



Accelerating Change in Built Environment Education (ACBEE)

Case Studies of High Quality

UNIVERSITY OF ABERTAY DUNDEE / NATIONAL CONSTRUCTION COLLEGE (GLASGOW) UNDERGRADUATE CONSTRUCTION SKILLS APPLICATION

Summary of Case Study

The case study is a “hands-on” simulation of construction site activities. Undertaken by 2nd year undergraduate students in construction courses at the University of Abertay Dundee and involves building a full-scale reinforced concrete framed structure comprising column bases, columns and connecting suspended beam. Students develop an awareness of the management and craft skills necessary to organise and execute the construction of a complete small structure, accurately, safely and within the target time. Students undertake various management/engineering and craft roles such as: health & safety, teamwork, site management, communications, planning and programming, setting out, materials ordering, measurement of works, costing, formwork construction, steel fixing, scaffolding, concreting, and stripping formwork.

Characteristics

<input checked="" type="checkbox"/> Partnership Approach	<input checked="" type="checkbox"/> Clear Objectives	<input checked="" type="checkbox"/> Appropriate Measures	<input checked="" type="checkbox"/> Modularity	<input checked="" type="checkbox"/> Industry Relevance	<input checked="" type="checkbox"/> Best Practice
<input type="checkbox"/> Interdisciplinary Team-Work	<input type="checkbox"/> Other – please specify:				

Basic Information

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Case Study Title:	Undergraduate Construction Skills Appreciation
Theme:	Providing site experience

Teaching Context

Subject Area Covered / Module Title:	Management, engineering, craft skills, health and safety
Keywords:	Site Management, Communications, Site Operations, Health & Safety.
For how long has this project run?:	15 years
Subject Area:	Planning / Building / Surveying / Engineering

Participants

Number of Students:	Varies (approx. 15)
Number of Staff involved:	6 (Lecturers, tutors and instructors)
Level / Year: <i>(Delete as appropriate)</i>	U/G (2 nd year students)

The Author(s)

Please provide brief details of the Author(s) prior experience in this field:	Experience covers building, civil engineering, and quantity surveying, and provision of education/training in these areas.
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Written Statement

Please submit a brief description of your case study (500 words), using the headings provided to frame your submission:

a. Collaboration between education, industry &/or professional bodies.	The case study involves collaboration between the University of Abertay Dundee and the National Construction College, Glasgow.
b. A measurable set of objectives for each partner in the collaboration.	The objectives of the case study are: <ul style="list-style-type: none"> ▪ to enable students to gain intensive “hands-on” practical experience, over an extended period, in construction practice to underpin the formal teaching of the subject related areas. ▪ to apply the understanding of materials, safety practice and construction techniques to a full-scale example of civil engineering construction.
c. Identify subject, issue or theme in case study with wide appeal in the built environment.	An appreciation of the management and craft skills necessary to organise and execute the construction of a complete small structure, accurately and within the target time. The subject involves planning, execution and appraisal of performance for the construction of a reinforced concrete portal frame. Also included are materials and equipment requirements, method statements, resource management, health and safety assessment, and costing of the works.
d. Describe the context, both within the educational provider and the industry partner.	The National Construction College uses in-house and external staff to provide training and instruction to the students. Abertay staff are involved in integrating the learning experience from the lecture, practical and laboratory classes into “hands-on” construction activities, which simulate real life construction activities. The context being to put theory into practice, going from greenfield site to reinforced concrete “portal frame”.
e. Describe the evaluation of the impact of the case study over time.	The Undergraduate Construction Skills Appreciation field course has been specifically mentioned by students, in their course feedback, as one of the most rewarding experiences. In general, the students feel very satisfied that they have built a product that simulates real life site construction and also have in the process become more aware of the planning and preparation that is involved from a practical perspective. They also have a better appreciation of the different professionals and craft skills that can be involved in construction, a better awareness of the need to manage operations on site, and an increased consciousness of health and safety issues. They realise that things can go very wrong, hence costing time and money.

Learning Methods & Resources

Objectives / Learning Outcomes:	Apply the understanding of materials, safety practice and construction techniques to a full-scale example of civil engineering construction.
Outputs:	<ol style="list-style-type: none"> 1. The students build a full-scale reinforced concrete framed structure comprising column bases, columns and connecting suspended beam 2. A report (based on a daily diary) describing the construction activities and including a bill of quantities, costing the works.
Teaching Method(s): <i>A brief description of what you actually did. What sort of activities & interaction occurred?</i>	Students given a brief of the task, beforehand at the University of Abertay Dundee by the lead lecturer. On a one-day per week basis during five weeks of semester 1 the students and a lecturer travel to the National Construction College premises, Glasgow, where they get a briefing at the start of each day and then subsequently get involved in working in groups involved in various activities such as setting out, steel fixing, shuttering, concreting, scaffolding and preparing risk assessments.
Assessment Procedures: <i>A brief description of any assessment methods used.</i>	Students are assessed on the report (based on the daily diary), attendance and involvement in activities on each of the five days at the field course.
Support requirements: <ul style="list-style-type: none"> • For you and/or the students. • Funding/costs. • Did you or the participants need/get technical support? 	<ul style="list-style-type: none"> • Students are provided with all personal protective equipment (PPE), and are also made aware of the reason for provision of PPE. • Facilities and premises are provided by the National Construction College, Glasgow, and are funded by the University of Abertay Dundee. • Staff at the University of Abertay Dundee and National Construction College provide all the technical support required.

'Good Practice' Tips

Further advice and pointers - incl. enablers / barriers / proposals for improvement.	It would be beneficial if students, prior to undertaking this exercise, have had classes (lectures, tutorials, practical sessions, and laboratories) in construction materials and testing, site surveying, and a general introduction to the construction industry. Construction site visits are an added advantage from year 1.
How can other staff or partners reproduce this technique / method?	By having a good idea for a construction site simulation "hands-on" activity and approaching an organisation (e.g. the National Construction College) that can provide the personnel, premises and facilities for a full-scale simulation exercise.

Supplementary Information

Any other factors which you wish to be considered?	The students are issued a certificate of training at the end of the field course, which details activities that have been undertaken. This has been an incentive to students.
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