

## Case Study Originated Education in Construction Technology

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**Abstract:** It has an up most importance of the construction technician students to have professional information as well as to have an ability to cope with the people and the foundations necessary. In this study the importance of the case study has been investigated. A case study has been applied to the students to determine the developments in their professional life and solutions, in one term time; and to determine acquisition a survey has been done. The survey has been done to the Ahi Evran University, Kaman Vocational High School Construction Technology students during Construction Management course. 23 cases have been selected from experience which had been leaved at different times and places. Every week 2 cases have been read, and the students have been asked how they would react if he/she were one of the person in the cases. After taking the written answers, oral debates have been done, and the oppositons were seen with the students. At the end of the term a survey has been done to determine how useful the case studies were. It has been seen that case study has been found useful by most students as it gave them an idea of the professional life to be emphatic. It is thought that such technicqs can be useful for the students to prepare them to the professional life.

### Introduction

The aim of the case study method is to gain abilities to people who have different opinions and values in the same society to solve the problems on the ground of differences by communicating with each other. The case study examination is based on solving a problematic matter in class environment by students. The case study examination is based on finding solution ways for the cases calling problematic with the participation of participants (Altunçekiç, A. 2010).

The case study examination necessitates the active participation of the students to the problem that can be faced in real life. The case may be real or imaginary and it is generally written. The students who study on the case, analyses the data and evaluate it after they learned the content of the case, at last they reach a solution. The students, sometimes, may be asked to write the case. The case must be proper for the level of the students. The basic problematic and its details must be obvious in the case and the story must have been fictionalized reasonably.

The key questions must be prepared to clarify the case and provide the direction in the desired way (for example, about the reason, occurrence and results of the case). The teacher must have a good leadership to direct the discussions (Mesleki ve Teknik Öğretim Dairesi, 2006).

## **The study**

The researches on learning method base on case study indicated that it develops the performance abilities of the students (Çakır, Ö.S. and others 2010)

Scwartz and Burget indicated that learning method base on case study develops the performance abilities of the students in their study in 1997. Although, one of the aims of the education is to prepare the students for real life, traditional schools grows student far from real life abilities on account of education system based rote-learning. The performance abilities like organizing, self-expression are needed for lifetime and they must be enabled in the schools.

Jones (1997) stated as a result of his research that students consider the cases similar to real life and they like cases.

Arambula-Greenfield (1996) stated that students prefer the education based on cases since it helps the personal development and they can easily establish the relation between the matters in the article.

Cliff and Curtin (2000) indicated that education based on cases increases the level of understanding the realities and concepts, of students.

Herried (1994), too, has focused on the students understanding ability of the matter and as a result of the study, stated that cases develop the learning by practicing, learning internalization, ways to approaching the real life matters and oral communication.

As a result of the literature researches, it is seen that students in Turkey in the field of civil technician have no experience in case study practice. To be able to compensate such fault, 17 people who took part in either national or international projects in the construction field as architect/engineer/building teacher and the cases they met during their work life were written into 23 different texts. The second grade students of civil technician was given those different situation definitions in the context of Site Management course and ask for the comment/analyses. Majority of those 23 cases are real.

The questions were asked in the class by the instructor, they were also presented on papers and students were given time to think. The situations which were asked for evaluation to students are given in Table 1 as summary.

1	<i>A master builder who is very close to retirement has been asked for building a house and he took lightly and at the end, the boss gave the house to him as a gift.</i>
2	<i>Veli Göçer; sea sand, very cheap houses, construction on the fields without investigation of ground conditions ... and the earthquake. Is he the only one who is guilty?</i>
3	<i>Since the required time and money was not spend, the block supports were not built so the block was collapsed so the work could not be achieved on time.</i>
4	<i>Opinions of workers, masters, technicians, engineers and site manager on insufficiency of job work security precautions.</i>
5	<i>No safety belt on scaffold, insufficiency of rigidity of scaffold, no use of helmet, no belt during the crane installation in Iraq.</i>
6	<i>There are requests and pressure to controller for the permission of concreting although it was warned that iron equipment and block supports are not strong enough.</i>
7	<i>The worker experienced an industrial accident on account of his own fault and he is suggested by others to bring a lawsuit for compensation against the employer and threaten him for jail.</i>
8	<i>The construction watcher goes up to the roof then he falls and dies, the site manager is in the court.</i>
9	<i>The building contractor who misleads people by using qualified labels on cheap paints for exhibition as if he does a good buildings.</i>
10	<i>The cooperative management tries to re-start the construction after the cancellation of the license since there is no basement recovery, filling bevel without slope stability, by providing a patronage.</i>
11	<i>Acceleration measures of the site manager during a meeting since the work plan could not be followed in a timely manner.</i>
12	<i>The discussions to determine the price before the tender file is given.</i>
13	<i>The site manager having a payment trouble on account of the late payment of the progress billing.</i>
14	<i>The new comer crane operator was beaten by the existing operators..</i>
15	<i>The controller who notices that there are more/less iron during the control.</i>
16	<i>The teams of wall, alum and coating which strikes for more wages while the works are so intensive.</i>
17	<i>While the personnel are so much needed, reclaim a engineer without any discipline.</i>
18	<i>Although it is demanded in a timely manner, the cement plant sent the cement lately in general and the workers are paid to over-work.</i>
19	<i>The intervention to the fight between the workers of two contractors who make the same work.</i>
20	<i>A contractor who does not pay the wages of his workers after he is paid the progress bill and continue to cooperate with him.</i>
21	<i>There is a struggle for the returns of personnel who were in an event and sent to the jail while they were in critique mission.</i>
22	<i>Telling a technician about the death of his father and send him to his place.</i>
23	<i>Noticing that the person responsible for purchase cheats and intervention.</i>

Table 1. Cases

## Findings

During the practices for an academic semester, a selection of interesting student comments in relation with different cases is given in Table 2. The most interesting answers according to the implementing instructors in the aforementioned situation are;

1	<i>A master builder who is very close to retirement has been asked for building a house and he took lightly and at the end, the boss gave the house to him as a gift.</i>
	<ul style="list-style-type: none"> <li>I think that the boss gave the house as a gift since he disliked the house.</li> <li>People working in the construction sector must never take their job lightly.</li> </ul>
2	<i>Veli Göçer; sea sand, very cheap houses, construction on the fields without investigation of ground conditions ... and the earthquake. Is he the only one who is guilty?</i>
	<ul style="list-style-type: none"> <li>The institutions which did not control, as well.</li> <li>Everyone who took place in the construction is guilty.</li> </ul>
3	<i>Since the required time and money was not spend, the block supports were not built so the block was collapsed so the work could not be achieved on time.</i>
	<ul style="list-style-type: none"> <li>The responsible technician must be punished.</li> <li>The work plan was not given the necessary importance.</li> </ul>
4	<i>Opinions of workers, masters, technicians, engineers and site manager on insufficiency of job work security precautions.</i>
	<ul style="list-style-type: none"> <li>Workers never feel themselves in security. That feeling affects their performance.</li> <li>The workers have not considered it.</li> <li>“Worker: We are not considered as human being. Master: What will I do if anything happens to my workers? Technician: How can I secure the life security? Engineer: The technician cares about it, I will tell him to do. Site Manager: There are many responsible. Why should I think about it?”</li> </ul>
5	<i>No safety belt on scaffold, insufficiency of rigidity of scaffold, no use of helmet, no belt during the crane installation in Iraq.</i>
	<ul style="list-style-type: none"> <li>Human is valuable whether in Iraq or in Italy.</li> <li>There is a possibility of termination of the freedom of the site manager.</li> </ul>
6	<i>There are requests and pressure to controller for the permission of concreting although it was warned that iron equipment and block supports are not strong enough.</i>
	<ul style="list-style-type: none"> <li>People have lost their moral values on account of ambitious to earn more money.</li> <li>The person who makes such pressure, where does he take courage from?</li> <li>If the controller accepts, he is a murderer.</li> </ul>
7	<i>The worker experienced an industrial accident on account of his own fault and he is suggested by others to bring a lawsuit for compensation against the employer and threaten him for jail.</i>
	<ul style="list-style-type: none"> <li>There will be no matter since he is not right. Sorry for the money he spends.</li> <li>The worker is fault but he searches the fault in someone else.</li> </ul>
8	<i>The construction watcher goes up to the roof then he falls and dies, the site manager is in the court.</i>
	<ul style="list-style-type: none"> <li>What does watcher do on the roof?</li> </ul>
9	<i>The building contractor who misleads people by using qualified labels on cheap paints for exhibition as if he does a good buildings.</i>
	<ul style="list-style-type: none"> <li>The contractor should be put in those paints.</li> <li>It is unethical.</li> <li>He is a cheater.</li> </ul>
10	<i>The cooperative management tries to re-start the construction after the cancellation of the license since there is no basement recovery, filling bevel without slope stability, by providing a patronage.</i>
	<ul style="list-style-type: none"> <li>The management is murderer.</li> <li>The only aim of the management is to earn money.</li> <li>I resigned if I was in the management.</li> <li>Why the license was given if it was not proper?</li> </ul>
11	<i>Acceleration measures of the site manager during a meeting since the work plan could not be followed in a timely manner.</i>
	If he accelerates, he should consider the necessity of the use of more equipment, machine and workers.
12	<i>The discussions to determine the price before the tender file is given.</i>
	<ul style="list-style-type: none"> <li>The discussion environment has already been necessary for the proper offer.</li> <li>There must be a very careful market analyses.</li> </ul>
13	<i>The site manager having a payment trouble on account of the late payment of the progress billing.</i>
	<ul style="list-style-type: none"> <li>The works become slower.</li> <li>He tells the situation and expects the understanding of the workers.</li> </ul>
14	<i>The new comer crane operator was beaten by the existing operators..</i>

	<ul style="list-style-type: none"> <li>I am not involving in that matter.</li> <li>They think that the new comer is better than them so they tried to deter from.</li> <li>Who knows what did he do?</li> </ul>
15	<i>The controller who notices that there are more/less iron during the control.</i>
	<ul style="list-style-type: none"> <li>It is a trouble if he says improper, there is a conscience if he ignores...</li> <li>It must be intervened and it must be according to the project.</li> </ul>
16	<i>The teams of wall, alum and coating which strikes for more wages while the works are so intensive.</i>
	<ul style="list-style-type: none"> <li>The teams are opportunist.</li> <li>I fire the teams and find new teams.</li> <li>I behave as if I accept their demand till the new teams arrives, and then I fire them.</li> </ul>
17	<i>While the personnel are so much needed, reclaim a engineer without any discipline.</i>
	<ul style="list-style-type: none"> <li>No one is unique.</li> <li>I give him promotion.</li> <li>I give him more responsibilities.</li> </ul>
18	<i>Although it is demanded in a timely manner, the cement plant sent the cement lately in general and the workers are paid to over-work.</i>
	<ul style="list-style-type: none"> <li>I change the cement supplier.</li> </ul>
19	<i>The intervention to the fight between the workers of two contractors who make the same work.</i>
	<ul style="list-style-type: none"> <li>I listen both parties and try to find a mid-way.</li> <li>I forbid them to communicate with each other.</li> </ul>
20	<i>A contractor who does not pay the wages of his workers after he is paid the progress bill and continue to cooperate with him.</i>
	<ul style="list-style-type: none"> <li>I do not cooperate with him anymore.</li> </ul>
21	<i>There is a struggle for the returns of personnel who were in an event and sent to the jail while they were in critique mission.</i>
	<ul style="list-style-type: none"> <li>In my opinion, they must be away from the profession at least for five years. I do nothing for their return.</li> <li>I help for return.</li> </ul>
22	<i>Telling a technician about the death of his father and send him to his place.</i>
	<ul style="list-style-type: none"> <li>Sending him is the ethical approach. Even, a close friend can be sent with him as a company.</li> <li>I told him that his father is very sick. I do not tell him his death.</li> </ul>
23	<i>Noticing that the person responsible for purchase cheats and intervention.</i>
	<ul style="list-style-type: none"> <li>I inform the authorities.</li> <li>I inform my supervisor for his punishment.</li> </ul>

Table 2. Answers of students

A questionnaire consisting of 9 questions was applied to 67 students after the case study in the Site Management course. The questionnaire tried to determine the students' satisfaction from the application and their opinions about it. The questions in the questionnaire can be seen in the Table 3.

		Yes	No
1	I am satisfied with case study application.		
2	I am in favour of doing such applications in other courses.		
3	The students having this course after us should experience such application.		
4	A multi-discussion environment could be created after the application.		
5	That application indicated me the possible situations which I can face to while I am on work.		
6	That application contributed my ability to think positively.		
7	In comparison with other illustrations in the courses, that application is more attractive for me.		
8	That application causes better feelings towards my profession.		
9	Your opinions and demands about the application.		

Table 3. The questionnaire after the case application

Some findings as a result of the questionnaire are below;

1. The percentage of the students who are satisfied with the application is 82 %.
2. When the civil technician students asked whether they desire to have the similar applications in other courses, 8 % of them said "Yes".
3. 71 % of the students answering the questionnaire said that they are in favour of the application on behalf of the students who would have the same class after them.
4. A multi-discussion environment was created in the class as a result of the case study application according to the 94 % of the students.
5. 6 % of the students mentioned that they had opinions about what they can face to during the work by the help of the application.
6. 78 % of participants to the questionnaire told that it contributed positively to their analytic thought abilities.
7. In comparison with other teaching methods, case study method is more attractive for 74 % of the students.
8. 81 % of the students mentioned that the application cause better feelings towards their profession.
9. The participant students demanded that,
  - They want to have more information on work security and labour health;
  - They want to have complete information on construction law;
  - They demand the generation of lecture notes on case studies.

## **Conclusions**

When the results of the case study in civil technician education are evaluated on the basis of the questionnaire;

- Majority of the students have satisfaction with the application,
- They want similar case studies in other courses,
- The creation of the multi-discussion environment provided development in their analytic thought skills,
- In comparison with other teaching methods, the case study is much more attractive for them,
- They like more their profession with the application,
- They have information about the situation they can face during the work life.

It is thought that, as one of the teaching method, the case study examination method will provide to practise and know their sector closely in case the method is used in other courses in construction programme, for students.

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