Moral Problems Perceived by Industry in Collaboration with a Student Group: Balancing between Beneficial Objectives and Upholding Relations

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ABSTRACT

Industry-university partnerships are common in the IT field. This paper reports on moral problems perceived by client representatives collaborating with student groups taking part in a project course in information systems education in a Finnish university. Twenty-two client representatives from IT organizations were interviewed during the course of one project, phenomenography was used in the analysis, and a collective description was determined. The moral problems in collaboration relate to business-directed (gaining benefit) and relations-directed (upholding relations and taking care) intentions, and also relate to interpersonal issues, the project task, and external parties. The results also indicate that the relationship between the clients and the students resembles the dirty-hands dilemma of the corporation, and that client representatives experience role confusions. Forming a reflective community between collaborators is recommended to handle the moral problems.

Keywords: Industry-university relations, Moral Problems, Project-based learning

1. INTRODUCTION

Successful industry-university collaboration benefits all parties (Slotte and Tynjälä, 2003). The industry partners may acquire broad and profound theoretical knowledge and a more skilled workforce, for example. Universities could benefit by developing contacts with working life, using work-based cases for teaching purposes, and developing awareness of business life. Individual learners, whether university students or employees learning at work, develop themselves and enhance job security and opportunities for career progress and salary improvement, for example. There are several forms of co-operation, including training programs, research centers, industry advisory boards, internships, and mentoring (Keithley and Redman, 1997; Santoro and Chakrabarti, 1999; Abraham et al., 2006; Watson and Huber, 2000).

A common form of industry-academia partnership in the IT field is the collaborative student project (Bergeron, 1996). Student projects benefit industry by providing it with results and contacts with students – potential future employees - and the students reap benefits by learning relevant skills, including communication and interpersonal skills (Fritz, 1987; Roberts, 2000). Profitability, a major responsibility of business, is visible in all business activities (Carroll, 1999), and presumably also in collaboration with the university, which on the other hand adheres to “seek and teach the truth” responsibility (Kenney, 1987, 129; Brown, 1985, 12). Studies on business ethics show that business actors are expected to engage in ethical practices and to uphold the law, in addition to ensuring the profitable functioning of the business and treating employees well (Carroll, 1999).

Given this difference in the fundamental responsibilities of business and universities it is assumed that these responsibilities might collide in the various partnership forms. Indeed, conflicts in partnerships have been recognized (Stankiewicz, 1986) but have not been studied from the individual viewpoint, the perspective of moral problems, or difficult decision-making situations related to good/bad or right/wrong. These decisions are made by individuals - not firms or corporations, therefore studying moral problems is focused on the perceptions of individuals. Given their nature as mentally grave situations (Statman, 1995; Lemmon, 1987), and the uncertainty related to moral decision-making (Bauman, 1997), it is important to study individuals’ experiences of moral problems in any socially complex phenomenon. Identification is a first step in solving (Rest, 1994; Clarkeburn, 2002, 439; see also the dilemma approach in Kaptein and Wempe, 2002) and preventing them (Kallman and Grillo, 1996). Philosophers have defined a moral problem (or moral conflict, moral dilemma) in a variety of ways (see Gowans, 1987), but all of them agree in that the moral agent:

1. morally ought to do A,
2. morally ought to do B,
3. is not able to do both A and B.

These moral requirements or “oughts” stem from different aspects of human life (Nagel, 1987; Lemmon, 1987). In the IT field a computer professional may confront moral problems when seeking a balance between the quality of the information systems and the costs (Anderson et al., 1993). Redesigning work systems in organizations may inherently raise problems related to the changes that affect employees (Mumford, 2003). Although there are various definitions (e.g., moral conflict/dilemma; Gowans, 1987), for reasons of simplicity the term moral problem is used here to mean any morally relevant issue (cf. the variety of definitions of a moral dilemma in Audi, 1995).

This study sheds light on a form of collaboration, a collaborative project course, and it identifies the moral problems perceived by client representatives regarding such a course in information systems education. A research method developed for capturing the perceptions of a group of people, phenomenography (Marton, 1986), is applied. It is a method that makes it possible to construct a second-order perspective on how individuals perceive the selected phenomenon, meaning that the perceptions of a group of people are analyzed and a collective description is derived.

This research project was needed for the following reasons. First, although moral problems are inescapable in human life (Gowans 1987), we should nevertheless aim to prevent at least the most dilemmatic kinds (Marcus, 1987; McConnell, 1987). Given the popularity of industry-university partnerships in the IT field, we need to find out if there are moral problems in the partnerships, and if so what we can do to avoid and resolve them. Secondly, this study complements business-ethics research on ethical issues in industry-university relations (Kenney, 1987). Thirdly, in the field of moral psychology empirical studies on moral problems have been conducted in order to identify the characteristics of moral conflicts (e.g., Krebs and Denton, 1997) and moral problems in certain professions (e.g., Tirri, 1999). This study complements the research from the IT viewpoint in having IT professionals as subjects. Fourthly, phenomenography has rarely been used in the study of moral phenomena (except Vartiainen, 2005, 2006, 2007; Stoodley 2007), and this study will confirm its relevance to research on moral and ethical issues. Fifthly, research on project-based courses in computing has rarely been touched on from the perspective of morals or ethics (except Fielden, 1999 and Scott et al., 1994, who nevertheless do not consider the viewpoint of clients). This study complements educational research on computing by taking moral conflicts into account.

Section 2 following this introduction introduces phenomenography as a research method and Section 3 describes the data gathering and analysis. Section 4 shows the collective description of the moral problems perceived by the client representatives in collaboration with the student group. Section 5 relates the results to the literature and evaluates the study. Section 6 offers practical recommendations for avoiding and learning from moral problems.

2. ON EXPERIENCING A PHENOMENON AND THE PHENOMENOGRAPHICAL METHOD

The phenomenographical research method was developed at Gothenburg University in the 1980's in order to study human understanding of specific phenomena (Marton, 1992). The aim is to identify and describe qualitative variation in individuals' experiences of their reality (Marton, 1986, 31). The phenomenographic researcher seeks to attain a holistic view of a selected phenomenon, which - according to Marton (1995, 178) - is possible because there are a limited number of qualitatively different ways of experiencing it:

> "…had the number of potential aspects (we are talking about essential aspects that define the phenomenon) been infinite, we could have experienced every situation, every phenomenon differently, each one of us. … We have variation and resemblance in our way of viewing the world. In order for this to be the case the number of critical aspects that define the phenomenon must be limited. And the number of critical aspects must be limited because we learn to experience them by successive differentiations from each other. Oversimplifying things a bit, the different ways of experiencing a phenomenon reflect different combinations of the aspects that we are focally aware of at a particular point in time."

It is thereby possible to obtain a holistic view of individuals' conceptions of any phenomenon under study. What is characteristic of phenomenography is that it aims at conceptualizations that are faithful to the individuals' experience of the selected phenomenon. Such conceptualizations, which are typically gathered in interviews, are then categorized and the relations between the categories are further explored (Francis, 1993, 69). A phenomenographic researcher seeks qualitatively different ways of experiencing the phenomena regardless of whether the differences are between or within individuals. He or she tries to achieve a so-called second-order perspective on the investigated aspect of reality by describing the conceptions of a group of individuals - instead of taking the first-order approach and describing the reality directly, which is the convention in ethnographical studies (Figure 1). The outcome of a phenomenographic research project is the researcher's interpretation of the subjects' understanding of how the subjects experience, understand or perceive the studied phenomenon (Berglund, 2005, 37). The variation lies in the interpretation made by the researcher (Berglund 2005, 38). Phenomenography is used in the following three main areas (Uljens, 1991, 98): 1) Research on general aspects of learning (approaches, strategies), 2) Content-oriented studies on learning (focusing on educational effects), and 3) Studies on people's conceptions of everyday-life phenomena (e.g., taxes, death).

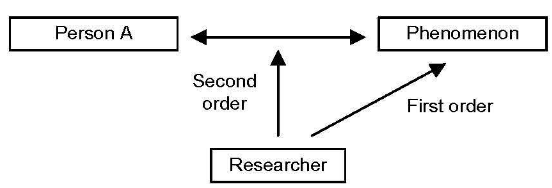

Figure 1. The first- and second-order perspectives (Uljens 1991; Järvinen 2001)

People's conceptions, like awareness, are dual-aspect: the "what" or referential aspect corresponds to the object itself and the "how" or structural aspect relates to the act

(Marton and Fai, 1999). The "what" aspect concerns what a mental act is directed towards, and in phenomenological terms is called noema, which stands for what is experienced (Ihde, 1979, 44). The "how" aspect, on the other hand, denotes the different parts of the phenomenon that constitute its overall meaning. The phenomenological term is noesis, which stands for mode of experiencing (ibid.). In order to understand the whole we must understand both the object and the mode of a person's mental act (Uljens, 1991, 84). These two aspects are different perspectives on the same thing (Berglund, 2005, 43). Berglund (ibid., 41) offers an example by way of clarification. Let us think about a one-euro coin. The meaning of the coin (legal tender in Europe) and its shape (round, consisting of two metals) must be known in order to understand it. Someone knowing its meaning or value without knowing its structure would not recognize it in a pile of round metal pieces. Similarly, someone knowing its shape and finding it would not understand that she or he could buy something with it.

2.1 Data gathering in phenomenography

Interviewing is the most commonly used data-gathering method in phenomenographical studies, although drawings, for example, have also been used (Uljens, 1991, 89). Data gathering through interviewing enables the researcher to access the perspective of the person being interviewed (Patton, 1990, 278), but it is impossible to obtain information about how people feel or think, and about their intentions, through direct observation. Nor does it allow us to observe behaviors that took place in the past, or how people have organized the world and what kind of meanings they attach to what goes on in it. By interviewing people we are able to enter the other person's perspectives. However, this data-gathering method is very much dependent on the researcher: the quality of the information obtained during an interview is largely dependent on the interviewer (ibid., 279). The task of the phenomenographic interviewer is to direct the discussion towards the phenomena being studied and to obtain information about how the interviewees understand the concept (Bowden, 1994, 9). Open-ended questions are usually used, and additional questions such as, "What do you mean by that", or "Could you explain that further?" may follow. This encourages the interviewees to reflect on what they have said and to explain their understanding more fully.

2.2 Data analysis in phenomenography

The aim of a phenomenographical study is to differentiate, group and interrelate data and then to determine the categories of description as the result (Svensson and Theman, 1983). A category may include several concepts, which may be compared with each other. The aim is then to explore relations between the obtained categories in order to derive a meaningful structural model of the conceptions (Francis, 1993, 74). This search for a meaningful structure demands the identification of the distinguishing features of the categories and the determination of logical or other relations between them. There are variations in ways of analyzing interview transcripts. One way is to extract quotes and deal with them away from the interviews, and another is to keep the context of the citations in mind (the whole interview transcript) (Bowden, 1994, 11). Bowden advocates dealing with the whole transcript instead of the cut-and-paste solution. The next step is to shift attention to the meanings embedded within the quotes (ibid,, 11). The interest is focused on the 'pool of meanings' instead of on what the individual interviewees have said. As a result of this work, the citations are arranged and rearranged, and narrowed into categories. Finally they are defined in terms of core meanings and borderline cases. It is not necessary in phenomenographic research to try to obtain a comprehensive account of the conceptions of each individual (Francis, 1993). However, the researcher should be able to show that no more categories would emerge if the selected sample size were increased. Sandberg (2000) observed that after 20 interviews the conceptions start to saturate.

Phenomenography as a method is closer to abductive than to inductive logic (Isomäki, 2002, 51). In the former the theory is created from the empirical data following a guiding principle or some kinds of clues found in the scientific literature, for example, whereas in the latter the theory is created from the empirical data without a priori assumptions. Phenomenographical studies feature a priori assumptions (ibid.).

This approach has been used in studies concerning conceptions of matter (Renström, 1988) and systems designers' conceptions of the human being (Isomäki 2002), for example. A collection of phenomenographical research is to be found in Marton and Wenestam (1984), and on the Land of Phenomenography website (2007).

2.3 Phenomenography and research on morals

There are characteristics of phenomenography that make it a promising method for the purposes of this study. First, the aim of the research method is to show the qualitative variation in which a certain population understands something (Järvinen, 2007). The aim in this study is to determine what client representatives perceive as moral problems in their work, and what these individuals are able to describe is therefore dependent on their moral sensitivity (Rest, 1994). Secondly, the interest in phenomenography is both in the object itself and in how it is experienced, including - in the case of students' learning - the act of learning and the motive (Berglund, 2005, 42). As far as moral conflicts are concerned, we are able to express our conceptions of them (the "what" aspect), and we have intentions in our acts regarding what is right/good or wrong/bad (the "how" aspect, motive). In addition, an individual's morality is subject to development (e.g., Kohlberg, 1981; Rest, 1994), and could therefore be studied from the perspective of learning. Given these characteristics of morality and phenomenography, this method is a promising medium for studying moral phenomena.

3. DATA GATHERING AND ANALYSIS

The research setting is briefly introduced below, the phenomenographical method is described, and the data-gathering and analysis processes are presented.

3.1 The research stage

In order to investigate moral problems in one form of industry-academia collaboration, the student project, the author started to work as the instructor on a project course in the IS curriculum at a Finnish university (see Appendix for a course description). Students on this course are put into groups of five to implement a project task defined by a business client, typically an IT firm such as a software house, or the IT department of an organization such as an industrial plant. Each student is expected to use 275 hours in implementing the project task, and 125 hours to demonstrate project-work skills, including project leading, group work and communication skills. In total, a five-student group uses 1,375 hours in planning and implementing the client project. Each student is expected to practice the role of project manager for about one month during the process, which lasts from five to six months. The tasks range from extreme coding projects to developmental projects and research. They are typically ill-defined, and need to be redefined as the project progresses. Four examples of project tasks follow. The texts have been translated from Finnish into English from the course website, where the students produce their project homepages (Vartiainen, 2005):

> The task of the [name of a project group] group is to investigate the usage of EJB (Enterprise Java Beans) in an n-layered environment. The goal is to examine the potential uses of EJB in delivering information between the client and the server components. In addition to this, the project group will program a small prototype.
>
> The task of the [name of a project group] group is to investigate product management and different sectors of software engineering in [name of a client], and to analyze and describe the salient concepts and processes relating to them. In addition to this, the group will produce a report based on the concepts, methods, tools, and best practices found in the market, and which assesses the functionality of new operational models in managing infrastructure products in the workstation environment in [name of the client].
>
> The purpose of the project is to implement an information-transportation protocol for [name of system], a client-server system developed by [name of a client] for reading and managing information about energy.
>
> The task of the project is to map the security level of [name of a client] and to produce real recommendations and solution models for improving these security levels.

A board consisting of two client representatives, two representatives from the student group (the project manager and the secretary) and the university instructor make the redefinition and other decisions. During the collaboration, the role of the clients is to provide the students with guidance in terms of substance (e.g., technical guidance), and the role of the instructors is to guide the process (e.g., planning, reporting). Client organizations pay the university the equivalent of 50,000 Finnish marks (the study was conducted before Finland changed its currency to the euro; 50 000 FIM was approximately €8500 and $10 000) for the co-operation. Once the supervising course instructor has accepted the clients, their representatives present the project tasks to the pre-formed student groups during the task-exhibition stage. The student groups then negotiate the tasks, and when clients and groups are allocated to each other the collaboration between group and client starts with an introductory meeting, the signing of the contract, and the first board meeting.

In order to identify moral conflicts the author chose a qualitative and interpretive research approach. The subjects were given the opportunity to express themselves freely and openly when describing the conflicts they perceived in the collaboration. The author thus adopted a phenomenographical approach in asking the client representatives open-ended questions. As the phenomenographer Uljens (1991) put it, the best way to understand reality is to investigate people's understanding of it, which is the focus of interpretive research (Klein and Myers, 1999, 69):

> Interpretive research does not predefine dependent and independent variables, but focuses on the complexity of human sense making as the situation emerges ... attempts to understand phenomena through the meanings that people assign to them.

This study could not be purely inductive because the researcher's awareness of the theoretical literature on moral conflicts, and on business ethics, affected the results: it is therefore abductive (Isomäki, 2002) in nature.

3.2 Data gathering

Client representatives were interviewed during the academic periods 2000-2001 and 2001-2002 with the following task: "Describe the moral problems and issues worth mentioning from the moral viewpoint that are related to the fact that you are acting as a client in the Development Project." The author used "moral problems" because "moral problem" is common language used in every-day contexts (e.g., newspapers, critical documentaries on television). Moral conflict and moral dilemma are more scientific terms. The expression "Issues worth mentioning from the moral viewpoint" is based on the broad definition found in Audi (1995): any morally relevant issue may be called a moral dilemma according to the broadest definition.

Client selection was based on the idea of theoretical sampling (Glaser and Strauss, 1967, 62-63):

> Theoretical sampling is done in order to discover categories and their properties, and to suggest the interrelationships into a theory. … The adequate theoretical sample is judged on the basis of how widely and diversely the analyst chose his groups for saturating categories according to the type of theory he wished to develop.

The aim was to interview the client representatives a) representing different hierarchical levels like chairs of board (who typically were managers in their organizations) and support persons (who typically were technical specialists), b) representing different ages, c) representing both men and women. Some representatives of clients were clearly either managers or direct support persons for their groups, but some subjects worked in a managerial position and specialist roles simultaneously during the course (e.g., some managers of small firms guided the students in technical/specialized issues). As an exception, there was a client organization, which included two representatives who worked close to each other, so that it was natural to interview them simultaneously.

The subjects represented the following age and gender (male/female) profiles (in one case two representatives of a client organization were interviewed at the same time): 23/F, 26/M, 27/M, 27/M, 28/M, 29/M, 29/M, 30/M, 33/F, 33/M, 35/M, 36/M, 36/M, 37/M, 38/M, 39/F, 42/M, 47/M, 49/M and 50/F, 56/F, and 56/M. Twelve interviewees represented the managerial level and the others were technical specialists.

3.3 Analysis

The goal of the analysis process was to determine a meaningful structure of the subjects' perceptions (Francis, 1993, 74). The resulting structures should describe the studied phenomenon logically and consistently so as to show its diversity, and to provide the means of deriving implications for research and practice. Awareness of related theories is a challenge to a phenomenographer in that the analysis should not be affected by the theories, and the categories should rather be formed via interpretation of the subjects' perceptions. However, this is an ideal that is rarely achieved as the researcher cannot forget the theoretical background (cf. the idea of abduction discussed above).

In the analysis the author coded the main issues that emerged from the interview extracts in order to acquire an understanding of the matters that were raised by the subjects. Then he started to group similar perceptions they shared, that is to say he produced "pools" of perceptions. This coding phase was repetitive in nature, and he studied the extracts numerous times. Flap boards and the network views supplied in Atlas.ti software (Muhr, 1997) were used to visualize the categorization procedure of both collective descriptions. Different versions of the classification emerged during the analysis process. The "what" or referential aspect was apparent from the beginning of the study. There were moral problems related to the objectives of the project and obtaining the results, which the author termed task-related problems. Then there were problems related to interpersonal issues such as giving feedback and how the project affected students, which he named interpersonal problems. Finally, there were problems related to parties not involved in the collaboration but who were nevertheless affected by the project: he called these problems related to outside parties or external relations.

The author's first interpretation of the "how" or structural aspect incorporated doing-wrong, self-centered, and other-directed moral problems. The doing-wrong problems were related to doing something that the subject perceived as wrong, such as stretching morality when advertising the project to the students. Moral problems based on the self-interest of the firm emerged, and at first the author called them self-centered. However, because both types of problems were based on the same motive, benefiting from the collaboration, he combined them as self-centered problems. Then, in order to highlight the significance of the business context he gave them the label business-directed moral problems. Relations-directed problems arise for a mixture of reasons: business-directedness and concern for collaborative actors, students and the university. The subjects thus extend their deliberation to upholding not only their own business but also their relations with others.

In the author's opinion the current classification has enough granularity as it serves its purpose, which is to describe the core moral problems in the stage in question. Although the descriptions of moral problems in the fields of philosophy and moral psychology (Nagel, 1987; Lemmon, 1987; Myyry and Helkama, 2007) are more specific than the one given in this study, the two aspects and the six types include the essential.

4. A CLASSIFICATION OF MORAL PROBLEMS IN THE COLLABORATION

Table 1 summarizes the referential (the rows) and structural (the columns) aspects of moral problems, which constitute six categories. These aspects are considered next, starting with the structural aspect.

The structural (how) aspect involves business-directed and relations-directed moral problems. It is hierarchical in nature: business-directed conflicts represent more restricted deliberation and relations-directed conflicts extend the deliberation to upholding relations. Subjects facing business-directed moral problems are either forced to do something wrong in order to uphold the major responsibility of the business, profitability (Carroll, 1999), or they are forced to do something that is detrimental to profitability. As far as the external parties are concerned, clients face the danger of educating students for their competitors. This may be morally dilemmatic as the education benefits the achievement of project results. With regard to the project task, the clients deliberate about not upholding moral values such as honesty in order to bring their project task into the collaboration. Interpersonal conflicts may involve the client deliberating about refraining from telling the truth or lying to students in order to get a good team together or to uphold good relations.

Relations-directed moral problems are extensions of business-directed problems in that concern for other parties and their objectives and welfare is brought into deliberation together with upholding the responsibility of profitability. Client representatives still adhere to their objectives, but they also engage in perspective taking, i.e., they try to understand the students' viewpoints, for example. As the collaboration takes place in close contact with the students, the client representatives are concerned about how the project and the attainment of beneficial objectives would affect them. The latter seem to harm some parties in some situations: employing students may prolong their studies, giving harsh feedback may discourage them, and intensive guidance may provide them with a false image of working life. The consequences of the projects for the employees in the client's own organization, and for the vendors, were also found to be of concern. The move from business-directed to relations-directed problems implies development in moral sensitivity (Rest 1994) as – on the collective level – more affected parties are taken into consideration.

The referential (what) aspect concerns interpersonal, project-task, and external relations. Interpersonal moral problems involve relationships between individuals, whereas project-task problems relate closely to implementing the project tasks and attaining the objectives. External relations concern moral problems in relations with outside parties.

		Business-directed	Relations-directed
The structural aspect "How" The referential aspect "What"		Motivation and concern are based on the utility of a client representative's organization. His or her deliberation and concern are restricted to the business objectives of his or her organization	Motivation is based on the whole: how to uphold business objectives and show concern for other parties at the same time.
External relations	Relations with parties outside the project collaboration (competitors, educational institutes, vendors)	Category 1: "How do we avoid aiding our competitors?"	Category 2: "How do we balance business objectives and social responsibilities towards outside parties?"
Project task	Attaining the objectives of the parties in the project co-operation and implementing the tasks in the process.	Category 3: "What do we get from collaboration with universities?"	Category 4: "How do we combine our objectives and those of our partners?"
Inter-personal	Treatment of the individuals who work for the project.	Category 5: "How do we benefit from the students' efforts?"	Category 6: "How do we attain our objectives and uphold relations with the individuals who work for the project?"

Table 1. Moral problems perceived by client representatives involved in a project course

Next, the individual categories are presented.

Category 1: "How do we avoid aiding our competitors?" A client representative confronts a moral problem in which concern and care are targeted and restricted to the utility of his or her organization, and which relates to external parties. The possibility of the client's competitors' benefiting from the particular co-operation with the student group is a moral problem for the clients. They face this problem when making decisions about providing students with something that could benefit competitors that might recruit them. The client faces a risk in disclosing confidential corporate information to students, and in putting resources into their education because this could also benefit competitors. For example, one client representative said that in order to get maximal utility from the project clients should be aware of the students' plans, and should refrain from educating them if they did not want a job in the client organization. The fact that educated students might be employed by other (possibly competing) IT firms affected future-oriented decision-making. The following example describes this problem:

> C4: We have seen that, I don't know if this is related to morality at all, but if you think from the employment viewpoint, it's the opposite, the people in these projects, they now have such good contacts with their present employers, so that we, in a way, educated them for our competitors … and then we didn't have the opportunity to employ any of them.

Category 2: "How do we balance business objectives and social responsibilities towards outside parties?" A client representative confronts a moral problem in which his or her concern and care are extended to others, and which relates to external parties. External parties include educational institutes and other actors in the business field. As far as educational institutes and society in general are concerned, client representatives deliberate on whether there are social responsibilities towards them, and if so whether the clients should fulfill them. This moral problem emerges in the two following cases: the selection of an educational institute, and contributing to the development of an educational institute. Selecting an educational institute incorporates a moral problem related to contributing to the surrounding community: when the firm selects the institute it contributes to the community in which it is located. As far as other actors in the business field are concerned, clients deliberate about the effects of exercising power over outside parties: the exercising of power may have detrimental consequences. Two examples follow.

> Client C10, a so-called long-distance client engaging in co-operation from a town far away from the city in which the university is located, talked about contributing to the development of the local community and practicing co-operation with an educational institute far away from the town in which the client was located:
>
> C10: Should we favor educational institutes located there [in the city in which the client was located] or, or should it be, well, this is very much dependent on me that we have directed [the co-operation] to [the city in which the university was located] … … This kind of social, or how can I put it, social

> responsibility … firms have this kind of social responsibility to employ people where they are.

Client C4 talked about the project task, in which the students were to compare information relating to products sold by different vendors. He thought that selecting vendors for students' assessment work included a moral problem related to the grounds for the selection. In addition to this, the results of the project, the assessment of the products of different vendors, would affect some of them by reducing their possibilities for economic growth:

> C4: Many times, one party here, well, there are different vendors, in our case [three names of software houses], what would be a moral problem, in a way it's a problem with the project that we give the information that these should be investigated – how have we chosen them. Are these deliberations based on personal thinking or other issues or based on facts, or how have we used our power to get these? Power must be used – in the right way when we have mobilized vendors around this project. Perhaps this doesn't fit into a development project.
> … …
> C4: … and then it's, of course, although they are all functional, it's from their sales and from their activities and growth possibilities.
> … …
> The researcher: Might there be any kind of moral problem or issue worth noting?
> C4: Well, it's no big deal … here it's that anyone who gives recommendations to anyone else – how correct the judging is. Was it so bad at all or was it so good, and from this it could follow so-and-so-on. It could harm someone.

Category 3: "What do we get from collaboration with the university?" A client representative confronts a moral problem in which his or her concern and care are targeted on and restricted to the utility of the organization, and which relate to the objectives of the project. The results of the project, together with the employment of students, are the main motives and objectives driving the clients in the collaboration with educational institutes. How to organize the collaboration with educational institutes inside the client organization was a moral concern. There is the possibility that potential clients will provide the university with false information beforehand in order to be accepted as a collaborating partner. Prioritizing between student-project and other business-project-related work tasks is also considered a moral problem. During the project the client representatives confront decision-making situations in which they produce cost-benefit analyses. A client may observe that the co-operation could be considered a failure if they do not reach the objectives. The reasons for the failure may lie in the overall co-operation and in the functioning of the student group, for example. Presenting arguments for quitting the project, and also the timing of the quitting, were considered moral problems. Client C5 raised this problem as follows:

> C5: … then moral problems related to in what phase a client is justified in resigning from it [project] start to emerge. On what grounds it is justified that the client does not fight till the death to keep the project alive but says, 'Ah, fifty thousand so what?'.
> The researcher: Would you describe how such a moral problem could arise?
> C5: I suppose that it's mostly based on the fact that the expectations are so far away from what the bare reality is. Then if the group does not act in the expected way, as one could generally expect.

Client C1 considered the possibility of giving university parties a false image of the future project:

> C1: Well, it's possible to give too good a picture of the probable task or give empty promises to students or to the university about the task. Yes, this involves a moral consideration … … the most important thing is that the project is described correctly and we don't give the wrong idea about the consequences … … I'm quite sure that all [clients] have other goals related to this work, and activities apart from this project. We have openly said that recruiting occurs here, that is to say we're also looking for good people by using this opportunity.

Client C7 considered the selection of an individual to maintain the willingness and motivation inside the client organization a moral problem – and similarly, the non-existence of policies concerning the co-operation:

> C7: … the moral question actually relates to who is organizing and exposing the state of willingness on the client's side. I don't know what these processes are like in firms – I have a sort of understanding of how we do it … … a sort of moral question would be that we should have a strategic starting point for this kind of co-operation, and it should be at a high level in this organization so that the moral questions on the client's side would be handled systematically. For example, we don't have any framework pertaining to what our objectives are relating to these kinds of issues. We have discussed them and someone may have written about it. But we're not aware of any brilliant courses of action.
> The researcher: Then what makes this a moral problem?
> C7: Perhaps, well, I don't know if, perhaps, perhaps we take this too lightly. We should deliberate more seriously about what and to what extent – but we're not up in the air either. But if one deliberates how matters could be handled in a better way, the reasons are quite clear, the viewpoints about recruiting and the image of the firm are important, and, well, on the other hand we get a working resource. But there might be something more profound if one sat down to deliberate.

Category 4: "How could we combine our objectives and those of our partners?" A client representative confronts moral problems in which his or her concern and care are extended to others, and that relate to the objectives of the project. Respecting the objectives of the university and the students is such a moral problem: clients adhere to their own objectives but they also show respect for those of the university and the students. They also see a moral problem in the possibility that they might not respect the learning aspects of the project co-operation and that they might exploit the students. However, they are ready to give up some of their utility-based demands because of the students' status as students. Client representatives confront prioritization in decision-making situations in which the decisions may harm the students or the employees of the client organization. The following is an example of a client deliberating about his role as a client, and the one after that deals with the employment of students.

C15: I think that I have, concerning the project, in a way, when thinking about moral problems, ethics … okay, well, yes, in the sense that, naturally, at the beginning - I wondered, now that we have this project, so I had to consider whether there really is a kind of client issue – is it a sort of a client-consultant relationship here, or is it more like we are the client and then there are the students who do the job, and who need these credits then … I had to consider if this was work done for us, or if it was done for the students, anyway.
The researcher: Yes. I see.
C15: And, and I think that everybody at our place wrestled with [the problem] that there was a kind of desire to help the students to meet this study objective, but on the other hand we had money invested in it, fifty thousand, or what was the amount that we invested in it in old money, so we wrestled with that ... and there was another kind of, kind of not a problem, but which we actually stuck to, then we agreed at the beginning that this project, when it started, we wouldn't make them do anything … but we'd kind of morally stick to it that we wouldn't put them, let's use the expression – to formatting floppy disks.

In the next extract, the client representative was wondering if they were exploiting students because the client had the benefit and the students were not paid for the job:

C5: Well, probably the fact that one has the idea that when someone works he or she is paid for it, now we, however, get this concrete result that we can benefit financially from in the future, and these students aren't paid at all, here one feels that these students have been exploited.

In the next extract the client representative deliberates on the moral problem on by-passing educationally important issues in pursuance of the efficient attainment of the project task:

C13: Well, there is a matter that comes to mind, well, the client has its own advantages and objectives relating to the whole project – about the end results. Well, how does it correlate with education, that is to say, related to the objectives and advantages of the students? Do they get the benefit they are expected to get? And this in relation to us as clients – do we get the benefit that we are expecting?
The researcher: Would you say a bit more about what you mean by this?
C13: I mean - is it, perhaps, morally wrong to expect certain kinds of results from the project although one knows that attaining them doesn't benefit students in terms of education?
The researcher: I don't fully understand what you mean. Would you say it again?
C13: Yeah, if we think that, well, when there's a client who pays for the project, and he wants to attain certain objectives that have been set for it. If these objectives don't go hand in hand with the objectives that the university has set as educational objectives for the students.
The researcher: Could you give me an example or tell me somewhat more specifically what this could mean in practice?
C13: In practice, it could mean, for example, well, we bypass certain educationally important phases in the project and use professional skills related to the project in the name of efficiency.

The employment of students is an important beneficial objective for many of the clients. Selecting employees from a student group is a moral problem in the sense that recruiting them during the project might affect the spirits of individuals in the group and therefore the results of the project:

C5: … you have to make a choice and making the choice could perhaps cause a phenomenon relating to 'this is for you and this is for me' or whose favorite are you? Or it could cause some kind of moral problem – also for the client who is recruiting. What are the grounds for selecting those to whom the opportunity was offered in the end?
The researcher: What do you mean by the 'this is for you and this is for me' principle?
C5: Well, is there competition relating to who is employed and who isn't employed? Does it affect the actions of the group? If in the middle [of the project] it's known that a certain person is offered something and 'I am not offered anything, so what is wrong then?' I can't be bothered to do anything. There are multitudes of scenarios relating to what can happen.

Category 5: "How do we benefit from the students' efforts?" A client representative confronts a moral problem in which his or her concern and care are targeted on and restricted to the utility of the organization, and which relates to individuals in the project. The client representatives believe that their utility-based objectives could be safeguarded by not being open, by refraining from telling the truth, or by being dishonest about various issues to do with the project task or their attitude towards the functioning of the student group. Getting a good team for the project, keeping up the spirits of the student group, and employing students are the benefits the clients are aiming for by refraining from telling the truth or by lying. Client representatives also make decisions of which the students are the objects, and which are made to safeguard the results. The following extract describes a moral problem in advertising the project task to student groups, concerning how truthful the description of the task should be:

C4: When we come to morals, at the phase when we were thinking about the task we had to decide to what extent to transform it … How much to oil it so that we could persuade the students in order to get a good team. And here we stretched morality a little bit so that they would really be interested in us, and because, we thought, we had an attractive task to offer.

The clients are interested in finding new employees and in making contact with students who would like to write a thesis for them. The clients thought that the possibility of providing the students with a better image of the client organization in order to forge contacts with them presented a moral problem:

C8: … "it could be that the firm tried to give a false image, a better image than the reality, about itself to the students, and why not to the instructors as well … … there is the possibility, let's say that there's an individual in a student group, and he was recognized as very bright and, perhaps, the firm used all possible means to ensure that he would be interested in starting as a summer trainee, or perhaps writing his thesis, or as a regular employee. There is a risk factor here, let's see, even such things as entertaining and so on. Here we can find, as well as from the things mentioned previously, seeds for moral conflicts emerging.

The researcher: Well, what makes it a moral conflict or a problem?

C8: If, with the help of a false image, you – so-to-speak - buy a student or influence him consciously using his weak point or something like that.

Category 6: "How can we attain our objectives and uphold relations with the individuals who work for the project?" A client representative confronts a moral problem in which his or her concern and care are extended to others, and which relates to individuals in the project. Client representatives consider it a moral problem if some of their acts harm the students: proper feedback, offering employment, and excessive guidance are considered in some cases to have harmful effects. They deliberate about carrying out their duties towards the students, and about safeguarding their rights and treating them in an impartial and equal way. These issues are related to keeping promises, ensuring that the students will get real-life experience in the project, giving them feedback about their abilities, and teaching them to respect other individuals and parties. In the following example, client C5 suggested that recruiting students prolonged their studies and therefore it was a moral problem for client representatives:

C5: These moral problems emerge from the notion of how far we put our resources, how far the firm puts its resources into the finalizing of their studies or whether the students are used as a labor reserve who code from morning to evening getting a pizza as wages … in this area there are many kinds of actors, a responsible firm, which acts in the morally right way, making it possible to some extent for them to finalize their studies while working to support them.

When the clients give feedback and assess the functioning of the student group, they may provide the students with misleading information and visions about their abilities. Client C18 considered this a moral problem. He felt that they were responsible for giving honest and open feedback to the students:

C18: Yes, in my view, it could be, indirectly, and I'm not saying that I have experienced this kind of [moral problem] but in general, if, well, let's say that, in any case, wrong beliefs and visions of the person about himself might be due to him and these could, in a way, be reflected in, well, in general, in what is one's responsibility towards individuals and towards fellow humans, and, and towards honesty and openness. In that way, they are confronted. It's exactly like giving testimonials to people. How honest we are and how over-superlative we are and how it affects one's mind and beliefs.

A representative of a long-distance client deliberated on whether it was right to ask the students to travel instead of traveling himself when they had project meetings. The moral problem is based on the deliberation about what justifies this treatment of students, who are human beings like any other people:

C21: Well, perhaps this kind of, well, traveling – does one expect the group to travel to the client's location, this is about the usage of time – is it about the usage of one's own time or that of the group, or should one feel pity for the students, that is to say, should one make them come to a location a few hundred kilometers away (laughing) is it about seeking one's own advantage – if you are a client you dictate the times and locations of the meetings. Morality in practice (laughing).

The researcher: Well, what is it that makes it a moral problem?

C21: Perhaps the fact that, well, is it right to use your position for your own advantage … they are human beings, these students as well. What justifies or mandates this – is the money always the only measurement or is it that you possess the mandate or justification to dictate on all matters?

Friendship with individuals with whom one has business contacts is considered a moral problem. There may be the temptation to resort to bribery, for example, in the case of a close friendship. The problem described by client C19 is illustrated with the help of two extracts from his interview. In the first he describes a moral problem as a conflict between one's own interests and the interests of the firm. In the worst cases such conflicts might lead to bribery:

The researcher: What else comes to mind about moral problems, what does it mean?

C19: "Yes, of course, these conflict situations where personal, well, could I say, advantage and the interests of the firm are on a collision course, which, in the worst cases, leads to corruption."

The second extract from the same interview describes a moral problem related to a friendship with a university instructor. Client C19 considered making friends with an instructor a moral problem if the results of the student project were poor. The moral problem is based on a conflict between the interests of the client organization and the interests of those who are friends with each other:

C19: Well, again, … in principle it would be possible, for example, when I asked the instructor to do a favor for me – that we might think about this further – if an instructor and I had become friends and hit if off, and on the one hand if the results from the previous year had been poor, a moral problem regarding the future could emerge. But this is supposition, with many dimensions to it. But related directly to this I don't perceive any problems in the future.
The researcher: You described a kind of likely problem, so what makes it a moral problem?
C19: There is a clear conflict between the interests of the firm and one's personal interests, that is to say, I consider it dangerous, well, not dangerous but something that should be planned and carefully thought over, whether to make friends with suppliers. It is allowed but then one has to be very careful and remember one's own moral code and objectives.

5. DISCUSSION

This study showed evidence of moral problems identified by client representatives on a project course in information systems education. As a result of the phenomenographical analysis a collective description based on second-order perspective (the focus is on the perceptions of a group of individuals) was derived. Although no genuine or grave moral dilemmas were identified, which is not surprising as genuine moral dilemmas are rare in ordinary human life (Lemmon, 1987), the subjects confronted a variety of colliding moral requirements that needed attention in practice. The categories are split into two aspects, the referential (what) and the structural (how). On the referential side the moral problems related to

1. external relations (educational institutes, vendors)
2. the project task (attaining objectives, implementing tasks)
3. interpersonal (treatment of individuals).

The referential aspect reveals the three major areas of moral problems in collaboration. The division into external relations, and the project task and interpersonal issues is also visible in the studies carried out by Blake and Mouton (1978), Brittain and Leifer (1986), Culnan (1987), and Semprevivo (1980, 114). Consequently, the triplicity found in these studies as well as in the present one describes the three essential problem areas in IS projects, and attests that these problem areas can be reflected through the moral viewpoint.

Inherent in the structural aspect are two kinds of moral problems:

1. business-directed (the profit and utility motives)
2. relations-directed (extends business-directed problem to consider the students and the objectives of other parties).

Business-directed moral problems reflect the fundamental business responsibility, profitability (Carroll, 1999), which is the driving force in stockholder theory (Smith, 2002; Smith and Hasnas, 1999). Client representatives' loyalty as employees (Johnson, 1995, 565) makes them adhere to the objectives of their employers and of the owners of their firms (shareholders could be classed as managers' employers). They therefore fulfill their professional duty to uphold profitability, in other words the production of goods and services at a profit (Buchholz and Rosenthal, 1999, 303). Of concern in the business-directed problems was how to get the most out of the students and the collaboration as a whole. Relations-directed moral problems resemble the idea behind stakeholder theory (Smith, 2002, Smith and Hasnas, 1999). Clients still adhere to their objectives, but they also engage in perspective taking, i.e., they try to understand the students' viewpoints, for example, and to find a balance between the beneficial objectives and the stakeholders' rights and interests. Engagement in perspective taking refers to the development of moral sensitivity (Rest, 1994), an awareness of how our actions affect other people. Subjects facing relations-directed moral problems engaged in more developed perspective-taking than when facing business-directed problems. The division into business-directed and relations-directed problems bears some resemblance to the findings of Myyry and Helkama (2007). They determined three types of moral conflict: 1) low-socio-cognitive conflicts (or conflicts involving temptation) in which a person's desires go against internally accepted moral standards; 2) moderate socio-cognitive conflicts in which the person reacts to the transgressions and needs of others; and 3) high socio-cognitive conflicts in which the person is faced with conflicting demands and social pressures. Business-directed problems include the temptation aspect in cases in which the client representative puts forward beneficial objectives by doing something he or she perceives to be wrong, by "oiling the project task for the students", for example. Relations-directed problems relate closely to moderate and high socio-cognitive types of conflict. The collective description of moral problems resembles the dirty-hands dilemma, which is discussed next.

5.1 The dirty-hands dilemma and the studied case

The collective description bear resemblance to the dirty-hands dilemma, which is characterized by a conflict between a consequentialist and a principled demand (Kaptein and Wempe, 2002, 180): Stakeholders of the corporation must be convinced of the corporation's importance as a long-term partner, their rights and interests have to be taken into consideration, and they have to receive compensation for their collaboration. Only in this way will the partners contribute to the existence of the corporation. However, stakeholder demands have to be met at minimal cost otherwise the corporation would not be acting efficiently. Therefore, in order to act responsibly (ensuring the existence of the corporation) one has to act immorally (regarding individual stakeholders). Firing employees to increase returns is an example of this dilemma. In the studied case, clients offer the university a real-life learning environment and they opportunistically use the university and the students for their own ends, and are ready to violate moral values (e.g., honesty) or otherwise cause harmful consequences for the students (e.g., neglecting the learning objectives, prolonging their studies by employing them). Table 1 show that the moral problems in the collaboration relate to interpersonal issues, the project task, and external relations. This means that clients are prone to upholding business objectives by doing something that they perceive to be wrong if all the related parties are considered. However, the set-up is not black-and-white. Student employment was easy for the clients as most students were enthusiastic about the implementation of the project task and about learning project-work skills, and many of them were eager to get a job. Thus, the collaboration represents a good harvesting opportunity for clients, and also for students looking for a job. Therefore, the set-up is mainly of the win-win type and this is why the students and the university adhere to this kind of collaboration. However, what strengthens the resemblance to the dirty-hands dilemma is that the set-up makes it possible for the clients to exploit and abuse students, as the client representatives themselves mentioned. As Kaptein and Wempe (2002, 167) state, the position of corporate representatives is ambiguous in that they have to balance between different responsibilities all the time. The same kind of balancing can be inferred from the collective description of this study. What makes it difficult is that the two types of moral claims, upholding beneficial objectives and relations, represent intrinsically incommensurable value types, as Nagel (1987) puts it. Therefore, the set-up of the studied case makes it possible for client representatives to confront genuine moral dilemmas.

5.2 Role confusion: being a client representative

The client representatives experienced role confusion due to the educational nature of the collaboration and the fact that they also had the task of marketing the client organization as a good employer. Their role as a prospective employer affected the feedback they gave and the timing of students' employment. In addition, some of them did not know how to relate to students who were not professionals but just setting out on their careers. These experiences resemble role conflict or conflicting role strains as discussed in the field of social psychology (Secord and Backman, 1964, 494). Role strains emerge when an individual confronts expectations or she or he perceives obligations that are given equal priority, that is to say the role becomes conflicting or in extreme cases dilemmatic. The client representatives who were confused about their role as clients in the student project probably experienced role strain as not all of them were able to clearly prioritize their actions. In order to avoid such strain it would be advisable to develop awareness of the characteristics of each party and to make conscious decisions concerning their responsibilities and tasks.

5.3 Evaluation of the study

Some critical points are presented below: the full evaluation of the study is to be found in Vartiainen (2005). The saturation point in terms of moral problems was reached after 12 or 13 interviews. However, the dangers concerning rationalization, lack of awareness, and the fear of being shown up (Fielding, 1993) were significant according to the interviews. Interviewees might consider interview situations stressful or embarrassing because they might disclose thoughts that may not be creditable or honorable. It could be argued that the client representatives agreed to the interviews because of the stated and beneficial objectives to maintain good relations with the university. Because the author was not just a researcher, but also a staff member and a teacher on the project course, their participation in the interviews could have been interpreted as a goodwill gesture towards collaboration and the university. It is impossible to know why the subjects agreed to take part, but it is noteworthy that the moral problems they described included non-honorable issues such as the possibility of lying. However, Mattson (1998) argues that studying of individuals' morality must take place in various situations because if we approach criminals or anyone else, one may just get the picture of his/her moral ideology formed for the interview situation. This critique towards data gathering via interviews is noteworthy in studying moral phenomenon.

With regard to the motives of the client representatives, the author was under the impression for a long time that the clients were involved in this co-operation because of beneficial goals. This appeared to be the correct assumption, but what the author was not expecting was that they would bring up moral problems related to the wellbeing of the students. Whether these concerns were real or based on researcher bias is not known. The author's intuitive assumption, after the interviews, was that although beneficial objectives were the focus of the co-operation, many of the client representatives were genuinely worried about its possible negative effects on the students.

The traditional interest of industry in academia is based on the supply of an educated workforce (Louis and Anderson, 1998, 87). During the research period this interest was a significant determinant of the clients' willingness to embark on collaboration. Indeed, for some, finding potential employees was a more important project objective than achieving results.

The results are dependent on the client representatives' moral sensitivity and their ability to observe morally significant issues (Rest, 1994), together with my ability to interpret their perceptions. The granularity of the resulting classifications is specific enough to develop our understanding of the moral problems clients face.

The results should be understood as providing in-depth information concerning the case (the course, the country, the university, the timing) at hand. Whether they are applicable to other contexts (the course, the country, the university, the timing) depends on the similarities. As far as Lacity and Janson's (1994) criterion is concerned, according to which the validity of interpretive studies rests on acceptance by the scientific community, it is up to the reader to decide if the results are meaningful in his or her particular context.

What happens in society during the research phase may affect the subjects' thinking. Issues to do with morals and moral problems related to sports were under intense discussion in the Finnish mass-media during the spring of 2001 because four famous and talented Finnish skiers were found to have been using prohibited drugs. Direct television broadcasts reached over one million viewers (Finland's population is ca. five million). During the scandal and its coverage in the mass media the term "grey area" was used to describe issues in which the good and the bad were mixed. This topic was not mentioned during the interviews, but it may have unconsciously affected the subjects' thinking and the contents of their responses.

5.4 Research implications

During the interviews it became evident that the subjects confronted a variety of moral problems in their work in business IT projects. In addition, the resemblance of the referential aspect to the moral problems described in the IS literature suggests that they may be similar in structure in business IS projects. This is a potential avenue for future research.

This study concentrated on mapping moral problems in the light of the moral-sensitivity process in Rest's (1994) Four Component Model. Other significant processes of moral behavior - moral judgment, moral motivation and moral character - were not dealt with. This being the case, in order to develop more in-depth understanding of these processes future research should focus on the IT context.

One of the three corporate dilemmas (Kaptein and Wempe, 2002) was identified in the studied case. It is likely that these dilemmas exist in IT projects in business, too. Further studies on this issue would enhance understanding of IT projects in business contexts.

Some practical recommendations for collaboration are offered next.

6. FORM A REFLECTIVE COMMUNITY OF COLLABORATORS

During the research process the author observed that many client representatives were ready to participate in the university-arranged discussions about the collaboration despite the fact that their competitors were also present (Vartiainen, 2005). This observation encouraged him to develop the idea further. Although the drawing up of a social contract as defined in business ethics (Smith, 2002; Smith and Hasnas, 1999) may be too ideal to realize in its fullest sense, participants in complex collaboration should nevertheless strive to do so. In order to bring this about, the actors involved (corporations, educational institutes) should form a community of critical thinking and social learning with a view to finding a balance and developing an understanding of the effects of the collaboration and the actors on the rest of society. University representatives might offer tools and guidance for critical thinking (e.g., on theories of justice and ethics in general, and on critical discussion), and corporate representatives could openly express the (moral) problems they face. The triplicity determined in the referential aspect might support the thinking process, as follows:

1. External relations: How should one start collaborating with actors and what are the rules? How should one deal with the possible detrimental effects of collaboration and projects?
2. Task: What are the objectives of each actor and how do they converge with those of other actors? What forms of collaboration are suitable? What should one do if one is not able to do one's share?
3. Interpersonal: How should the individuals - especially students - involved in the collaboration be treated?

In addition to the above, the objectives of the educational institutes and private firms together with the dirty-hands dilemma of the corporations should be clearly articulated and discussed. These discussions might prevent role confusions among client representatives. Due to the fact that in this kind of community individuals vary in their moral sensitivity and judgment (Rest 1994), this set-up would offer a good basis for an effective moral discussion (Nucci, 1987) in terms of individual moral development. Level-X representatives in moral judgment might learn from those whose thinking represents the X+1 level (Kohlberg,1981), for example. As a whole, this kind of community would not only support collaboration among its partners, it would also foster the development of moral sensitivity in students if critical thinking is broadened to cover moral conflicts in the whole IT field (Vartiainen, 2005). Even if the collaboration did not develop to such an extent, the business actors and educational institutes might reach a mutual understanding of the rules of the game and the principles to which they should adhere, i.e., a common social contract concerning collaboration between industry actors and educational institutes.

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APPENDIX: A DESCRIPTION OF THE CHOSEN PROJECT COURSE

The name of the course was at that time the Development Project course, briefly, the DP course, and the aim was to educate students in project-work skills (e.g., group work, planning, leading, and communications) through the implementation of a project task for a real-life client. The pedagogical roots of the course lay in experiential learning (Kolb 1984) and project-based learning (Helle et al. 2006). From the instructors' viewpoint the yearly process of the DP course was divided into four phases: preparation, start-up, guidance and follow-up (Figure).

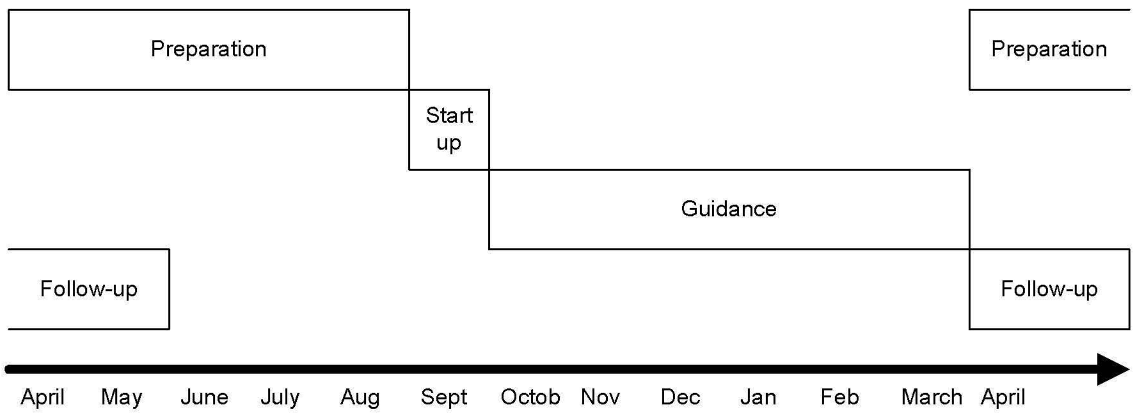

Figure: Phases of the DP course.

The preparation phase During this phase the leading instructor selects the clients and students for the course and, together with the department head, allocates the instructors for the current academic period. In the Finnish system the academic period starts in September and ends in May. The leading instructor negotiates the project task with the clients, and encourages them to adopt the role of a demanding customer as far as the student group is concerned. The client typically represents an IT firm such as a software house, or the IT department of an industrial organization, for example. The tasks range from extreme coding projects to developmental projects and research. They are typically ill defined, and need to be redefined as the project progresses.

The start-up phase The project course starts at the beginning of September with lectures and orientation exercises for the students. The group is formed before the task-exhibition session when the client representatives present the project tasks. The students then negotiate the tasks. By the end of the start-up phase all individual students will have been placed in groups, and the project tasks and clients allocated to them. Similarly, instructors will have been nominated for the student groups.

The guidance phase The focal student project is implemented during the guidance phase, which starts with a meeting with the group instructor. Soon after that, the group and the client representatives start their collaboration with the first workshops and a formal board meeting. Each student is expected to use 275 hours in implementing the project task, and 125 hours in demonstrating project-work skills, including project leading, group work and communication skills. In total, a five-student group uses 1,375 hours in planning and implementing the client project. Each student is expected to practice the role of project manager for about one month during the process, which lasts from five to six months. A board consisting of two client representatives, two representatives from the student group (the project manager and the secretary) and the instructor make the redefinition and other decisions. During the collaboration, the role of the clients is to provide the students with guidance in terms of substance (e.g., technical guidance), and the role of the instructors is to guide the process (e.g., planning, reporting). The collaboration ends with a formal board meeting at which the results of the student project are accepted. The process of the student group is assessed and each student is given an individual grade. The client organization pays the university a fee for the co-operation.

The follow-up phase Any formal complaints from students concerning their grades are dealt with during this phase, and experiences are discussed for the benefit of future participants. The follow-up and the next preparation phases overlap.

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