

CASE WRITING PROJECTS IN CO-OPERATION WITH COMPANIES AND ORGANIZATIONS

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Abstract

The purpose of this paper is to present the process and evaluation of case writing projects in co-operation with companies and organizations in a course for engineering students. The case writing projects could provide an illustration and example framework for working with companies in constructing cases. Normally cases are constructed for teaching purposes in higher education. However, in order to get closer co-operation and more interest from the companies the authors encouraged the students and the companies to construct cases on issues that the companies felt were especially relevant for them. Drawing on previous research on case writing in teaching case writing projects were set up. The companies who worked closely with the students were very satisfied with both the case writing process and the final cases. These companies expressed several benefits like getting a good public reputation, getting an analysis by a third party, a free look on possible future employees, maintaining good relations with higher education and also getting material for internal development purposes. The companies that had a more distant relationship to the projects or where the process had been problematic had a more critical view of the process and outcome. They saw few benefits with the case writing projects besides maintaining a good image.

KEYWORDS: Case writing, companies, co-operation, relationships between universities and industry, intervention

INTRODUCTION

Many universities all over the world use case studies in their teaching in order to approximate the reality of the decision-making process in firms and other organizations. The many strengths and benefits of the case method in teaching and learning are well documented [Erskine et al, 1998; Mauffette-Leenders et al, 2001]. Case studies are also used for assessing the students' performances in academic courses and programs for instance by grading participation in class discussions or case analysis in written reports. Even though case studies are a way of bringing reality into the classroom, the reality in the case is shaped by an author for pedagogical purposes and taken from a specific context. This could be a problem if the context of the case is foreign or unfamiliar to the students or written in foreign languages [cf Hornaday, 1995]. Many cases, at least in business and management education, are based on large and well-known firms while the students probably mostly will find their jobs in local small and medium-sized firms [Whitt et al, 1991]. Other problems with ready-made case studies are the vicarious reality it represents for the students and the missed learning opportunities that exist in having to construct

your own case. Students writing their own cases make the reality more vivid and profound as well as could provide stronger learning opportunities. While some research have been reported using case writing in academic education, e.g., Hornaday, [1995]; Barksdale-Ladd et al [2001], the topic is far from systematically explored [Sureshwaran and Hanks, 1998].

The educational program for engineers at Lund Institute of Technology at Lund University has for a long time included the use of case studies. Cases used are often set in foreign context, i.e., mostly American and British, and to some extent that poses some problems for the predominantly Swedish students. However, the greatest problem with case studies in the technology area is that cases fast become outdated and obsolete. With this in mind the authors decided to experiment with case writing in a course on Technology Strategy at the Lund Institute of Technology for last-year engineering students (year four). The objective was both to generate more Swedish based and contemporary technology strategy cases and to influence the students learning strategies towards using a broader set of skills and to understand technology strategy in a broader firm and societal context. The authors have earlier [Bengtsson and Asplund, 2002] reported the experiences and the outcomes of using case writing projects in this context. Overall the students seemed quite content with case writing as a teaching and assessment form. It also seemed reasonable to conclude that the case construction and its use as an assessment form significantly affected the students learning strategies. Especially important in this regard was the inclusion of the writing of a teaching note. However, it was also concluded that the quality of the case studies varied significantly due to the varied relations between student groups and companies. When first using the case writing projects the impression was that the best cases constructed were the ones where the co-operation between the companies and the student group worked well [Bengtsson and Asplund, 2002].

Previous research seems to lack concerning the experiences and outcomes for participating companies and organizations in case writing projects. A few exceptions do exist. Hornaday [1995] asserts that it demands certain responsibilities from students, faculty and organizations for case writing to work in undergraduate teaching. Also Whitt et al [1991] stress the win-win situation in case writing in co-operation between business and university education. For the companies and organizations studied possible benefits include analysis of their own strengths and weaknesses by a third party, a source of help for specialised problems, a free look at possible future employees, and public recognition. In a broader sense this issue concerns the division of business and management education into two encapsulated learning arenas: the university and the company [Leitch and Harrison, 1999]. Leitch and Harrison advocates a more interactive strategy and integration of these two learning areas especially when it comes to management and entrepreneurship education. Even though Leitch and Harrison do not explicitly discuss undergraduate education there is a need for teaching practices, e.g., case writing projects, which try to integrate and stimulate interactivity between these two learning arenas. Thus our study could both shed some light on company experiences and outcomes of case writing projects but also serve as an example of how these learning arenas could become more integrated and benefit from each other.

AIM AND STRUCTURE OF PAPER

The purpose of this paper is to present the process and evaluation of case writing projects in co-operation with companies and organizations in a course for engineering students. The case writing projects could provide an illustration and example framework for working with companies in constructing cases.

The paper is divided into four sections. The first section makes an overview on existing research on case writing in university teaching. Second, the case writing projects are described. Third, the companies' evaluation on the case writing projects is reported. The final section discusses the main learning points from the companies' evaluation and the project's contribution for case writing research.

CASE WRITING IN TEACHING AND ASSESSMENT

Case writing in teaching and/or as way of assessing students' performance in academic education has received very limited attention in research. Only a few articles seem to have been published in the area. For example, in WACRA proceedings only three papers regarding case writing in teaching and/or

assessment have been published during the last seven years [1995-2001]. Case writing is reported to be used in some teacher education programs were case writing as a way to reflect on and learn from their own teaching situations and teaching dilemmas [Barksdale-Ladd, 2001; Hunter and Hatton, 1998] or their own organization in management education [Coté, 1999]. Case writing has also been used in areas where there is lack of indigenous case studies, e.g., developing countries [Hornaday, 1995], small businesses [Whitt et al, 1991] and business development and entrepreneurship [Nelson, 1996]. For our purposes, using case writing in undergraduate teaching, the studies by Lamont [1995; 1998], Whitt et al [1991], Sureshwaran and Hanks [1998] give some valuable insights.

Whitt et al [1991] advocate the use of student-generated cases in small business education programs because of the lack of relevant case studies in the small business area. Furthermore, they assert that case writing by students have several advantages for students, faculty, the studied organizations and the school. For the students they list the following advantages:

- direct exposure to the dynamics of the organization,
- training in defining business problems,
- training in selecting and analysing data,
- working with experienced business leaders,
- selection of problem and issues appropriate to the students' knowledge and experience,
- working in teams,
- training in writing and presenting case material.

Whitt et al [1991] also maintain that case writing in teaching, properly executed, is a win-win situation for all parties involved. For faculty and school they discuss advantages like better links between local business/organizations and school, increasing faculty contact with business leaders, and possibilities for empirical research in local organizations. For the organizations studied possible benefits include analysis of their own strengths and weaknesses by a third party, a source of help for specialised problems, a free look at possible future employees, and public recognition.

Lamont [1995] describes a process for case development by undergraduate students in marketing management. The process consists of six steps: 1] identifying and selecting a case study topic, 2] organizing the case study research, 3] researching the case study, 4] preparing and testing the case study, 5] preparing the instructor's teaching note and 6] publication. Lamont reports that the students learn several research skills like sources of information, questionnaire design, and interviewing techniques. Moreover, writing skills, presentation skills and critical thinking are also trained. Lamont encourages the students to also construct a teaching note, however maintains that this is primarily a job for the teacher. Lamont [1998] reports on an evaluation of seven different teaching methods in marketing. One teaching method was team course project, a partially written case study that had to be complemented with additional information, e.g., marketing research data, by the students. The team course project scored high on educational outcomes like learning the practice of marketing, teamwork, interpersonal skills and decision making/problem solving.

Sureshwaran and Hanks [1998] develops a framework for applying case writing assignments in graduate agribusiness courses. For them, case writing by students means that the students are forced to confront the real situation and apply theories they previously have learned. They introduce an elaborate nine-step procedure for integrating case writing into a course from recruiting business mentors to on-campus workshops. The case writing assignment was also integrated in the assessment as it accounted for 20% of the final grade. The grading of the cases was based on evaluations made by business mentors, faculty consultants and course instructor. Criteria in the evaluation were initial case outline, final case study and accompanying teaching note, use of analytical skills, preparation at workshops, formal presentation, use of technology and agribusiness skills.

Bengtsson and Asplund [2002] reported on the experiences and outcomes from an experiment with case writing projects for last-year engineering students in Sweden. The results of the study confirmed the importance of the assessment as the most important element for the students learning strategies. In general the students were very positive towards case writing as part of the teaching and assessment. From a learning point of view the students rated case writing very high on multiple learning outcomes. The experiment verified the earlier reported advantages and positive outcomes of case writing in undergraduate and graduate education. The main new finding, in relation to earlier research, was the important role of the teaching note. A case writing assignment benefits greatly by including both the construction of the case as well as the teaching note.

Case writing in undergraduate and graduate education has received limited attention in the literature. However, a few studies have reported on the advantages of case writing [Hornaday, 1995] and the beneficial educational outcomes on a broad set of skills and knowledge [Lamont, 1998, Bengtsson and Asplund, 2002]. Moreover, two studies have proposed frameworks in undergraduate education for case writing development processes [Lamont, 1995; Sureshwaran and Hanks, 1998]. Thus, case writing in undergraduate education seems to have beneficial learning outcomes. At the same time Sureshwaran and Hanks [1998] notes that certain courses are probably better than others to use case writing in and probably demands more mature students like graduate students. Bengtsson and Asplund [2002] stress the importance of the teaching note, i.e., clear learning objectives and an understanding of the pedagogical context, for constructing good teaching cases. Of special interest for our study is Hornaday [1995] that asserts that it demands certain responsibilities from students, faculty and organizations for case writing to work in undergraduate teaching. Also Whitt et al [1991] stress the win-win situation in case writing in co-operation between business and university education. For the companies and organizations studied possible benefits include analysis of their own strengths and weaknesses by a third party, a source of help for specialised problems, a free look at possible future employees, and public recognition. However, the experiences and outcomes of case writing in undergraduate education for companies and organizations seem to have received limited attention in the literature.

DESIGN OF CASE WRITING PROJECTS

Our aim with the case writing projects was to give students incentive to adopt a deep-learning strategy thereby increasing the likelihood of knowledge retention as well as increasing the students' awareness of teaching and assessment issues. The more specific reasons for using case in our teaching were the following:

- The construction of a case fulfils the requirements for upholding the formal functions of assessment, i.e., diagnosis, motivation, and selection.
- By asking students to construct a case and teaching note for teaching purposes, as part of their assessment, the students were forced to think about learning and didactic issues.
- The major part of the course has a management perspective thus making decisions, in this course about technology strategies, a natural part of the course. Constructing cases would integrate and reinforce the decision-making perspective in the course.
- The intention was to give the students a deeper understanding of a specific and real management problem in order to convey the feeling to the students that issues taught in the course has a real-life meaning.
- It would generate contemporary cases from a context, i.e., Swedish industry, which the students are familiar with.
- The authors were aware of only a few studies in the area (see above). Thus, it would be interesting for teachers, course and program directors to take part of the authors' experiences.

The Course and the Design

In order to address the issues of decision-making and organization concerning technology and R&D the Lund Institute of Technology introduced a course on Technology Strategy in spring 2003. The overall purpose is to give the student a framework to identify the most important R & D questions especially concerning technology strategy and to find an appropriate organisation to conduct research and technology development projects in industry and at the university.

The course was an elective course given to last year (year four) engineering students. The course was assessed evaluating the constructed case (50%) and a written exam on concepts and models (50%).

The case writing process followed a ten-step process.

1. Instruction for case construction
2. Gaining access to a firm and a "technology challenge"-case
3. Round table sessions
4. Handing in case outline
5. Data gathering, compilation and writing of case and teaching note

6. Off-campus workshop
7. Presentation for company representatives and feedback from companies
8. Revision of case and teaching note
9. Handing in final case and teaching note
10. Grading and feedback to students

Instruction for Case Construction

The purpose of the assignment was to develop the students' understanding of the practice of technology strategy as well as to train the students' skills in areas like making research, applying theories, presenting, teaching and writing. The following instructions were given to the students concerning the final product of the assignment:

"The final product will consist of the following:

1. A written case, 5-8 pages, about a company in an interesting R & D or technology development decision making situation that has to be understood and solved by participants in different roles as internal and/or external consultants and/or managers. You decide focus and key questions to be addressed with the help of the course instructor and company contact person.
2. A teachers' note including:
 - a) The case learning objectives for two target groups; engineering students and company personnel.
 - b) How to use the case (one for each target group), including alternative ways of using it.
3. A short summary of the case including key case content and design. Finish with the key words that are addressed in your case.
4. The case is to be delivered, in two hard copies and word-document via e-mail attachment." (case writing instructions to the students)

Two lectures were held in the beginning focused on the construction of case and teaching note. The first lecture gave a general view of cases and its use as a learning tool. The Case Difficulty Cube framework by Erskine, et al [1998] which discussed three dimensions of case construction; the analytical, conceptual and presentation dimensions, was also presented. The second lecture focused more in depth on how to construct a case. Here the students learned for instance more about the target groups, the case as a learning tool with multiple uses and to focus on a decision maker. The class deconstructed a ready-made case. The students received checklists in order to help them work more independently.

Access to a Company and a Technology Challenge

The student groups (of three or four students) contacted a company of their own choice especially concerning interesting "technology" challenges. The student group was instructed to tell about their assignment and get permission to do a case study. The course coordinator sent a formal letter thanking the company for their co-operation and a short description of the case writing projects. The student group was then instructed to start with asking more basic questions in order to get a rich picture of the company in relation to the content of the course. Then they should focus on key issues that the group and the company considered to be the most interesting to understand, discuss and act upon more in depth. Finally time and dates for data collection, interviews and visits were made.

Round Table Sessions

The group made a briefing on the company and the technology strategy case in front of the other students and the course instructor. The other student groups and the instructor gave feedback and suggestions to the presenting group. The course director provided additional advice to those groups demanding it.

Handing In Case Outline

At a certain date the groups had to hand in a case outline to be approved or modified by the course director

Data Gathering, Compilation And Writing Of Case And Teaching Note

The student group collected data through collecting written material and interviews in the company relying on the contact persons advice and introduction. Then compiling of data and writing of case and teaching note.

Off-Campus Workshops

The student groups then organised an off-campus workshop, in order to present and test-teach the case. Before the presentation at the overnight stay the case was e-distributed to all students and faculty by the students themselves with the purpose of reading them before the presentation. After the test teaching of the case the other students, the course director and faculty consultant gave feedback to the presenting/teaching group.

Presentation For Company Representatives And Feedback From Companies

After the off-campus workshop the student groups sent their written case and teaching notes to the company contact persons asking for their comments and suggestions for the revision of the case and the teaching note. If possible the student group should meet face-to-face with the contact persons and get the feedback in a discussion.

Revision Of Case And Teaching Note

Based on the feedback and comments given at the workshop and from the companies the groups had five days to revise their cases and teaching notes.

Handing In Final Case And Teaching Note

Student groups handed in final written case and teaching note.

Grading And Feedback To Students

The course director and the faculty consultant graded the final case and the teaching note based on the following criteria: use of business and technology information, analytical skills/application of theory on case, trustworthiness, overall impression of process and final product. Course director communicated the evaluation of the case and the grade to the student groups.

Cases written by students in the Technology Strategy course

Idefix Consultants

Focus on the R & D decision making process in relation to the development of an administrative computer system to meet new public organizations needs

Ericsson Mobile Systems case 1

Focus on the evaluation of a special R & D project concerning wireless communication system.

Ericsson Mobile Systems case 2

Focus on the R & D microchip development process as a research dialogue between the executive group, research engineer group and human resource management group. One on the main issues is the question of outsourcing the production or not.

Höganäs

Focus on the product development and especially on the combination of material use to address the issue of sustainability and environmental considerations.

Perstorp

The case focuses on which overall computer system the company should invest in.

Semcon

Focus on the evaluation of the decision process and work methods as consultants where they try to introduce a new business model for other businesses. This is highlighted in a product development process of a dishwasher machine.

Gambro

Focus on the development of the packaging format in connection to product qualities when trying to increase the density of a kidney fluid liquid. This case illustrates the product and packaging development process in relation to customers needs.

QlikTech

Focus on the R & D process in relation to the upgrading of a software system in relation to customer needs. The challenge is how close should their system be in relation to the dominating systems in the market? Which direction of product development should be preferred?

C Technologies

Focus on the R & D process in connection to the development of the new version of a product. External barriers and internal barriers are highlighted in connection with the decision chain in the company.

Alfa-Laval 1

Focus on decision process when choosing between types of product strategy; ready-made product strategy or b) self organizing strategy. This case also highlights the company responsibilities concerning the final installed product solution.

Alfa-Laval 2

Focus on the issues of how to better understand and address technology strategy issues from a management and communication point of view. Which methods and models could be used in order to address the R & D challenges?

EVALUATION FROM THE COMPANIES

Telephone interviews were conducted by the authors with the assigned contact persons in the case companies. Unfortunately not all contact persons could be reached in the case companies. Due to contact persons travels, vacations and general time pressure problems only five contact persons could be interviewed. The authors' judgement is that the five companies fairly well represent all the cases as they represent both successful as well as less successful case writing projects. The interview questions concerned the process and interaction between the company contact persons and the student group, their evaluation of the finished case, the possible use of the case for internal purposes, proposals for improving the co-operation, willingness to participate again and overall evaluation.

The answers to the questions are listed in short form in the following table.

TABLE 1 - OVERVIEW OF ANSWERS TO TELEPHONE INTERVIEW WITH COMPANY CONTACT PERSONS (CP=CONTACT PERSON)

	Perstorp	Gambro	C Tech	Alfa Laval 1	Alfa Laval 2
Contact persons	Vice president IT Project director	Vice president Corp Research, Project director	Vice President R&D Project director	Vice president R&D, Vice president HRM, product manager	Vice president R&D
First contact	Personal contacts	Personal contacts	Personal contacts	Contact through faculty	Contact through faculty
Formulation of case task	Case formulated by CP	Case formulated by CP	Historical case formulated by CP	Case formulated by CP and faculty	Case formulated by CP and faculty

Planning of work	Done in co-operation between CP and student group	Done in co-operation between CP and student group	Done in co-operation between CP and student group	Done in co-operation between CP, faculty and student group	Done in co-operation between CP, faculty and student group
Feedback	Yes, in written form and face-to-face meeting	Only partially, initial feedback but not on final case	Yes, written feedback on final case	Yes, in written form and face-to-face meeting	Only partially, some written feedback on final case. CP travelling a lot.
Evaluation of final case	Excellent	Not very good	Ok	Very good	Ok
Improvements	No proposals	Better instructions and information to the company, especially on aim of case writing projects	No	Contact and planning much earlier than now, need to integrate in internal plans	Contact and planning much earlier than now, need to integrate in internal plans
Participate again?	Yes and also in other parts of the company	Yes, if improvements are made	Yes, if relevant case could be formulated	Yes, but better planning	Yes, but better planning
Use in company	Maybe later	No	No	Yes, have already been used	Do not know
Overall evaluation	Very good, very positive	Not good	Ok	Very good	Not good
Main benefits for company	Good analysis of IT problem by third party, look at possible future employees, good citizen	Nothing in this project	Good citizen	Good analysis of IT problem by third party, internal educational material, look at possible future employees, good citizen	look at possible future employees, good citizen

From the overview of the answers the following observations are made:

Two cases (Perstorp and Alfa Laval 1) worked very well and the contact persons in the companies were very enthusiastic about the project, the interaction with the students and the end result, i.e., the final case. They both wanted to participate again and Alfa Laval had already used for internal education purposes. Alfa Laval stressed that they needed to be contacted earlier in order to better plan the work with the cases. Perstorp wanted to get in contact with other types of students (e.g., other engineers, business students) in order to do similar projects with other parts of the university. Both companies said that the interaction with the students had been very good and that the work had progressed according to the initial plan. In the Alfa Laval case, one of the faculty, the course coordinator, had provided the contact and also been instrumental in informing the company and formulating the case task.

In two cases (Gambro and Alfa Laval 2) the process and the final case were considered to be less good. In Gambro, the project started well, but an early feedback from the contact person had been ignored by the students. Thus the contact person got irritated with the students and did not provide any more feedback. The main contact person also felt that she had not been sufficiently informed about the

case writing projects and the aim of the projects. In Alfa Laval 2 the student group had only one contact persons (most other groups had two or three contact persons in the company). In Alfa Laval 2 the contact person had to travel a lot in the second half of the project and became hard to contact for the student group. Consequently the group lacked supervision and support from the contact person in the later stages of the case. The case also concerned more abstract corporate R&D management issues, and not related to specific product development projects as was the case in several other groups, thus the need for company supervision was high.

In the last case, C Tech, the contact person was satisfied with the students but they considered the case study less interesting. While the other groups had been given on-going projects to study and write cases about, the C Tech group had been given a historic case. Thus the contact person and the company were less interested in the final case as they were now working with new projects. One reason for giving the students a historic case was the sensitivity, from a competitive perspective, of many of the projects that the company worked with. The contact person also remarked that future participation on their part depended on the formulation of more relevant (for them) case projects.

The main benefits for the companies ranged from public recognition (to be a good citizen, support higher education, get good reputation among students and faculty) to more relationship oriented benefits like getting free look at possible future employees and maintaining good relations with the engineering school. The two best cases (Perstorp and Alfa Laval 1) also stressed the benefits of getting a free analysis of difficult problem by a third party and getting perspective on their own thinking and reasoning. In one case, Alfa Laval 1, the case material was judged of so high quality that they had used it in internal education for managers.

CONCLUDING REMARKS - FROM CASE TO INTERVENTION

When the 2003 version of the technology strategy course was designed the authors focused especially on the improvement of the communication between the university/the students and the different eleven (11) companies/business units that was involved. This was also one of the implications when summarizing the previous course design [Bengtsson and Asplund, 2002].

The assumption was that if the purpose of the case and the case construction process was well understood by the company (as by the students) they could more connect the case projects to their ongoing value creation especially concerning current and earlier R & D projects and important issues in the area of technology strategy.

Another possible contribution was that if the students could get more authentic R & D issues to address during two months the course lasted, this would result in greater involvement and collaboration from the contact person (often the head of R&D) and their organization in solving the task. The authors assumed, if they understood this more elaborated learning method more deeply, this could mean that they could contribute more actively in the case construction process.

The efforts to involve the companies in a more substantial way were for some companies problematic. A combination of lack of motivation from the companies and their contact persons and the student groups sometimes in conjunction with problematic case construction processes resulted in less good co-operation and less good cases. These companies mostly participate because they felt obligated to do so. They feel it is their *obligation* to do so and do not want to give a bad impression on the students and faculty. Beyond keeping a good public image they do not see any benefits in participating in case writing projects.

A second group of companies seemed to involve themselves a bit more in the case writing projects. While they saw limited value in the actual case projects they did value the *relationships* with students, the faculty and developing a good public image. They also could get a free look at possible employees. Some of these companies recognised however that more value could be created if the process was managed differently, e.g., given longer notice of participation, better internal organization and so on.

The last group of companies was enthusiastic about the case writing projects and involved themselves heavily in the student groups' work. These companies recognised that not only could they maintain and develop the relationships (as the group above) with students and faculty, but they could also use the case studies for getting new perspectives on their own thinking and management practices. These companies seemed to use the case writing projects as possible *interventions* in their own practices.

In conclusion the companies could be differentiated according to the level of participation; 1) obligation level, 2) relationship level, and 3) intervention level. At the obligation level the main problem is motivation in the companies. Thus, more and better information about the case writing projects will not make these companies more active or better organised to participate in these projects. Here it is more an issue of selecting out such companies beforehand. Thus students and faculty need to be aware that some companies probably not should take part in case writing projects because of lack of motivation. Companies at the relationship level do have motivation but do not take part because of the case writing projects as such but rather because of the relationship qualities that come with these projects. These companies could probably benefit from more and richer information about the case projects both from faculty and from the students. This in order to become a company that operates at intervention level, i.e., see the value of the case projects in themselves and manage to organise internally in order to extract this value from the case projects. In relation to Whitt et al's [1991] discussion of benefits for the companies the authors think that faculty and students need to be aware of the interests of the companies. Thus while it is interesting to create more interactivity between the higher education area and the company arena [Leitch and Harrison, 1999] one need to understand the interests and capabilities of the companies. If the companies do not see the value in this interactivity, be it case writing projects or other teaching practices, and they do not know how to organise such an interactive strategy, little progress will be made. This paper has hopefully made some contribution to understand both the possibilities and the pitfalls of getting case writing projects to work in co-operation with companies.

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