their peers (Fiedler, Lange, and Wine-Brenner, 2002).

Mixed-ability grouping is based on cooperative learning which demonstrates positive success related to student's achievement. In this type of grouping, students work collaboratively to successfully achieve a desired educational outcome and develop a greater understanding and respect for individual differences. All forms of diversity within the learning environment are embraced (Felder & Brent, 2001; Freeman, 1993; Saleh, Lazonder, & DeJong, 2005). Moreover, in a mixed-ability, teachers respond to the individualized needs of all learners (Kulik & Kulik, 1992). The most compelling argument against ability grouping is the creation of academic elites – a practice which goes against democratic ideals (Slavin, 1987a).

A similar argument is also found between within-class and between-class ability grouping. Some of the previous findings were in favor of between-class ability grouping while some others were in favor of the other approach. Although within-class grouping is less common (or has been less researched), the findings that support this type of grouping in primary schools indicate that it leads to favorable effects for grouping which rarely exist in "between-class" grouping (Slavin, 1987a). However, there were no influences for within-class grouping and between-class grouping at the secondary level, though there were at the elementary level (Slavin, 1990). Using cooperative learning with mixed-age, mixed-ability groups is more viable than between-class grouping (Slavin, 1991). In fact, within-class ability grouping, when it is closely related to the purposes of instruction and is applied flexibly – grouping and regrouping based on the needs and interests of students – can be beneficial for students of diverse ability (Secada, 1992). For example, students with low academic achievement can benefit from students with high academic achievement if they are grouped together in a group in the classroom. On the other hand, the findings that support between-classes ability grouping suggest that this

approach allows students to progress at their own rates and can result in improved achievement (Slavin, 1986; Slavin, 1987a).

As mentioned above, early research findings investigated the influence of students' various groupings on their academic achievement. Some of these findings argued that within-class groupings improve students' academic achievement more than between-class groupings, while other findings stated otherwise. However, the questions that can arise here include: Does students' grouping influence teacher-students interaction? What other factors may influence teacher-students interaction? Does teacher-students interaction influence student's achievement? Many studies investigated these issues, for example, children benefit from positive interaction with their teachers (Beyazkurk & Kesner, 2005). These children are also doing better in early childhood educational settings (Egeland & Hiester, 1995; Pianta, Stuhlman, & Hamre, 2002) and such interaction even helps students adjust better in the classroom (Howes, Phillipsen, & Peisner-Feinberg, 2000). Previous research findings (Willson, 1999) indicated that high-achieving students initiate more interactions in mixed-ability classrooms than low-achieving ones; this is also consistent with a study conducted by Dukmak (2006) in the UAE. Furthermore, verbally-active students are more likely to be high achievers, and student-teacher interaction can help a student develops his/her cognitive skills (Jones & Gerig, 1994). Moreover, various studies on mixed-ability classrooms revealed that high-achieving students control interaction because they are more active in the learning process and participate more willingly than others (Willson, 1999).

Students' patterns of interaction in the classroom are often influenced by their homes, neighborhoods, and culture (Eggen & Kauchak, 1997). Many students come from cultures in which adults and children interact in ways that differ from the patterns found in most classrooms (Eggen & Kauchak, 1997).

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According to Helgesen and Brown (1994), each culture has different "rules" about how students should act in the classroom. In some countries, students are expected to listen; only the teacher should speak in class. But in some others, it is positive – and important – to answer the teacher's questions and interrupt him/her when something is not understood. For example, most Japanese students are taught to listen and not to question a teacher in class and, therefore, have little or no experience with in-class interaction with the teacher, such as questioning, commenting or giving feedback. Students are usually taught to be quiet and respectfully listen to the teacher (Snell, 1999). Hawaiian students in the USA, on the other hand, do not interact effectively in regular classroom lessons; either they do not participate at all or they participate in inappropriate ways, such as breaking in or interrupting other participants. These behavior patterns and their consequences often result in lower achievement (Tharp, 1989).

Previous research findings indicate a positive relationship between within-class grouping and interaction. For example, teachers who use learning groups in their classes engaged students in more mediated-learning interactions. Furthermore, these students modeled many of these interactions in their groups (Gillies, 2006).

When examining interaction by gender, previous research results have been inconsistent. While Younger, Warrington & Williams (1999) found that girls take the opportunity to initiate questions, seek clarification on work-related matters, dominate and maximize the support of the teacher, Pavlidou (2003) indicated that girls participated less in mixed-ability classes than boys and took less verbal initiative in their interaction with the teacher. In this sense, girls would be characterized as more "passive" than boys in the classroom. Furthermore, girls were found to be less persistent than boys in their non-compliance to the teacher and overtly negotiated their relationship with

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him/her. In addition, Kramer (1985) indicated that high-achieving girls avoided answering the teacher's questions in class and offered comments less frequently than boys. In UAE, Dukmak (2006) found that boys interacted more than girls. In addition, boys with high academic achievement attempted to interact more than girls with high academic achievement.

A number of studies have shown gender bias in teacher-initiated interaction in the mixed-ability classrooms (Sadker & Sadker, 1985; Callahan, 1980; & Kerr, 1991). While some researchers (Sadker & Sadker, 1985) found that teachers responded differently to boys and girls in the class, with boys tending to dominate classroom interactions and teachers accepting their dominance, others (Comfort, 1996) indicated that girls received more positive feedback from their teachers. Although Comfort (1996) found that teachers initiated more contact and directed more questions to boys than girls, they criticized and disciplined boys more. In fact, girls received more positive reinforcement. In the UAE, according to Dukmak (2006), teachers initiated more interaction with high-achieving boys than they did with high-achieving girls. Surprisingly, the opposite pattern was seen among low-achieving students, as teachers initiated interactions more with low-achieving girls than they did with low-achieving boys.

Patterns of interaction by students in mixed-ability classrooms were investigated by previous research. These patterns were different from one study to another. For example, in the United Kingdom (UK) and according to a study carried out by Myhili (2002), there were three patterns of interaction used by students in the primary mixed-ability classes, including "joins in collective response", "puts hand up" and "answers after invitation". There were fluctuating responses among students in using these patterns; for instance, low-achieving boys in grade one used this pattern much less than girls but girls in grade four used this pattern less than boys. There were also

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fluctuating responses between low-and high-achieving boys and girls with regards to using the patterns ‘puts hand up’ and ‘answers after invitation’.

In the UAE, according to the Dukmak (2006) study, boys used eight patterns of classroom interaction, of which "hand raising" was the most frequently-used and "eye contact" was the least frequently used. Girls, on the other hand, used two more patterns of interaction unused by boys: "answering the teachers' questions" and "asking the teacher questions". Among these, "hand raising" was also the most frequently-used pattern and "answering teacher's questions" was the least frequently-used one. In the same study, high-achieving boys initiated five patterns of interaction of which "eye contact" was the most frequently-used pattern and "proximity" was the least frequently-used one. Low-achieving boys initiated six patterns of interaction, with "hand raising" most frequent and "proximity" least frequent. Dukmak’s study also found that high-achieving girls initiated six patterns of interaction of which “hand raising" was most frequent and "head shaking" least frequent. Low-achieving girls initiated seven patterns of interaction, "side-talking to peers" most used and "eye contact" the least.

Teacher’s patterns of interaction were also investigated in a previous UAE study (Dukmak, 2006) which revealed that teachers initiated five patterns of interactions with high-achieving boys and four patterns of interaction with high-achieving girls. The pattern of interaction most frequently used with these boys was "head shaking" and with these girls was "asking the students to do an academic task". The least frequently-used pattern of interaction with high-achieving boys was "asking students to do an academic task" and with high-achieving girls was "head shaking". Teachers initiated four interaction patterns with low-achieving boys and five with low-achieving girls. With these boys, "asking the students to do an academic task" was most frequent and “eye contact” was the least. With low-achieving girls, the most frequent was

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“asking the students to do an academic task” and the least was “rewarding students”.

Student-student and teacher-students interaction in various learning situations are very important in the learning process. Much of the existing research investigates the relationships between academic achievement and interaction in the regular classrooms such as that carried out by Dukmak (2006) in the UAE which is the only one and the studies conducted in other parts of the world, such as Willson (1999). However, no research has been found that studied such interaction in the same-ability classrooms or in the mixed-ability and same-ability learning groups, especially, in the UAE. The majority of the research initiatives in the same-ability classrooms as well as in the mixed-ability and same-ability learning groups emphasized the issue of the relationship between these settings and academic achievement. However, this research will be the first of its kind not only in the UAE but also in the Arab countries to study the student-teacher interaction in the same-ability classroom and in the mixed-ability and same-ability learning groups. The importance of this research lies in promoting best classroom behaviors by investigating which classroom or group settings encourage more teacher-students interaction. According to the previous research findings mentioned in the introduction, such interaction can improve the achievement of students and improve the learning outcomes in general. This constitutes the rationale for this research.

This research, however, investigated the patterns and frequency of interactions initiated by high-and low-achieving boys and girls in mixed- and same-ability classrooms. It also examined the patterns and frequency of interactions initiated by high- and low-achieving boys and girls in mixed- and same-ability learning groups.

Teachers' patterns and frequency of interactions initiated with boys and girls in mixed- and same-ability classrooms and in learning groups were also examined.

## **Method**

### *Sample selection and Characteristics*

The study population included high-and low-achieving students from middle primary stage (5<sup>th</sup> grade level) public schools from Al-Ain city, Abu Dhabi, UAE. Middle primary public schools were selected because students in this stage are more mature and can better understand the importance of interaction and the instruction given to them. Two primary schools were randomly selected based on two criteria: gender and the existence of a wide range of students in all levels of academic achievement. One class was further selected from each of these schools.

A stratified random sample procedure was employed to select students from classes with the help of their teachers. The sample consisted of sixteen students ranging in age from ten to twelve years, with each of the two groups equally divided between boys and girls. The groups were: eight fifth-grade high-achieving students and eight fifth-grade low-achieving students from regular classrooms in mainstream public schools. The high- and low-achieving boys were selected from one classroom and the high- and low-achieving girls were also selected from one classroom. The cut-off scores for high and low achievers were based on the students' scholastic achievement. Those with an average in the top 27 percentile were classified as high achievers; those whose average was in the lower 27 percentile were identified as low achievers. The location and socioeconomic factors of people in the area were not considered as factors influencing the site selection process.

### *Instrumentation*

This research is concerned with teacher-students interaction that is considered a human behavior. Therefore, a qualitative methodology was considered an appropriate approach to be used in this research. The major rationale for this selection was qualitative methodology's use of 'naturalistic inquiry'; it is characterized by unobtrusiveness and accuracy in presenting the real-world events and experiences that unfold in a particular environment (Patton, 1990, p. 41). Qualitative methodology provides detailed and in-depth descriptions of students' behavior through collecting, recording and analyzing these descriptions. However, it has generalizing problems because a small sample cannot represent a whole population. Observation then was the method used to gather information about the students' and teachers' sample in various learning situations.

### *Data Collection Procedure*

The students in the sample were observed continually by four trained data collectors in four various learning settings: mixed-ability classroom, same-ability classroom, mixed-ability learning groups and same-ability learning groups. As mentioned in the introduction section, a mixed-ability learning group is a group of students with different academic achievements that can be formed in the classroom to be taught by the teacher a selected academic task. The same-ability learning group is a group of students with the same level of academic achievements that can be formed in the classroom to be taught by the teacher a selected academic task. It is worth noting here that the last three settings (same-ability classroom, mixed-and same-ability learning groups) were formed by data collectors to address the purpose of the study. In forming groups, the regular classrooms (gender-segregated), in which the high- and low-achieving students appeared, were divided into groups of six students

each. In each classroom, two mixed-ability working groups were formed of which the research student's sample was part. Each of these groups consisted of two high-achieving students, two low-achieving students and two average-achieving students. In forming the same-ability groups, each of the two classrooms were divided into groups of six. Among these groups in each classroom, there were two groups of which one consisted of six high-achieving students and the other of six low-achieving students. The research sample of high- and low-achieving students was among these groups.

Before starting the observation, the inter-observer reliability between the researcher and the four data collectors was calculated; it ranged from 0.81 to 1.00, with a mean of 0.95. The observations in the mixed- and same-ability classrooms were recorded during seat work and other learning activities. In the mixed- and same-ability learning groups, the teacher was involved in the group work in order to open the floor for interaction with her/his students. Structured observational formats recorded the frequency of both students-initiated and teachers-initiated interactions. The patterns of interactions that are usually initiated by students in a learning situation include eight patterns: "hand-raising", "calling teacher's name", "answering the teacher's question", "asking the teacher a question", "talking to teacher about the lesson", "talking to another student about the lesson", "proximity" and "head shaking to indicate acceptance". The patterns of interaction that are usually initiated by the teacher in a learning situation include: "asking student a question", calling student's name", "asking student to do something", "head shaking to indicate satisfaction with student", "proximity", "talking to student about the lesson", and "praising student". Proximity occurs when the student or teacher gets physically closer or nearer to the other for the purpose of initiating interaction. The observer sat near the observed students in order to hear when the students "talked to each other about the lesson". Furthermore, questions followed the

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observations, clarifying the content of any conversation among students. All of these patterns of interactions were identified prior to observations and were all based on the literature.

The observations were carried out during different periods of the day in several lessons, with different activities in each lesson. Each student was observed over four days in three different lessons (Arabic, English, & Mathematics) each day, for a period of twenty minutes in each lesson and an average class size of twenty students in the classroom settings and six students in each learning group. The first twenty minutes of each lesson was taken as the period for observation because interaction is more likely to occur in this period. Each observation period was observed as a block and was not divided into intervals. In all, each student was observed for twelve periods and the cumulative 192 periods of all observed students (sixteen) were then analyzed. The observations for all male students were carried out by male teachers and for female students by female teachers. It was very important to record the frequency of initiated interactions by students and teacher in every observation session in all settings.

#### *B- Data Analysis*

The “natural” data obtained in this research were then subjected to Fleet and Cambourne's process of coding naturalistic data, for formulating comparisons. According to Fleet and Cambourne (1989, p.3) the process of coding naturalistic data is: “the process that takes data in its 'raw form' and 'chops it up' in a systematic manner to produce more manageable 'bits' that are then coded accordingly. The main purpose of coding is to overcome the complexity of the data collected by reducing it into simplified records and then to rearrange the records according to some rules of order”.

Data gathered from observations were categorized to include the frequency and patterns of interaction initiated by high-achieving students versus low-achieving students and by male and female students in all four settings. The categorization also included the patterns and frequency of interactions initiated by teachers. It is worth noting here that the reader should only consider the major discrepancies in the frequency of interaction between the groups.

## Results

### *Student-initiated interactions and their gender and achievement level*

As Table 1 presents, overall, the findings indicate that the number of initiated interactions by boys and girls were equal. However, high-achieving students initiated many more interactions (more than double) than those initiated by low-achieving students in all groups. High-achieving girls initiated more interactions than high-achieving boys but low-achieving boys initiated more interactions than low-achieving girls.

**Table 1: Frequency of student-initiated interactions by their gender & achievement level in all groups**

Achievement level	Students' gender		
	boys (n=8)	girls (n=8)	total (n=16)
Freq. of Int. of high-achieving students	283	301	584
Freq. of Int. of low-achieving students	147	129	276
Total students-initiated interactions	430	430	860

Freq. of Int.= Frequency of Interaction

### *Teacher-initiated interactions and students' gender and achievement level*

Overall, teachers initiated interactions with boys more than they did with girls, with high-achieving students more than with low-achieving students and with high- and low-achieving boys more than they did with high- and low-achieving girls (see Table 2).

**Table 2: Teacher-initiated interaction by students' gender & achievement level in all groups**

Achievement level	Students' gender		
	boys (n=8)	girls (n=8)	total (n=16)
Teach. freq. of int. with high-achieving students	190	170	360
Teach. freq. of int. with low-achieving students	129	122	251
Total teachers-initiated interactions	319	292	611

Teach. freq. of int.= Teacher frequency of Interaction

*Student-initiated interactions and their gender, achievement level, and between-class settings*

Overall, boys initiated more interactions in the same-ability classrooms than they did in the mixed-ability classrooms, while the opposite results were found among girls. High-achieving boys initiated interactions in same-ability classrooms more than they did in mixed-ability classrooms. Similar results were found among low-achieving boys. With regards to girls, no difference in the frequency of initiated interactions was found among high-achieving girls in the two settings (same-and mixed-ability classrooms). The initiated interactions among low-achieving girls in the same-ability classrooms was less than those initiated in the mixed-ability classrooms (see Table 3).

**Table 3: Student-initiated interaction by gender, achievement level & between-class settings**

Achievement level	Between-classroom settings & student's gender			
	boys/mixed- ability class (n=4)	boys/same-- ability class (n=4)	girls/mixed- ability class (n=4)	girls/same-- ability class (n=4)
Freq. of int. of high- achieving students	67	71	73	73
Freq. of int. of low- achieving students	31	36	36	31
Total interactions	98	107	109	104

Freq. of int.= Frequency of interaction

*Student-initiated interactions and gender, achievement level, and group settings*

Student-initiated interactions were also investigated among students in different groups within-class including mixed-ability and same-ability groupings. In all, students in the same-ability groups interacted more than those in the mixed-ability groups. However, high-achieving boys and girls in the same-ability groups initiated more interactions than high-achieving girls and boys in the mixed-ability groups but an opposite results were found among low-achieving boys and girls. Moreover, low-achieving boys in both group settings interacted more than low-achieving girls (see Table 4).

**Table 4: Frequency of student-initiated interactions by their gender, achievement level & group settings**

Achievement level	Within-class settings & student's gender			
	boys/mixed-ability groups (n=4)	boys/same-ability groups (n=4)	girls/mixed-ability groups (n=4)	girls/same-ability groups (n=4)
Freq. of int. of high-achieving students	65	80	69	86
Freq. of int. of low-achieving students	42	38	32	30
Total interactions	107	118	101	116

Freq. of int.= Frequency of interaction

*Teacher-initiated interactions and students' gender, achievement level, and between-class settings*

As evidenced in Table 5, teachers interacted with high-achieving boys in the same-ability classrooms more than they did with boys in mixed-ability classrooms but opposite results were found among low-achieving boys. In relation to girls, teachers initiated more interactions with high-achieving girls in mixed-ability classrooms than they did with these girls in the same-ability classrooms, although the difference in these initiated interactions was very



small. On the other hand, teachers interacted with low-achieving girls in the mixed-ability classrooms more than they did with these girls in the same-ability classrooms.

**Table 5: Frequency of teacher-initiated interaction by students' gender, achievement level & between-classroom settings**

Achievement level	Between-classroom settings & gender			
	boys/mixed-ability class (n=4)	boys/same-ability class (n=4)	girls/mixed-ability class (n=4)	girls/same-ability class (n=4)
Teach. freq. of int. with high-achieving students	82	88	81	79
Teach. freq. of int. with low-achieving students	52	47	58	44
<b>Total interactions</b>	<b>134</b>	<b>135</b>	<b>139</b>	<b>123</b>

Teach. freq. of int.= Teachers frequency of interactions

#### *Students' patterns of interactions and their gender*

The findings of this research reveal that, in total, students in all group settings used "hand raising" as the most frequent pattern of interaction. The student's gender, academic achievement, between-class settings and within-class group settings did not influence "hand-raising" and this pattern remained the most frequent one used by students compared to the other patterns. Boys and girls used "hand raising" almost equally as the most frequent pattern. The most frequently-used patterns of interaction among boys were the same ones used among girls. These patterns include "hand raising", "answering a question", "head shaking to indicate acceptance", and "calling teacher's name" (see Table 6).

**Table 6: Patterns of interaction used by students in relation to their gender in all groups**

Patterns of interaction & their frequency	Gender		total
	boys	girls	
Frequency of hand-raising	162	160	322
Frequency of calling teachers name	40	47	87
Frequency of answering a question	69	56	125
Frequency of asking A question	24	26	50
Frequency of talking to teacher about the lesson	35	37	72
Frequency of talking to another student about the Lesson	34	24	58
Frequency of Proximity	22	30	52
Frequency of head shaking to indicate acceptance	44	50	94

*Students' patterns of interaction and their achievement level*

As illustrated in table 7, the frequency of each pattern of interaction used by high- achieving students was higher than the frequency of each pattern used by low-achieving student. This is apart from “talking to another student about the lesson” pattern that was used by low-achieving students more than high-achieving ones.

**Table 7: Students' patterns of interaction by their achievement's level in all groups**

Patterns of interaction & their frequency	Achievement level		total (n=16)
	high-ach. stu. (n=8)	low-ach. stu. (n=8)	
Frequency of hand-raising	221	101	322
Frequency of calling teachers name	57	30	87
Frequency of answering a question	82	43	125
Frequency of asking a question	39	11	50
Frequency of talking to teacher about the lesson	47	25	72
Frequency of talking to another student about the Lesson	20	38	58
Frequency of Proximity	42	10	52
Frequency of head shaking to indicate acceptance	76	18	94
Total	584	276	860

High-ach. stu.= high-achieving students, low ach. stu.= low-achieving students

*Students' patterns of interaction and between-class settings*

The students' patterns of interactions used were also influenced by their classroom settings but not as much as by their achievement level. For instance, "hand raising", "asking questions", "talking to another student about the lesson", and "answering a question" patterns were used by students in the same-ability classroom more than they were used by students in the mixed-ability classroom. On the other hand, "talking to teacher about the lesson", "head shaking to indicate acceptance", and "proximity" patterns were used by students in the mixed-ability classroom more than they were used by students in the same-ability classroom (see Table 8). It is worth noting here that the patterns of interaction used by students in the same- and mixed-ability groups within-class were the same as those used in the same- and mixed-ability classrooms. Also the difference in frequency of initiated interactions by students in these groups was small.

**Table 8: Students' patterns of interaction by their classroom settings**

Patterns of interaction & their frequency	Between-classroom settings		
	mixed-ability class (n=8)	same-ability class (n=8)	total (n=16)
Frequency of hand-raising	75	84	159
Frequency of calling teachers name	21	21	42
Frequency of answering a question	29	30	59
Frequency of asking a question	11	14	25
Frequency of talking to teacher about the lesson	19	16	35
Frequency of talking to another student about the Lesson	12	14	26
Frequency of Proximity	14	11	25
Frequency of head shaking to indicate acceptance	26	21	47
Total	207	211	418

*Teachers' patterns of interaction and students' achievement level*

Table 9 shows that the patterns of interaction used by teachers were influenced by the achievement level of students. For example, the patterns "asking student a question", "head shaking to indicate satisfaction with the student", "proximity", "talking to student about the lesson", and "praising student" were used more with high-achieving students than with low-achieving students. On the other hand, only the patterns "calling student name", and "asking student to do something" were used with low-achieving students more than with high-achieving students.

**Table 9: Teachers' patterns of interaction & students' achievement level**

Patterns of interaction & their Frequency	Achievement level		
	high-ach. stu. (n=8)	low-ach. stu. (n=8)	total (n=16)
Frequency of asking student a question	132	61	193
Frequency of calling student name	40	55	95
Frequency of asking student to do something	35	52	87
Frequency of head shaking to indicate satisfaction with student	47	20	67
Frequency of proximity	23	19	42
Frequency of talking to student about the lesson	40	24	64
Frequency of praising student	43	20	63
<b>Total</b>	<b>360</b>	<b>251</b>	<b>611</b>

High-ach. stu.= high-achieving students, low ach. stu.= low-achieving students

*Teachers' patterns of interaction and between-classroom settings*

The patterns of interaction used by teachers were influenced by the between-class settings in the same- and mixed-ability classrooms. For instance, the patterns "calling student name", "head shaking to indicate satisfaction with student", "proximity", "talking to student about the lesson", and "praising

student” were used with students in the mixed-ability classrooms more than in the same-ability classroom. This is different from only “asking student a question” and “asking student to do something” in that they were used with students in the same-ability classrooms more than in the mixed-ability classrooms (see Table 10). It is worth noting here that the patterns of interaction used by teachers in the same- and mixed-ability groups within-class were the same of those patterns used in the same- and mixed-ability classrooms. On the other hand, the frequency of initiated-interactions by teachers in these groups was also much closer to that initiated by teachers in the same- and mixed-ability classrooms.

**Table 10: Teachers’ patterns of interaction used by classroom settings**

Patterns of interaction & their frequency	Between-classroom settings		
	mixed-ability class (n=8)	same-ability class (n=8)	total (n=16)
Frequency of asking student a question	98	103	201
Frequency of calling student name	43	40	83
Frequency of asking student to do something	40	42	82
Frequency of head shaking to show satisfaction with Student	23	18	41
Frequency of proximity	17	11	28
Frequency of talking to student about the lesson	23	20	43
Frequency of praising student	29	24	53
Total	273	258	531

### Summary & Discussion

As indicated in this research as well as in previous UAE research (Dukmak, 2006), students interacted with their teachers more often than evidenced in other studies (i.e. Willson, 1999). The differences may be due to cultural factors (Eggen & Kauchak, 1997; Helgesen & Brown, 1994), learning experience (Good, Slavings, Hobson-Harel & Emerson, 1987), gender and

teaching style (Willson, 1999). In the Arab culture, students usually become enthusiastic about interacting with the teacher in the classroom, raising their hands and shouting, begging the teacher to call upon them. Some students do this even if they do not know the answer to the question asked; a common interpretation of this behavior is that they want to act like the other students. This is unlike the behavior of both Japanese and Hawaiian students mentioned earlier (Snell, 1999; Tharp, 1989).

The findings of this research also indicate that the number of initiated-interactions by boys and girls was the same as this was inconsistent with previous findings (Dukmak, 2006; Kramer, 1985; & Pavlidou, 2003) of which boys initiated more interactions than girls. This was also inconsistent with other findings (Younger *et al.*, 1999) of which girls initiated more interaction than boys. Consistent with previous research (Dukmak, 2006; & Willson, 1999), high-achieving students initiated more interactions than low-achieving students, but inconsistent with previous research (Dukmak, 2006; & Kramer, 2003) high-achieving girls initiated more interactions than high-achieving boys. The findings of this research also reveal that low-achieving boys initiated more interactions than low-achieving girls.

As evidenced in other studies (Callahan, 1999; Comfort, 1996; Dukmak, 2006; Kerr, 1991, & Sadker & Sadker, 1985), teachers in the current research initiated more interactions with boys than they did with girls. Furthermore, they initiated more interaction with high-achieving students than they did with low-achieving students and with high-achieving boys more than they did with high-achieving girls. This was also evidenced in the study that was conducted by Dukmak (2006). Inconsistent with UAE previous research (Dukmak, 2006), teachers in the current research interacted more with low-achieving boys than they did with low-achieving girls. The fact that teachers initiated more interactions with high-achieving students can be seen as more likely to lead to

successful outcomes than initiating interactions with low-achieving students (Cooper, Burger, & Seymour, 1979). Furthermore, high-achieving students may be seen as more controllable than low-achieving ones (Cooper *et al.*, 1979).

In between-class settings, the findings of the current study indicate that boys, in all, interacted in the same-ability classrooms more than they did in the mixed-ability classrooms while opposite results were found among low-achieving girls. No difference in the frequency of initiated interactions was found among high-achieving girls in the two settings. Teachers interacted more with high-achieving boys in the same-ability classrooms than they did with these boys in mixed-ability classrooms. Opposite results were found among the interactions initiated by teachers with low-achieving boys and girls and also among high-achieving girls.

In within-classroom settings, overall, students in the same-ability groups interacted more than those in the mixed-ability groups, and high-achieving students in all groups interacted more than low-achieving students. However, opposite results were found among low-achieving students. Low-achieving boys in all groups interacted more than low-achieving girls.

In relation to the patterns of interaction initiated by students, and consistent with previous UAE research (Dukmak, 2006), the current study results show that “hand raising” was the most frequent pattern used by students in all groups. The student’s gender, academic achievement, between-classroom settings and within-class group settings did not significantly influence this pattern and it remained the most frequent used one by students compared to the other patterns. The most frequently-used patterns of interaction among all students were “hand raising”, “answering a question”, “head shaking to indicate acceptance”, and “calling teacher’s name”. Students in the same-ability classrooms used “hand raising”, “asking questions”, “talking to another

student about the lesson”, and “answering a question” more than these interactions were used by students in the mixed-ability classrooms. On the other hand, students in the mixed-ability classrooms frequently used the patterns “talking to teacher about the lesson”, “head shaking to indicate acceptance”, and “proximity”. These interactions were used in this setting more than they were used by students in the same-ability classrooms.

Teachers used five patterns of interaction with high-achieving students more than with low-achieving students. These patterns include “asking student a question”, “head shaking to indicate satisfaction with the student”, “proximity”, “talking to student about the lesson”, and “praising student”. On the other hand, the patterns “calling student name”, and “asking student to do something” were used with low-achieving students more than with high-achieving students.

With regard to between-classroom settings, teachers used the patterns “calling student name”, “head shaking to indicate satisfaction with student”, “proximity”, “talking to student about the lesson”, and “praising student” with students in the mixed-ability classrooms more than they used them with students in the same-ability classrooms. However “asking student a question” and “asking students to do something” were used with students in the same-ability classrooms more than with students in the mixed-ability classrooms.

This study has many implications at different levels: classroom and group setting levels, teacher level, and student level. The findings of this research show that students’ gender, students’ levels of academic achievement, classroom and group settings within the same classroom are factors that influence the frequency and patterns of interaction initiated by students. The results also reveal that these factors can also influence the frequency and patterns of interaction initiated by teachers with students. As a result, it is recommended that teachers should frequently divide their students in the



classroom into mixed-and same-ability groups because the group setting positively influences the interaction of many students and such interaction promotes their learning process. The teachers should also rethink their communication with students and develop skills that promote and encourage students to interact in the classroom. It also recommended that we should create schools that are flexible and use flexible grouping and instructional opportunities both inside and outside of the classroom-that improve education for all students, including the most able. Furthermore, teachers should avoid gender-bias and achievement level bias in interacting with their students, interacting equally with both boys and girls with different levels of academic achievement.

However, since the overwhelming majority of classrooms in the UAE are gender-segregated, it would be very interesting if similar research is conducted in the future in classrooms where male and female students study together. Furthermore, it would also be useful to see similar research conducted in inclusive classrooms where students with disabilities are found.

A major limitation of this research remains in its small sample, which leads to problems in the generalization process from the results. Further research, using a larger sample and quantitative methodology, would offer a more comprehensive study that might support the current research findings. Another limitation lies in that observations were only carried out in math, Arabic and English lessons. Such observations should also be carried out in other subject areas. The author could also have carried out interviews with students in the sample to find out why they usually interact, what reasons prevent them from interacting and why they use certain patterns in interaction more than others. The author could have interviewed teachers to find out why they interact with boys more than with girls and with high-achieving students more than with

low-achieving ones. These two points are also considered as limitations to the study.

#### ACKNOWLEDGMENT

This work was financially supported by the Research Affairs at the UAE University under a contract no. 04-20-03-11/07. So I would like to thank the UAE University Research Affairs for supporting this research financially. I would also like to extend my sincere thanks and appreciation for the Research Affairs Team for their continued help and support. Sincere thanks go to the schools that allowed their teachers and students to be part of this research.

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