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# The Effects of Age, Gender, and Major on Measures of Jordanian Students' Attitudes towards Academic Group Learning in Computer Training Courses

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**Abstract**
The purpose of study was to investigate students' attitudes towards academic group learning in computer training courses in education department at a university in Jordan as well as the effect of age, gender, and major on students' attitudes towards academic group learning. The participants in this study were 183 undergraduate and graduate students who were enrolled in on-campus educational technology courses at a public Jordanian university over two semesters. Cross-sectional survey design was selected in the current study. The questionnaires, which were designed to measure students' attitudes toward academic group learning, were distributed and collected at the end of the semesters. The analysis of students' responses showed that the students had positive attitudes toward academic group learning. In addition, students' attitudes towards academic group learning were not different accordance with students' gender and age. However, students' responses for one of the scales of their attitudes toward group learning were different accordance with students' major, where computer science and computer engineering students showed more favorable attitudes towards academic group learning compared to education students. The results were useful in providing faculty members empirical data regarding students' preferred teaching methods that they can employ in their educational practice.
**Keywords:** Group learning, Students' Attitudes, Computer Training Courses

## 1. Introduction

As a result of pedagogy shift from objectivism to constructivism, academic group learning has emerged as an important educational approach in higher education. Academic group learning (also referred to as cooperative or collaborative learning) represents a major move from the instructor-learning environment to students-centered one (Smith, & MacGregor, 1992).

Academic group learning can be broadly defined as "a situation, in which two or more people learn or attempt to learn something together," (Dillenbourg, 1999, P.1). In the higher education settings, academic group learning can be defined as a teaching method in which students working in teams to achieve educational goal under certain conditions that include positive interdependence, individual accountability, face-to-face interaction, appropriate use of collaborative skills and group processing (Johnson, Johnson, & Smith, 1998).

From the constructivism point of view, academic group learning represents an essential part of students' learning. In the context of designing constructivist learning environments, Jonassen and Rohrer-Murphy (1999) stated that "learning most naturally occurs not in isolation but by teams of people working together to solve problems" (p. 70). The focus in constructivist learning environment is on knowledge construction that involves students negotiate meaning from different point of views to reach common understanding of idea or concept (Jonassen, Mayes, & McAleese, 1993).

Research studies have shown the positive effects of academic group learning on different aspects of students' learning. For instance Van Boxtel, Van der Linden, & Kanselaar, (2000) noted that collaborative learning activities allow students to "verbalize their understanding" (p.313), where as a result students will be able to elaborate and restructure their knowledge which leads to better understanding of the educational concepts. In the process of learning, social interaction might leads to conflict that can create "explanations, justifications, reflection and a search for new information" (Van Boxtel, Van der Linden, & Kanselaar, 2000; p.313). In addition, collaborative learning have been found to have positive effects on students' critical thinking, Gokhale, A. (1995) explained that "collaborative learning fosters the development of critical thinking through discussion, clarification of ideas, and evaluation of others' ideas" (p.30).

Beside the academic benefits of the academic group learning, academic group learning has several benefits on

 

students' social skills and emotional environment. For instance, it has been found that academic group learning builds and enhances students' self-esteem (Johnson & Johnson, 1989), improves students' satisfactions with and attitudes towards the learning process (Jung, Choi, Lim, & Leem, 2002), and develops social and leadership skills (Soller, Goodman, Linton, & Gaimari, 1998).

In Jordan, there is official interest of providing students with the needed knowledge and skills related to information and communication technology, therefore computer training courses were introduced in the curriculum in every academic discipline. However, due to limited fund, the number of computers does not match the number of the students in the classroom. Consequently, faculty members adopted academic group learning strategies in computer training courses to overcome the limited number of computes in the classroom.

The different reported benefits of academic group learning on students learning and learning environment, and the limited technological resources that require the faculty members in Jordanian higher education to adopt academic group learning strategies in computer training courses, and the lack of empirical research studies the investigate academic group learning in term students' attitudes and the demographic characteristics that might affect their attitudes in Jordanian higher education have triggered the need to investigate Jordanian students' attitudes towards academic group learning in computer training courses

The purpose of this study aimed to investigate students' attitudes towards academic group learning in computer training courses in education department at a university in Jordan as well as the effect of age, gender, and major on their attitudes towards academic group learning.2. Literature Review

"Collaborative learning produces intellectual synergy of many minds coming to bear on a problem, and the social stimulation of mutual engagement in a common endeavor. This mutual exploration, meaning-making, and feedback often leads to better understanding on the part of students, and to the creation of new understandings for all of us." (Smith, & MacGregor, 1992, p.12).

Several research studies that discussed academic group learning have emphasized on the outcomes of academic group learning. Some research studies emphasized on students' achievements as a result of students working on groups. For instance, Anderson, Mitchell, and Osgood (2005) conducted an experimental study (*n =420*) that aimed to examine university students' content knowledge, problem-solving skills, learning experience opinions in cooperative learning and traditional lecture-based introductory biochemistry curriculum. The researcher followed two groups, posttest design. For the purpose of the research study 381 enrolled in the traditional lecture-based classes while 39 students enrolled in cooperative learning classes. The analysis of students' scores in the post-standardized test, instructors' observation, and students' written opinion about the learning experience showed that the students in cooperative classes performed better than the students in the lecture-based classes in the standardized testing and problem-solving skills. In addition, the students in cooperative classes had more positive opinions regarding the learning experience. For instance students reported that they enjoyed the cooperative learning class, and the new role of the instructor as facilitator, rather than controller, of the learning process.

In similar research study, Yamarik, (2007) conducted a study *(n= 116)* that aimed to examine the effect of cooperative learning on student learning outcomes in economic instruction. The researcher followed nonrandomized control group, posttest research design. The study took place over two semesters in four sections of intermediate macroeconomic course. The control group consisted from 59 students from two different sections, who were taught in the traditional lecture-based format for one semester long, while the experimental group consisted from 57 students from two different sections who were taught through cooperative learning strategies for one semester. After controlling for classroom, demographic, and academic factors; the analysis of students' scores in the post exam showed that the students in the cooperative learning group performed higher than the students in the traditional lecture group. Furthermore, the students in the cooperative learning group expressed their positive attitude towards cooperative learning at the evaluation of the end of course. For instance some student reported that they have learned better through their discussion with other students, while other students reported that they have learned from fellow students as well as from the instructor in cooperative learning setting.

Other part of research studies focused on examining students' preferences, attitudes, and feelings towards academic group learning. For instance, In Malaysia, Maesin, Mansor, Shafie, & Nayan, (2009) conducted a study that aimed to investigate Malaysian students' preference towards collaborative learning activities in English classes as well as the effect of students' gender, location and program on their preference towards collaborative learning activities. The researchers used cross-sectional survey research design in which 162 students filled a questionnaire instrument that designed to measure student's preference towards collaborative learning activities in English classes. Students' responses to the questionnaire showed that the majority (92.6%) of the students had a high level of preference towards collaborative learning. An independent samples t-test was conducted in order to examine the effect of students' gender on students' preferences towards collaborative learning, the test results showed that was no significant difference in the students' preference towards collaborative learning based on their gender.

In United State, Gottschall, & Garcia-Bayonas, (2008) conducted a study that aimed to assess university students' attitudes towards group learning in different disciplines. The researchers used cross-sectional survey research design in which 291 students filled a questionnaire instrument that designed to measure student's attitudes towards group learning in three different disciplines: Business Administration, Education and Mathematics. The survey result showed that one third of the participants preferred to work alone rather in groups. In addition, the students in the Education department had more favorable attitude towards group learningthan the students in the Business and Mathematics departments. Regarding the students perceptions of the negative sides of group work, the highest rated negative aspect of group learning were related to "free riders" (Gottschall & Garcia-Bayonas, 2008, p. 11), scheduling issues, and students contributions issues.

In Australia, White, Lloyd, Kennedy, & Stewart, (2005) conducted a study that aimed to investigate university students feeling and attitudes toward group work. As part of the research, the researchers used repeated measures survey design in which 126 students, from Pharmacology and Information Technology disciplines, filled questionnaire instrument at the beginning and at the end of a semester. The analysis of students' responses to the questionnaire showed that the students had more positive feeling toward group learningrather individual work at the beginning and at the end of a semester.

Forrester and Tashchian (2010) conducted a study that aimed to investigate the effects of business students' personality on their attitudes toward academic group work. 255 students participated in the study. The study involved collecting self reported data, regarding some dimensions of the students' personality and their attitude toward their experience of group learning during the courses. Students' responses showed that they had positive attitude toward group work, and there were significant relationship between students' attitudes and some dimensions of students' personality. However, students' attitudes were not impacted by their age and gender.

The previous discussed research studies showed that the students in group learning performed better than the students who work individually, however the studies showed mixed results regarding students' feeling toward group works. In addition, the discussed research studies concentrated on specific majors in specific regions.

## 3. Purpose of the study

The purpose of this study was to examine the Jordanian university students' attitudes towards academic group learning in computer training courses. The research questions for this study were:

1. What are the Jordanian students' attitudes towards academic group learning in computer training courses?
2. What are the relationships between Jordanian students' attitudes towards academic group learning in computer training courses and their gender, age, and major?

## 4. Research Methods

The researchers followed a non-experimental, cross-sectional, descriptive quantitative research design in the current study. Cross-sectional survey method was used in order to describe the dependent variable (students' attitudes towards group work) and the independent variables (age, gender, and major) as well as to examining the relationship between the dependent variable and selected independent variables.

### *4. 1 Participants*

The participants in this study were 183 students who were enrolled in computer applications in education or programming basics classes at the college of education in a university in Jordan in the first and second semesters of 2013/ 2014 academic year. The computer applications in education class was offered for undergraduate students in three sections in the first semester and in two sections in the second semester, while programming basics class was offered for graduate students in one section in the first semester and in two sections in the second semester. The computer applications in education class was required course for the education students and it was elective course for computer science and computer engineering students. The programming basics classes were required courses educational diploma students. The sample of this study included 116 females and 67 males. The number of the undergraduate students was 102 students, while the number of graduate students was 81 students. The age of the undergraduate students were between 18 and 23 while the ages of graduate students were between 26 and 40 years old. The number of education students was 147 students while the number of computer science and computer engineering students was 36.

### *4.2 Instruments*

The used instrument in this study developed based on Feelings Towards Group learning(FTGW) questionnaire (Cantwell & Atwell, 2002) as well as students' attitudes toward group learningscale (Gardner & Korth, 1998). The FTGW questionnaire consists of three scales: Preference for Individual Learning, Preference for Group Learning, and Discomfort in Group Learning. Only the two scales (Preference for Group Learning, and Discomfort in Group Learning) were used in the instrument of the current study. Cantwell and Atwell (2002)

described these scales as follow:

- Preference for Group Learning: This scale consist from items intimate a strong sense of commitment to and fulfilment in group learning situations (p. 80).
- Discomfort in Group Learning: This scale consist from items intimate a sense of discomfort when learning in a group context (p. 80).

The total number of the items in the questionnaire was 18. Students' attitudes toward group learning scale consisted from seven items. Preference for group learning consisted from seven items, Discomfort in group learning scale four items, The questionnaire' items were presented using five-point likert scales (from "strongly disagree" to "strongly agree"). In addition, the survey had questions regarding students' age, gender, and major.

The used instrument was administrated in Arabic language. The validity of the Arabic version of the instrument was examined by a panel of reviewers. The reviewers' comments were used to adjust the instruments.

Consistency of the questionnaire instrument was measured using Cronbach's alpha for each the three scales after reversing the negatively stated items. The results showed acceptable value of Cronbach's alpha for each scale (Attitude was α=83, Preference was α=0.73, and Discomfort was α=0.66).

### *4.3 Procedure*

The instructor of the two classes (the first author) used the group learnings strategies in the classroom, where the students, in the classes, have been divided in groups. Each group consisted from 3 to 4 students. The students had the chance to form their groups. The students worked on in-class and out-class assignments in groups.

In the last week of the semester, the questionnaire was administrated. The researchers selected the last week in order to make sure that the students have enough time to experience academic group learning in computer training courses. In order to avoid the effect instructor-student relationship on the students' responses to the questionnaire, the second author was responsible for acquiring students' consent to participate in the study as well as administrating the paper format questionnaire. The participation was voluntary and the students were asked to fill the questionnaire anonymously. The number of the students who completed the questionnaire was183 with response rate of 100%. Data were collected over a two-semester span in eight sections.

### *4.4 Data Analysis*

Two types of statistical analysis were used to analyze the collected quantitative data. Descriptive statistics were used to answer the first research question, where the means and standard deviations for students' responses were computed. Inferential statistics were used to answer the second research question, where One-Way (ANOVA) were used to examine effects of the independent variables (age, gender, and major) on the dependent variable (Students' attitudes towards group learning). SPSS 15 statistical package was used to conduct the statistical analysis. For the purpose of the statistical analysis, the selected level of significance (alpha) was at 0.05 levels.

## 5. Results

### *5. 1 Students' Attitudes towards Group Learning*

Table 1 shows that the students' attitudes towards academic group learning in computer training courses were positive. Participants' attitudes toward group learning were positive with general mean of 3.89 and standard deviation of .63. The range of respondents' mean scores for the attitude scale was between 4.22 and 3.10. Participants responded most positively to item 1 (mean=4.22) that stated "Group learning helps me learn better", and least positively to item6 (mean=3.10) that negatively stated "I learn best when I am working alone". Participants' preferences for group learning were positive with general mean of 3.96 and standard deviation of .55. The range of respondents' mean scores was between 4.22 and 3.62. Participants responded most positively to item 7 (mean=4.22) that stated "It is best when each person helps each other within a group", and least positively to item3 (mean=3.62) that stated "It is important that other group members take responsibility for my learning as well". Participants responded negatively to the items that assessed their discomfort in group learning (M=2.55, SD=.78). The range of respondents' mean scores was between 2.72 and 2.19. Participants responded most positively to item 1 (mean=2.72) that stated "I sometimes feel nervous when I have to give my ideas or communicate within a group", and least positively to item 3 (mean=2.19) that stated "I am often afraid to ask for help within my group".

 

Table 1 Mean and Standard Deviation of Participants' Responses to the Attitude Scales.

| | **Attitudes toward Group learning** | ***N*** | ***Mean*** | ***SD*** |
|---|---|---|---|---|
| 1 | Group learning helps me learn better | *183* | 4.22 | .76 |
| 2 | I enjoy participating in group learning | *183* | 4.15 | .82 |
| 3 | Group learning is a productive use of class time | *183* | 4.02 | .86 |
| 4 | Group learning engages my interest | *183* | 4.00 | .78 |
| 5 | I find it easier to learn in group | *183* | 3.94 | .94 |
| 6 | *I learn best when I am working alone | *183* | 3.10 | 1.14 |
| 7 | When I learn something in a group setting, I tend to remember more than if I learn if from a lecture | *183* | 3.83 | .99 |
| | Average | *183* | 3.89 | .63 |
| | **Preference for group learning** | ***N*** | ***Mean*** | ***SD*** |
| 1 | I often have a strong feeling satisfaction when I become totally involved in a group achievement | *183* | 3.97 | .89 |
| 2 | I understand information better after explaining it to others in a group | *183* | 4.12 | .79 |
| 3 | It is important that other group members take responsibility for my learning as well | *183* | 3.62 | 1.11 |
| 4 | I usually make a strong personal contribution to group learning | *183* | 3.87 | .829 |
| 5 | I like group learning more when we can make up our own groups | *183* | 4.09 | .90 |
| 6 | I can usually understand other group members' ideas | *183* | 3.79 | .85 |
| 7 | It is best when each person helps each other within a group | *183* | 4.22 | .79 |
| | Average | *183* | 3.96 | .55 |
| | **Discomfort in group learning** | ***N*** | ***Mean*** | ***SD*** |
| 1 | I sometimes feel nervous when I have to give my ideas or communicate within a group | *183* | 2.72 | 1.11 |
| 2 | I often find it difficult to understand what the group task is | *183* | 2.71 | 1.05 |
| 3 | I am often afraid to ask for help within my group | *183* | 2.19 | 1.02 |
| 4 | I rarely feel relaxed within a group | *183* | 2.61 | 1.25 |
| | Average | *183* | 2.55 | .78 |

*REVERSED

***5.2 Students' Attitudes towards Group Learning and Gender***

Table 2 shows a one-way ANOVA comparing the means of attitudes, preferences, and discomfort in relation to group learning for respondents based on their gender. No significant difference was found for attitudes, preferences, and discomfort in relation to group learning based on gender.

Table 2 Differences in Attitudes, Preferences, and Discomfort towards Group Learning based on Gender

| | Mean | | F | Sig. |
|---|---|---|---|---|
| | Male | Female | | |
| Attitudes | 3.93 | 3.87 | .365 | .547 |
| Preference | 3.95 | 3.96 | .003 | .958 |
| Discomfort | 2.58 | 2.54 | .127 | .722 |

***5.3 Students' Attitudes towards Group Learning and Age***

Table 3 shows a one-way ANOVA comparing the means of attitudes, preferences, and discomfort in relation to group learning for respondents based on their age. No significant difference was found for attitudes, preferences, and discomfort in relation to group learning based on age.

Table 3 Differences in Attitudes, Preferences, and Discomfort towards Group Learning based on Age

| | Mean | | F | Sig. |
|---|---|---|---|---|
| | Between 18-23 | Between 26-40 | | |
| Attitudes | 3.92 | 3.86 | .378 | .540 |
| Preference | 3.97 | 3.94 | .161 | .689 |
| Discomfort | 2.54 | 2.59 | .182 | .670 |

***Students' Attitudes towards Group Learning and Major***

Table 4 shows a one-way ANOVA comparing the means of attitudes, preferences, and discomfort in relation to group learning for respondents based on their major. No significant difference was found for attitudes, and discomfort in relation to group learning based on major. However, A significant difference was found for students' preferences of group learning based on grade major $F(1,181) = 6.72$, $p = .01$. Students who majored in

 

computer science and computer engineering (M = 4.17 indicated they preferred group learning to a significant greater degree than those who majored in education (M = 3.90).

Table 4 Differences in Attitudes, Preferences, and Discomfort towards Group Learning based on Major

| | Mean | | F | Sig. |
|---|---|---|---|---|
| | Education | Computer | | |
| Attitudes | 3.89 | 3.92 | .099 | . 753 |
| Preference | 3.90 | 4.17 | 6.72 | . 010 |
| Discomfort | 2.61 | 2.34 | 3.55 | . 061 |

## 6. Discussion

The result of the current study showed that that the participants had a positive attitude toward academic group learning and they preferred group learning in computer training courses. In addition, the participants responded negatively to the items that assess their discomfort in group learning. The results of the current study were similar to the results of some research studies (White, Lloyd, Kennedy, & Stewart, 2005; Gottschall, & Garcia-Bayonas, 2008; Maesin, Mansor, Shafie, & Nayan, 2009; Forrester & Tashchian 2010) that investigate students' attitude and feeling toward academic group learning in different cultures, settings, and across different disciplines. Jordanian students are not used to the educational environment that facilitates students centered learning, where traditional lecture-based instruction is the dominant mode of instruction in the Jordanian higher education. Therefore, in students- centered learning environment, the students seek for other students' help to cope with the new mode of instruction that concentrate on the students rather than the lecturer.

The study found that general group learning attitudes, preferences and comfort were not significantly different accordance with students' gender and age. The findings were similar to the results of Forrester and Tashchian (2010) and Maesin, Mansor, Shafie, & Nayan, (2009) studies. Group learning is favorable mode of instruction for Jordanian females and males students with different ages.

In addition, general group learning attitudes and comfort were not significantly different accordance with students' major. However, group learning preferences were significantly different accordance with students' major. Compared to the Education major students, computer science and computer engineering students are more likely to work on groups, in other courses, due to the nature of their assignments that require team work. Therefore, their experience with group learning made develop more positive attitudes toward group learning.

## 7. Conclusion

The literature have examined either undergraduate or graduate students' attitude toward group learning , however the current study investigated both groups attitudes toward group learning. Therefore, the results can be generalized on a wider range of population. Generally, the findings related to Jordanian students' attitude toward group learning were consistent with previously discussed studies that were conducted in different parts of the world. Understanding students' reaction to group learning allows faculty members to employ students' preferred teaching methods in their educational practice.

More research studies are needed to investigate, qualitatively and in-depth students' attitudes towards group leaning in computer training courses and in other courses. In addition, students from other majors needed to be included in such studies.

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