

## Students' Perceptions towards Co-teaching as an Innovative Approach in Teaching Excellence

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**Abstract:** *This study argues that co-teaching between two different disciplines, i.e. English and Engineering can contribute to the improvement in the quality of teaching English in general and in enhancing communication skills and class interaction in specific. To investigate this argument, one Industrial Engineering teacher and two English language teachers launched an innovative teaching experience through applying co-teaching in their teaching of English 10322 course for students of engineering and science. The 'One Teaching-One Assisting' co-teaching approach was adopted in this study. Co-teaching was employed to a class of 42 students to report the students' attitudes towards three main domains. More specifically, the researchers investigated the students' attitudes towards the co-teaching environment, the co-teacher himself and the benefits of co-teaching in improving students' oral communication, presentation and writing skills. Students' attitudes were collected via a self-report questionnaire as well as through observations and interviews. The statistical analysis revealed general positive attitudes in the three domains, however, significant differences were only observed among both genders in their attitudes towards the co-teaching environment, in particular, in improvements of their writing skills in favor of females.*

### 1. Introduction

Traditionally, university subjects were taught independently of each other. However, recently it is possible for both language and content teachers to co-teach if there is a need for so (Jacobs, 2005). Jacobs (2005, p. 109) affirmed the need for co-teaching for all levels of students. Risko and Bromley (2001, p. 12) believe that a collaboration as such "reduces role differentiation among teachers and specialists, resulting in shared expertise for problem solving that yields multiple solutions to dilemmas about literacy and learning". Other researchers such as D'Amour and Oandasan (2005) contend that co-teaching proves that the concept of *interprofessionality* is of great importance to both students and teachers.

The present study builds on the assumption that co-teaching has been considered as one of the most effective models in teaching when it comes to students' improved performance (Castro 2007) and satisfaction (Gerber and Popp 2000). This study describes an innovative co-teaching study at An-Najah National University between two different disciplines resembled, respectively, by English language teachers (LTs) and Discipline teachers (DT), primarily engineering teachers.

In accordance to literature (e.g. Hirsch et al. 2001), the study aims at improving the quality of teaching, in general, and increasing class interaction, in particular. To this end, this study focuses on English 10322, which is a university compulsory course offered for engineering and science students. The general objectives of this course include improving students' English language skills in general and reading skills in specific. The course focuses also on writing as a productive skill in the form of writing paragraphs and short reports. Finally, one of the main goals of this course is improving students' oral communication and presentation skills through the use of critical thinking and problem solving. Accordingly, the researchers argued that a collaborative approach could be established due to the relevance of the course material across the two disciplines (English and Engineering) through the use of relevant case studies in Industrial Engineering (IE). Due to the huge overlap between IE and other engineering branches, the IE-related case studies are expected to enhance students' interaction and improve their oral communication skills in English.

Co-teaching is still relatively uncommon in teaching English language and is rather rare in English as a Foreign Language (EFL) context especially at the university level. The researchers here believe that collaboration between English and engineering teachers will be beneficial for students as it includes increased relevance to the course material and as a result may affect student motivation and interest. To this end, a whole class of 42 students taking English 10322 was taught by a co-teacher who was the DT and an LT. Among the five common models in co-teaching, the "One Teaching-One Assisting" co-teaching model was presented in a student-centered approach (Keefe et al. 2004) where both teachers consistently planned and executed the process (Sileo 2003).

The rest of the paper is organized as follows: Section 2 presents some pertinent literature on co-teaching, its models and its expected outcomes. Section 3 includes the methodological framework adopted in planning and executing the co-teaching experience of this work. In Section 4, the researchers present the statistical analysis and results of the study accompanied with discussion and reasoning for those results as well as recording the personal opinions of the students and teachers on the co-teaching study. Section 5 concludes the work and gives some recommendations which would improve the quality of the study.

## **2. Literature Review**

The roots of co-teaching, or the use of two or more teachers instructing in a classroom, goes back to at least the sixties of the last century. Co-teaching, as a special education service delivery alternative, emerged in team teaching employment among general education teachers. Friend and Cook (2010, p.1) defined co-teaching as a "two or more professionals jointly delivering substantive instruction to a diverse or blended group of students in a single physical space". Co-teaching has been used in so many foreign language programs (Greany,2004); it is also adopted in teaching mathematics and science

subjects (Jang, 2006; Roth, Tobin, Carambo, & Dalland, 2004), interdisciplinary courses (J.R. Davis, 1995; Ivan A. Shibley, 2006; Letterman & Dugan, 2004), and bilingual teaching (Bahamonde & Friend, 1999).

It is also worth mentioning that Tertiary education employed co-teaching model (J.R. Davis, 1995; Greany, 2004; Ivan A. Shibley, 2006; Wilson & Martin, 1998), in western and Asian countries as well (Carless, 2006; Davison, 2006; Han, 2005; Jang, 2006; Macedo, 2002; Tajino, 2002; Tajino and Tajino, 2000).

Fenty and Mc-Duffie-Landrum (2011) pointed out that five models of co-teaching are common in practice. More specifically, these models are (1) one teach/ one assist; (2) station teaching; (3) parallel teaching; (4) alternative teaching; and (5) team teaching. In this research, we adopt the first model; the one teach/one assist; in which teaching is lead by the LT; while, the DT supports the learning process of students. Usually, both teachers collaborate for the entire class instruction, where the LT is supposed to provide the whole class with instructions, whereas the DT walks around in the class and monitors the learning process of students. This model is reported to the most-frequently used approach of co-teaching. Moreover, it is viewed as an effective way of co-teaching as researchers recommended the adaption of this teaching system, (Fenty and Mc-Duffie-Landrum 2011). For more details about the remaining models of co-teaching (models (2)-(5)), the reader is encouraged to refer to Fenty and Mc-Duffie-Landrum (2011).

The literature is very rich with many previous studies conducted on co-teaching and its expected benefits. The benefits are assumed to be mutual among both students and teachers and co-teachers ( Dieker 2001; King-Sears 1995; Miller and Savage 1995). Rehling and Hollaar ( (1997) claimed that students came to know the great advantage of co-teaching as it improved their communication skills. Fenty and Mc-Duffie-Landrum (2011) mentioned that teachers and students have reported a significant increase in their professional development, a great improvement among students in their social skills and academic performance and achievements. In the same vein, Hijazi and Al-Natour (2012) found that students preferred co-taught classes and their performance improved and there was a significant difference as for students' grades in terms of gender supporting the males.

In general, the teaching practices could be improved through co-teaching. Roth et al. (2002) affirmed that co-teaching allows teachers to benefit from each other and thus they could come up with a well-organized lesson. It is also claimed that co-teaching improves students academic achievement, provides better teaching conditions, facilitates the use of efficient teaching strategies, develops a sense of community and helps professional growth (Thousand et al. 2007). The researchers believe that when two teachers are present in the classroom, the teacher's time offered for the students is greater. Besides, the additional resource can be beneficial for small group activities and individualized instruction. Castro (2007) found that students' attendance and performance in the co-taught classes were better than in the traditional

classrooms. Generally speaking, a previous study by Harris et al. (1987) revealed that students preferred co-taught classes.

Villa et al. (2008) enumerated many hypothesized benefits of co-teaching. Namely, they mentioned that co-teaching enhanced students' learning via reducing the student-teacher ratio and increasing responsiveness to students, improving quality of instruction as a result of combining the skills of both LT and DT and enhancing the concept and practice of teamwork and collaboration. In the same vein, Liu (2008) believes that co-teaching is practical in China as it solves the problem of large classes especially when there are many native speakers of English teaching there. The co-teachers of various cultural as well as linguistic backgrounds can work together to improve the quality of their teaching.

Nevertheless, researchers reported that teachers encounter many obstacles that might restrict their ability to co-teach effectively. Such obstacles include insufficient training, limited resources, time scheduling difficulties, inappropriate planning, distinct teaching philosophies and/or characters across teachers, lack of administrative support and undefined roles of co-teachers, (Fenty and Mc-Duffie-Landrum, 2011). Furthermore, the qualifications and teaching competence of the co-teacher are presumed to be one of the critical factors contributing to the success of co-teaching. Similarly, Davison (2006) believes that co-teaching doesn't really solve all classroom problems. Still it is feasible if there is a need for it. Moreover, Aliakbar and Nejad (2006) implemented co-teaching to improve EFL learners' grammatical proficiency and found that it is doubtful that co-teaching could do *any good*. They recommended that co-teaching is not an easy mission.

In the current paper, we agree with Graham & Beardsley (1986) who reported of their collaborative ESL class in pharmaceutical studies: " skill development and content-area information enhance the learning of specialized communication by enriching context , stimulating interest and increasing the course's perceived relevance "(1986:239).

The students' fascination with this new approach might have affected their attitudes. What students say about their improvement, however, should be taken into consideration. Research in self efficacy in EFL (the belief in one's own ability to complete tasks in language learning settings) was found to be a significant aspect in students' success. Chularut and DeBacker (2004) and Bandura (1996) suggested that this could be true in any academic setting .

Thus, the students' with high sense of self efficacy were better language learners. However, there is still a need to carry out more research on co-teaching as a new approach in our English classes. Comparative studies between co-teaching and other communicative approaches should be also conducted. We believe that our research will arouse enthusiasm and spark a huge argument among researchers in our areas.

### **3. Methodology**

In order to plan for implementing this study, the DT and the LTs held several meetings before launching co-teaching. They agreed on many items including material, co-teaching approach, procedure and assessment criteria. Regarding the material, seven case studies were carefully chosen (see the Appendix for the list of case studies) in accordance with the course material. Moreover, in-class activities and tasks based on the case studies were created with special focus on the skills of critical thinking, problem solving and group discussion. Then, the students were divided into groups and group leaders were selected. In a further step the members were assigned tasks to execute. A self-report questionnaire (see the Appendix) was designed in order to report the students' attitudes towards the co-teaching environment. The participants were asked to report their attitudes towards three domains: (a) the co-teaching environment (10 questions), (b) the co-teacher himself (11 questions) and (c) the benefits of co-teaching in improving group interaction and oral skills among students (11 questions). A five-level Likert scale (Wuensch 2005) with (5: strongly agree, 4: agree, 3: neutral, 2: disagree, 1: strongly disagree) was adopted as a measurement scale for reporting attitudes of the participants in the study.

Students were divided into groups of six and each group worked as a team to complete a given task related to their assigned case study. Topics under discussion and the way they have been used in co-teaching are related to Research and Development (R&D) indicators in IE, leadership skills, and how to implement a successful project. Language areas are related to the use of connectors and relative clauses. The case studies reflect the way engineering students have to think critically, communicate actively, share ideas and reach decisions on how to solve problems. Implementing co-teaching is a great chance for students to utilize full advantage of having both English and content teachers cooperating and coming up with relevant material and comprehensive feedback. Each group was assigned a case study and consisted of 7 members. All worked together to discuss and evaluate the case study by answering questions prepared by the two teachers. The DT assigned leaders to coordinate group work. Some groups agreed to create an account for a group of their own on Facebook so as to share and exchange ideas in English about the given case studies. The DT started the first meeting with an ice-breaker activity by asking questions relating to the topics of the case studies in order to generate ideas on the topics and to motivate students to get involved in-class discussion. The DT invited questions that stimulated critical thinking and problem solving skills through classroom interaction and discussion. The LT aided the DT by summarizing items on the board, giving more clarifying examples, and taking part in asking questions. The students worked on their case studies and answered the questions raised by the DT. The DT and the LT worked with each group separately to discuss and give feedback on the answers to the questions. Then, the students were asked to write one paragraph stating the problem of their case and the application toward solving it. The DT and the LT assessed and provided

feedback to students before the second visit in terms of the content and language.

By the end of semester, each group submitted a written mini research report describing the case study, application, stating the problem and its solution. Then, they also submitted two reports evaluating and describing the procedures adopted while accomplishing the activities. The evaluation report should be based on strengths, weaknesses, challenges, opportunities, threats and action plan, while the procedures adopted documented all activities they did whether in-class or off campus. By doing so, project management, group work, leadership, testing, and assessment skills will be transferred indirectly in a consistent manner due to being involved immensely in a real activity. To assess students' oral and written work, Classroom Assessment Technique (CAT) was employed in getting feedback from students, and rubrics (see the Appendix) were created for assessing the oral presentations and written work. In order to assess the work of the students, the researchers examined more than one criterion for feedback. First, the students' oral work (presentations) and written work (reports) were studied. Then, the students' opinions were elicited through conducting interviews with them. Moreover, the students' overall averages were also investigated as an indicator of their performance.

#### **4. Statistical analysis and discussion**

##### **4.1. Study sample**

A self-report questionnaire was distributed to a whole class of 42 students. Replies were received from 41 students (97.6%). The researchers retained the responses of the 41 participants with valid values on the demographic characteristics; gender and specialization. The sample was composed mainly of male students with (61%). The majority of the sample were from engineering students (63.4%), followed by science students (34.1%) and the rest (2.5%) were from the faculty of Information Technology (IT).

##### **4.2. Statistical analysis**

The Statistical Package of Social Sciences (IBM Statistics SPSS 20) was used to conduct the statistical analysis on the data gathered from the study sample (n=41 students). The reliability statistics of the study sample yields a Cronbach's alpha of 0.701 which is a good indicator about the internal consistency of the data. Further descriptive statistics of the attitudes addressed in parts (a), (b) and (c) were obtained.

Tables 1, 2 and 3, respectively summarize the descriptive statistics of the three domains (a), (b) and (c) of the study. In each table, the mean (average), standard deviation and percentage of the students' attitudes for each question are presented. In relevance to the above table, it is evident that the average percentage for attitudes towards co-teaching was positive. This finding of students' attitudes confirms other researchers' findings (e.g. Fenty and Mc-Duffie-Landrum 2011).

The highest means in this domain were in favor of the benefits of co-teaching particularly in enhancing oral communication skills (item 1), improving language skills (item 2) which coincides with Rehling and Hollaar (1997) and improving teaching in general (item 3) which agrees with Gerber and Popp (2000) and Dieker and Murawski (2003). Collectively, this finding proves the students' satisfaction with co-teaching as a method that might play an important role in solving oral communication problems as it arouses students' interest in learning. However, items (5) and (10) reflect the idea that the participants found that co-teaching did not waste their time and as a result they wanted to take part in this study again.

Table 1: Descriptive statistics of the attitudes towards co-teaching environment

Attitude	%	SD	Mean	Item
Positive	87.8	0.586	4.39	1.Oral communication and interaction
Positive	80.4	0.821	4.02	2. General language skills
Positive	84.8	0.538	4.24	3. In favor of co-teaching
Positive	70.8	1.120	3.54	4.Writing skills
Negative	45.4	1.080	2.27	5.Waste of time
Positive	74.6	0.949	3.73	6.Interest in English language
Positive	70.2	1.120	3.51	7.Easier learning with co- teaching
Positive	74.6	1.073	3.73	8.Enjoyed talking about co-teaching
Positive	75.2	0.916	3.76	9.Better English learning
Negative	49.8	1.210	2.49	10.Not taking part in co-teaching again
<b>Positive</b>	<b>71.4</b>	<b>0.941</b>	<b>3.57</b>	<b>Average</b>

With regard to Table 2, it is indicated that the average attitude towards the co-teacher was positive. The Table shows high means for a number of items, namely numbers (5,9,6,7,3,1). This is due to the fact that the co-teacher's character and behavior indicated good team work, time management and coordination with the course teacher (Keefe et al. 2004).

Moreover, the obvious reason behind this was that the co-teacher introduced beneficial material that is relevant to the course. These findings illustrate the importance of coordination between the two teachers and that the co-teacher could be a helpful source for enhancing confidence than a distracting one (Roth et al. 2002; Tobin et al. 2003). It is worth mentioning here that

coordination between both teachers is highly important to create a welcoming and relaxing atmosphere suitable for interaction among students.

The students' positive responses to items (1,4, 9) clarifies how they perceived their competency level in line with the self-efficacy theory. This theory was constructed by Bandura who states that the learners' beliefs in their ability to succeed or fail, affects their behavior (1984). When learners answer the self efficacy questionnaire, their cognitive system motivates them to act accordingly.

Table 2: Descriptive statistics of the attitudes towards co-teacher

Attitude	%	SD	Mean	Item
	80	1.049	4.00	1.Class group discussions
	44.4	1.084	2.22	2.Distracting co-teacher
	82	1.044	4.10	3.Beneficial and relevant material
	43	1.040	2.15	4.Nervous with co-teacher
	87.4	0.662	4.37	5.Coordination between teachers
	84	0.813	4.20	6.Effective time management
	83	0.853	4.15	7.Confidence and enthusiasm
	73.2	0.938	3.66	8.Relaxed with co-teaching
	85.4	0.742	4.27	9.Welcoming comments and suggestions
	78.6	0.959	3.93	10.Coteacher helps in learning better
	79.6	0.962	3.98	11.Equal partners in learning process
	<b>74.6</b>	<b>0.922</b>	<b>3.73</b>	<b>Average</b>

Table 3 indicates that the average percentage for all the items on this domain was positive. The participants reflected that the interaction between them and the two teachers was helpful in improving their communication skills (Rehling and Hollaar, 1997). They also reported that co-teaching enhances the chance for having different opinions and solutions to problems. Eventually, co-teaching has helped in improving discussion skills within the groups and at the same time enhanced oral skills, as depicted in Table 3.

Table 3: Descriptive statistics of the benefits towards co-teaching

<b>Attitude</b>	<b>%</b>	<b>SD</b>	<b>Mean</b>	<b>Item</b>
Positive	77	0.937	3.85	Oral communication
Positive	71.8	1.118	3.59	Making conflict beneficial
Positive	76.4	0.946	3.82	Important contribution
Positive	79	0.669	3.95	Chance for solving problems and discussions
Positive	77.6	1.077	3.88	Chance to achieve goals
Positive	83	0.882	4.15	Interaction and communication skills
Positive	74.6	1.049	3.73	Presentation skills
Positive	75.6	1.084	3.78	Discussion skills within group
Negative	44.4	1.215	2.22	No improvement in discussions in group
Positive	82	0.700	4.10	Different opinions and solutions to problems
Negative	47.4	1.067	2.37	No improvement in oral skills
<b>Positive</b>	<b>71.6</b>	<b>0.977</b>	<b>3.58</b>	<b>Average</b>

Table 4 reports that the average of the total degree for all the domains was positive with an average mean of 3.63, and 72.6 percentage. The average percentage reflecting positive attitudes towards co-teaching is due to the fact that the co-teaching environment offers a context where the two teachers benefit from each other and change their teaching practices accordingly (Roth et al. 2002). Therefore, they could come up with well-organized lessons in an environment that the students preferred, (Roth and Tobin 2002).

Table 4: Descriptive statistics for the entire domains of co-teaching

<b>Attitude</b>	<b>%</b>	<b>SD</b>	<b>Mean</b>	<b>Total degree for all domains</b>
Positive	72.6	0.947	3.63	Average

Table 5 indicates that the total mean for all the domains (3.73) was in favor of females. Also, it reflected significance of 0.025 for the first domain

regarding attitudes towards the teaching environment. The co-teaching environment offered a better teaching atmosphere due to coordination between the co-teacher and course teacher (Roth et al. 2002; Tobin, et al. 2003). This resulted in students' satisfaction with reference to the environment with a significant difference in favor of the females. To see where exactly the difference occurred, Table 6 illustrates the T-test results for the differences in domain A with respect to students' gender.

Table 5: T-test results for the differences in the three domains with respect to student's gender (25 males and 16 females)

Sig.	T	Df <sup>1</sup>	SD		Mean		Domain
			Fem.	Male	Fem.	Male	
0.025*	-2.36	39	0.285	0.287	3.70	3.48	attitudes towards co-teaching environment
0.377	-0.89	39	0.269	0.356	3.78	3.69	attitudes towards co-teacher
0.190	-1.34	39	0.279	0.509	3.69	3.51	attitudes towards the benefits of co-teaching
0.084	-1.78	39	0.221	0.326	3.73	3.56	<b>Total</b>

\*Significant at ( $\alpha = 0.05$ )

<sup>1</sup> Df: degrees of freedom

The results in Table 6 show that in 6 items out of 10, the means for females were higher than males. Again, this proves the notion that the females enjoyed co-teaching and believed it was helpful in improving their language skills in general. The table also indicates a significance of 0.006 on item 4 regarding improving writing skills in favor of the females. Other researchers (Hijazi and Al-Natour 2012) found that co-teaching improved the performance of the students, but the males' performance was better than females. When the students were interviewed, they clarified that co-teaching improved their language and writing skills, thus this proves that the co-teaching environment (Rehling and Hollaar 1997) improves students' writing and communication skills for both males and females.

Table 6: T-test results for the differences in domain A with respect to student's gender

Sig.	T	Df	SD		Mean		Sub-domain
			Fem.	Male	Fem.	Male	
0.13	-1.53	39	0.512	0.614	4.56	4.28	Oral communication and interaction
0.07	-1.85	39	0.479	0.943	4.31	3.84	General language skills
0.6	0.53	39	0.544	0.542	4.19	4.28	In favor of coteaching
0.01*	-2.93	39	0.806	1.143	4.13	3.16	Writing skills
0.71	0.38	39	0.911	1.180	2.19	2.32	Waste of time
0.82	0.24	39	1.078	0.879	3.69	3.76	Interest in English language
0.1	-1.69	39	0.957	1.173	3.88	3.28	Easier learning with coteaching
0.20	-1.29	39	0.894	1.158	4.00	3.56	Enjoyed talking about coteaching
0.32	-1.02	39	0.998	0.860	3.94	3.64	Better English learning
0.13	1.57	39	0.957	1.308	2.13	2.72	Not taking part in coteaching again

\*Significant at ( $\alpha = 0.05$ )

To test whether the females' grades were better than the males', the researchers tested the differences in their writing skills with respect to their graded written assignments, as depicted in Table 7.

Table 7: T-test results for the differences in report writing grades with respect to student's gender

Sig.	T	Df	SD		Mean		Domain
			Fem.	Male	Fem.	Male	
0.38	-0.89	39	0.516	1.593	8.47	8.09	<b>Report writing grades</b>

\*Significant at ( $\alpha = 0.05$ )

As shown in the above table, the average report-writing grade for females was found to be higher than that of males; however, no significant difference was noticed. Finally, what made the experience exciting is the fact that both teachers collaborated in the lecturing interchangeably. This made the interaction more exciting since interaction among both teachers made teaching more interesting, yet challenging at some points. As far as students' oral communication skills are concerned, it is worth mentioning that the differences in their oral presentation skills with respect to gender should be tested as shown in Table 8.

Table 8: T-test results for the differences in oral presentation grades with respect to students' gender

Sig.	T	Df	SD		Mean		Domain
			Fem.	Male	Fem.	Male	
0.280	-1.1	39	0.712	2.25	7.89	7.21	<b>Report writing grades</b>

\*Significant at ( $\alpha = 0.05$ )

Table 8 shows that the average grade for females was higher than the males, but no significant differences were found with respect to gender. The researchers thought that it would be worth stating the opinions of students as well as the opinions of both teachers after going through the co-teaching experience.

### 4.3. The students' Opinion

A Language teacher interviewed the students to answer questions about the implementation of the process of co-teaching in terms of: strong points, weak points, suggestions and assessment. In reference to the strong points, twenty

three students out of 41 students agreed that co-teaching improved interaction between the students and teachers. Twenty five students mentioned that the teaching material used in co-teaching was relevant to their textbook topics. They also added that the material provided them with real examples that enriched their knowledge. Six students also confirmed that co-teaching enriched their vocabulary and made them think critically by learning new ideas. Seven students added that co-teaching improved their language skills. Four students clarified that co-teaching improved their research and writing abilities. In general, five students stated that co-teaching was interesting and good.

As for the weak points, seven students said that the case studies chosen by the co-teacher were difficult. Two students said that they wanted more interaction with the co-teacher. Six students added that interaction between students from different groups was limited. Two students indicated that the varying levels of students led to poor interaction. In terms of the suggestions, four students recommended that the DL and TL should give more time to co-teaching in class. Two students said that co-teaching is a good idea for major courses when the textbook material is related to the students' fields of study. Four students suggested avoiding clustering students. Moreover, two students suggested that co-teaching should be applied to all sections taking English 10322 to allow for more competition.

Regarding assessment, the students were asked to state whether or not using rubrics and evaluation sheets for their oral and written assignments was fair enough. Most of them welcomed the use of rubrics. They also mentioned that using the classroom assessment technique (CAT) was effective as it helped both students and teachers assess their in-class interaction. However, they stated that students' evaluation should be done during all visits. It is found that most of the students welcomed the idea of co-teaching as they admitted that the DL and LT helped them learn more about critical thinking, decision making and problem solving when they were asked to evaluate the case studies.

#### **4.4. Co-teacher's Opinion**

It was a great opportunity for the co-teacher to be involved in the co-teaching sessions, however, the experience was challenging for the co-teacher. Specifically, sometimes it was not easy to coordinate the interaction among the three parties in the class (DT, co-teacher, and students) and handling various questions addressed by students coming from different majors. Overall, the experience was a successful one and the co-teacher is willing to voluntarily repeat it again in the future in other classes and courses.

#### **4.5. Language Teacher's Opinion**

According to the Language teacher, it was a privilege to have the co-teacher in class and it is considered a great experience since the language teacher found that her students' interaction increased and their problem-solving skills improved. It should also be indicated that the students' communication skills were enhanced. It was also noticed that students started using analogy as a way

of learning. It should also be emphasized that co-teaching reveals how humble and highly informative co-teachers are. The co-teacher respected the students and this improved their participation. Moreover, the LT believed that the experience would be better implemented if the language teacher also collaborates with the co-teacher in teaching language-related skills in engineering courses to experience co-teaching from a different perspective. In terms of assessment, the LT suggested that students performance should be evaluated every lecture depending on the given activities. However, it was noticeable that both teachers agreed that group work was challenging since many group leaders indicated that some of their group members were not cooperative and this made them make some changes related to distribution of tasks. Yet, the great achievement both teachers appreciated was the fact that many group leaders were honest in terms of evaluating their group members' work. Doing self-assessment (SWOT analysis) made them feel the seriousness of group work and helped them solve leadership problems.

### **5. Conclusions and Recommendations**

The study found a supportive evidence for the effectiveness of the co-teaching approach in improving the quality of teaching in general and in increasing class interaction in specific. The main finding of the study relates to the attitudes of the sample towards the co-teaching environment, co-teacher and the expected benefits of co-teaching. The statistical results indicated that the co-teaching approach improved the oral communication, presentation, writing, interaction, teamwork discussions, leadership and problem-solving skills of the students. Nevertheless, the researchers recommend people in academia and the decision-makers (administrations) in other universities in Palestine to adopt such an approach in their teaching.

### **6. Limitations of the Study**

It should be pointed out that this study has a limitation related to the sample size. Specifically, the study sample was restricted to one class since it was a hard task for the DT to co-teach with the LTs in more than one class. The researchers do believe that expanding the sample size to include more students would enrich the data, and, hence the statistical inferences on the results could be generalized to stronger conclusions. This obstacle could be overcome through recruiting more DTs to voluntary co-teach in other classes or to allow the present co-teacher to reschedule his classes to have more time for co-teaching in more than one class. Unfortunately, the DT could not co-teach in classes other than the one of this study.

## Appendices

### A. Questionnaire

Dear Students,

The following questionnaire aims at investigating your attitude towards the engineering case-study co-teaching technique we have employed in teaching the English Language course II (10322) in Spring 2012. For each of the following tabulated questions, please indicate the answer you think most appropriate by writing an (X) in the given spaces. Please try to be objective as much as you can in answering, knowing that your answers will be of the greatest value in our study and its analysis and it will be considered and used only for the purposes of scientific research

<b>Gender:</b>		Male	Female		
<b>Specialization:</b>		Engineering	Science	IT	
<b>Strongly Disagree</b>	<b>Disagree</b>	<b>I don't know</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Question</b>
<b>I. Attitudes towards co-teaching environment</b>					
					Co-teaching enhanced my oral communication and interaction in the classroom
					Co-teaching helped me improve my language skills in general
					I am in favor of co-teaching as an approach that improves teaching
					Co-teaching improved my writing skills
					Co-teaching was a waste of time
					Co-teaching increased my interest in

					English language
					I found learning English easier with co-teaching
					I enjoyed talking about co-teaching with others
					Co-teaching helped me learn English better
					I do not want to take part in co-teaching again

<b>Strongly Disagree</b>	<b>Disagree</b>	<b>I don't know</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Question</b>
<b>II. Attitudes towards Co-teachers</b>					
					Co-teacher encouraged me to participate in class group discussions
					The co-teacher in class was distracting for me
					The co-teacher introduced material beneficial and relevant to the course material
					I was nervous with a co-teacher working with my course teacher
					The co-teacher's behavior reflected

					coordination with my course teacher
					The co-teacher managed time effectively
					The co-teacher showed confidence and enthusiasm
					I was relaxed with the idea of having a co-teacher working side by side with my teacher
					I welcomed the co-teacher's comments and suggestions
					The co-teacher helped me learn better
					I accept both teachers as equal partners in the learning process

Strongly Disagree	Disagree	I don't know	Agree	Strongly Agree	Question
<b>III. Co- teaching and improving group interaction and oral skills</b>					
					Co-teaching helped me learn a lot from my group members and enhanced my oral communication with them
					In general, co-

					teaching made conflict among group members beneficial
					Co-teaching made contribution of every member important
					Co-teaching gave more chance for discussions and solving problems
					Co-teaching gave group members the chance to do their best to achieve the goal
					The interaction between the co-teacher, English teacher and students was helpful for improving my communication skills
					Co-teaching improved my presentation skills
					Co-teaching helped me improve my discussion skills within a group
					Co-teaching does not improve discussions among group

					members
					Co-teaching enhanced the chances for having different opinions and solutions to problems
					Co-teaching did not improve my oral skills.
Any further recommendations or comments:					

***Thanks for your cooperation!!***

### **B. List of Case Studies**

1. A Case Study of Serial-Flow Car Disassembly: Ergonomics, Productivity and Potential System Performance.
2. Lean Manufacturing Comes to China: A Case Study of Its Impact on Workplace Health and Safety.
3. Using RFID to Enhance Supply Chain Visibility - Airbus Case Study.
4. Total Quality Management (a case study of IBM).
5. A Case Study of Wal-Mart's "Green" Supply Chain Management.
6. Wal-Mart Supply Chain Management Practices.

### **C. Rubrics**

#### **Oral presentation rubric (English for science and engineering)**

<b>Comments</b>	<b>Grade</b>	<b>Criteria and Grading</b>
		Introduction ( 1.5 pt.)
		Grammar ( 1.5 pt. )
		Relevance of content to topic in focus (1.5 pt)
		Vocabulary (1 pt.)
		Time management (1 pt.)
		Interactive skills (1.5 pt)
		Group communication skills (2 pt.)
		<b>Total (10 points)</b>

**Mini Research Report Rubric**

<b>Comments</b>	<b>Grade</b>	<b>Criteria &amp; Grade (10 %)</b>
Identify the problem. Define the problem correctly. Use critical thinking		Problem statement ( 2 pts.)
Relate of the problem to real life, workplace. Analyze the problem in relation to the field. Evaluate the importance of the field of the problem.		Application field ( 2 pts.)
Analyze related literature. Relate the problem to other problems in the literature.		Summarized literature ( 2 pts.)
Get engaged in group discussions and exchange idea to reach solutions. Employ critical thinking strategies to reach solutions. Get engaged in group discussions and exchange ideas to reach solutions. Communicate effectively with group members.		Main findings (2 pts.)
Give their own opinions. Express themselves verbally. Evaluate the problems. Use critical thinking, problem solving, and decision making. Use formative evaluation to overcome problems and current challenges.		Your opinion (2 pts.)
		Total points (10 ts.)

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