

# A Study into the Method of Selecting a Graduation Computer Science Project

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*Abstract:* - This paper is a study into the selection of the senior project topics by the computer science students in the University of Bahrain. It presents the results of researching the issues pertaining to the problems that the computer science students are facing during the process of the project selection. We have surveyed the status of the ITCS499 graduation project course selection amongst the computer science students in the University of Bahrain through a carefully prepared questionnaire and studied the impact of industry, the curriculum being taught in the Computer Science Department and other support provided by the department to help students in choosing their project..

*Key Words:* - Computer Science Projects, Graduation Projects Evaluation; Senior Project.

## 1 Introduction

Before graduation; students have to combine their knowledge and skills in a project to show what they have learned. The senior project provides them with the opportunity to demonstrate the integrated application of their industrial skills and knowledge obtained in the collage curriculum, in identifying and solving a real life problem or in planning and conducting research in the field of their major through choosing a project and trying to show their problem-solving, decision-making and independent learning skills.

The project should be both creative and scholarly; it should demonstrate the students' ability to formulate an original interdisciplinary project and to complete it in a way that shows a level of skills and

understanding appropriate for a senior who has been engaged in a sustained program of study on a single theme. The particular form the project takes will vary depending on the substance of the student's major program and the student's specific learning goals. <sup>[4]</sup>

In the Computer Science Department of the University of Bahrain, the only way for students to graduate from the B.Sc. program is to take the ITCS499 course. It contributes to a strong senior course of challenging research and practical experiences that prepare them for the next step in the workplace. At the end of this course; students have to complete developing a whole project by working as individuals or in a team to do a research or a practical project.

The first major challenge to the students in doing the project is selecting the topic or the type of that project. This will typically take place during the first days or even months of working in the senior project.

In this research paper, we will try to discuss and evaluate the ITCS499 project topic selection in the Computer Science Department at the University of Bahrain. We will try to find the ideal methods to help the students to select their project topic. We hope this will be able to give the students the guidelines for selecting their projects.

We have conducted a number of studies on this issue relating to the senior project selection. After thoroughly searching the literature, we have found a lot of papers that are attempts to present a way of doing senior projects in a specified high school, college or university and discuss the project topic selection. We have found no published work about the opinions of the Computer Science students in the University of Bahrain and no published work on the evaluation of the ITCS499 course project topic selection.

## **2 Methodology**

Our research methodology for evaluating the ITCS499 course projects from the topic selection point of view was primarily based on a carefully prepared questionnaire.

### **Participants**

A sample of fifty participant volunteers was selected from a wide variety of the Computer Science Department students. We had to make sure that the sample represented the views of the students in that Department as much as possible so that our results reflect the views of the average computer science students. The academic year groups ranged from the second to more than fourth year. Students below the second year were not considered because we felt that they are not mature enough for this investigation.

In our survey; 35% of the participants were male and 65% were female. The academic year of the participants were as follows: 13% in the second year, 20% in the third year, 51% in the fourth year, and 16% More than fourth year.

### **ITCS499 Projects Selection Questionnaire**

The questionnaire began with a simple definition of the ITCS499 course and the purpose of this questionnaire.

Participants were asked whether they registered in the ITCS499 course or not. They were asked questions about their gender, academic year and some questions on their views and stance with regards to the senior project selection.

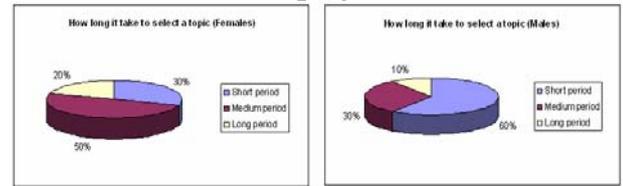
It was decided that a good method of answering these research questions was through a questionnaire and hence a questionnaire has been given to a reviewers and their feedback was taken into account. Then a questionnaire containing 20 questions was prepared to cover all the research questions that this research aims to answer. After that; the questionnaire was sent by email to various computer science students. The questionnaire was also distributed through the university forum (<http://umm.biz/>) to get wider range of computer science students.

### 3 Results analysis Analysis by Gender

In this part we would like to make a comparative analysis between the two genders in terms of the period of time taken to select a project topic, type of project and how each gender prefer to do the project (alone/with group).

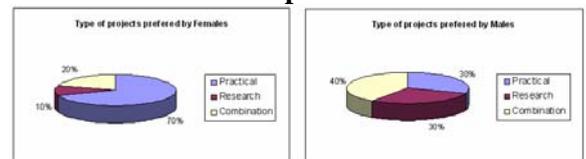
From the questionnaire, we can note that the period that the students are taking to select a project is varying between males to females. **Figure 1** shows the results to the question about how long it takes the male and female to choose his/her project topic. The results are different.

**Fig.1: How long it takes males and females to select a project**



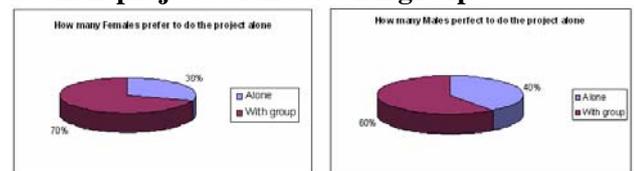
To know which type of projects does males or females prefer to do, you can refer to **Figure 2**. From that figure, you can conclude that females prefer to do practical projects, while males prefer to do a combination project.

**Fig. 2: What type of projects do males and females prefer**



**Figure 3** shows the results to the question about who preferred to do the project alone, males or females. The results are slightly different for the two genders.

**Fig. 3: Males and females prefer to do their projects alone or with groups**

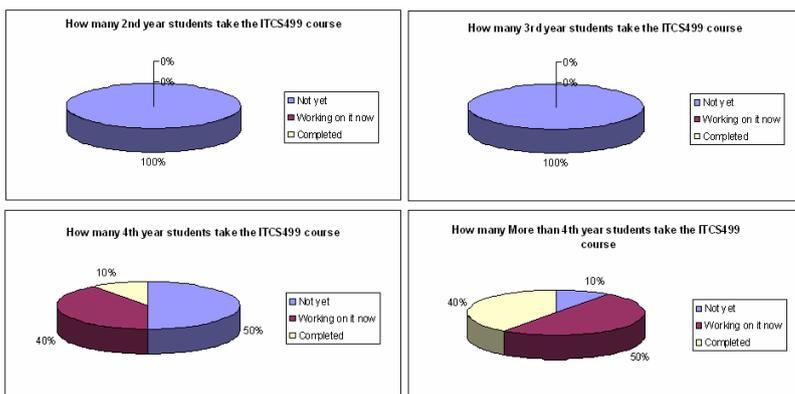


### Analysis by Academic Year

In this part we just to know in which academic year students start taking the ITCS499 course and what is the best year for them to take it.

From **Figure 4**, we can see that the students didn't start taking the ITCS499 course before their 4<sup>th</sup> year.

**Fig. 4: When does the students start taken ITCS499 course**



### Analysis of other factors

It is clear from the results obtained in this research that the majority of students prefer to take the ITCS499 course with some other courses in the final semester (70%). (25%) prefer to take it on it own in a separate semester and (5%) prefer to take it with some other courses in a semester before the final year.

Most of students prefer to do a project that they can benefit from in the future work or has practical applications (74%). On the other hand, (26%) of students like to do a project that has a very difficult and challenging algorithms.

It is clear that a wide variety of students like to works on web development (81%). While, only (19%) of students like to work on the other topics like algorithms, operating systems, databases and artificial intelligence.

Computer science students used to choose their projects topic by asking their instructors about a topic. We can see that (56%) ask their instructors, (27%) prefer to search by themselves whether by looking at previous projects or looking at some literature reviews, (10%) taken courses that developed an idea for their project such as ITCS373 (Internet Technology) and ITCS385 (Databases) and (7%) asks the other students about a topic.

It can be deduced from the results found that the department provides some seminars and a special course which is ITCS493 to help the students in choosing their projects but, the majority of students do not benefit from the activities that provided by the department. And do not use the extra factors side to help them in choosing their projects. The previous information becomes clear through the following results: There were only (6%)

students, out of the fifty participants for our questionnaire, read some research papers before they take the senior project course. There were no student attended a seminar in the department to give an idea for their project and no student attended the exam of the senior students. (98%) of participants did not look at the projects done by other universities.

Students have different views about the relation between the projects that they are doing and the job market. (60%) of them were influenced by the job market when they choose their projects and the others are not.

(45%) of students are thinking that they should solve a problem for the industry by their projects. Likewise, (45%) of students are thinking that the department should find out what the industry needs and ask the students to work on these projects.

#### **4 Recommendations**

The research objectives were to evaluate the ITCS499 course from the topic selection point of view. Then, we can give the students the guidelines for selecting their projects topics. From the research results, we can give the students the following guidelines:

- In choosing your topic, be sure to not take on more than you can handle.

- Think carefully about your capabilities, level of commitment, and goals before deciding on a project.

- Take your time to think about what projects might be feasible to do in your senior project course.

- Pick a project topic that you are really interested in and can learn from at the same time. Whether you are working on a research project or a practical application, you are going to be working on a single project for a substantial period of time.

- Try to select something that hasn't been done over and over again as much as you can.

From the questionnaire results, we can say that the Computer Science Department has to provide extra aids, materials, or activities to help students select their projects topic.

#### **5 Conclusion**

This research has investigated the challenges that are facing the computer science students in the University of Bahrain during the process of selecting the ITCS499 project. It presented an analysis of a survey distributed to these students regarding this issue. The survey clearly indicates that project selection can be complex and time consuming for students. Therefore; the Computer Science

Department has to help the students and guide them to select appropriate project for their ITCS499 course. The research has proved that the department has to offer additional help to students in their projects selection process.

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