Levels of Awareness of Professional Ethics used as a Sensitizing Method in Project-Based Learning

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ABSTRACT

There is a need for educational frameworks for computer ethics education. This study presents an approach to developing students' moral sensitivity, an awareness of morally relevant issues, in project-based learning (PjBL). The proposed approach is based on a study of IT professionals' levels of awareness of ethics. These levels are labeled *My world*, *The corporate world*, *A shared world*, *The client's world* and *The wider world*. The levels are compared to the results of a study on moral conflicts perceived by students in a PjBL environment and, as there are resemblances between the findings of the two studies, it is argued that the awareness levels can be used as an instrument to stimulate moral sensitivity in students in PjBL. We give recommendations for how instructors may stimulate students' thinking with the levels and how the levels may be taken into account in managing a project course and in an IS department. Limitations of the recommendations are assessed.

Keywords

project-based learning, ethics integration, phenomenography, variation theory, awareness

1. INTRODUCTION

Ethics teaching in computing has been recognized as a vital part of computing education, for example professional ethics have been incorporated into curricula in the computing disciplines (Gorgone et al. 2002), frameworks for ethics teaching in computing have been proposed (Martin et al 1996; Siponen and Vartiainen 2002), text books on ethics education have been published (Johnson 2002, Quinn 2006) and techniques for teaching computer ethics have been proposed (Applin 2006, Botting 2005). In this paper we present a new approach to be used in project based learning (PjBL). We propose that through this approach instructors of a project course would be able to support students' growth in moral sensitivity, that is, their recognition of morally significant issues, and orient the students appropriately towards ethical action. Moral sensitivity is, according to James Rest's (1984, 1994) Four Component Model (FCM), the first step in developing moral behavior. The FCM describes four simplified and overlapping processes, according to which an individual may fail to act morally. These processes are capabilities which can be focused on in educational interventions. The first process, moral sensitivity, involves awareness of how our actions affect other people. It includes the capability to construct different possible scenarios for moral conflicts and how different actions have an influence over other parties. After recognizing a moral conflict,

one has to solve it, i.e., make a decision concerning what to do. The second process, moral judgment, is about judging which courses of action are the most justified. As moral judgment develops, a person's problem-solving strategies become more directed towards others and more principled in nature. The third process, moral motivation, refers to the importance people place on moral values. Moral motivation is about prioritizing moral action. This speaks of having the will to carry through to action the choices made in the preceding (second) process. A clear example is if someone chooses to lie to maximize profit, although he or she understands that being honest is the moral choice to make, this is a failure in terms of moral motivation. The fourth process, moral character, refers to the psychological strength to carry out a line of action. Courage, perseverance and implementation skills are needed to carry out what a person perceives to be morally right to do. FCM describes four main types of failures in moral behavior but also four main abilities which develop as an individual matures morally and which can be reinforced by education.

In this paper, we focus on the first aspect of FCM, developing moral sensitivity in students. To do this, we introduce awareness levels of professional moral behavior into the PjBL environment. We describe five cumulative awareness levels, called 'citizenships' (Stoodley 2009). We show that these levels are found in IS students' thinking, by comparing the levels to a study on moral conflicts perceived by students in a project course in IS education (Vartiainen 2005, 2006). We argue that it is possible to support students' development to more comprehensive levels of awareness in the PjBL context, that is to say, to support the development of moral sensitivity in students on the issues relevant to information systems development (ISD). Towards this goal, we discuss the implications of such an approach for various people in project based learning.

The remainder of this article introduces project-based learning. Then, the results of two phenomenographical studies are presented: the awareness levels found in IT professionals' perceptions and moral conflicts perceived by students in a project course. After comparing the results of the studies, the implications for project based learning are considered and the proposal is evaluated.

2. PROJECT-BASED LEARNING (PjBL)

The project-based learning theory is based on constructivism which espouses the following guiding principles: 1) learning is a search for meaning and meaning is derived from experience; 2) meaning requires understanding wholes and their constituent parts; and 3) meaning that is derived from experience is powerful

because it is fundamentally self-referent, it is rooted in personal identity and it views life from the inside in the context of social systems. In constructivism, the situational nature of learning is taken into account and therefore authentic or simulated environments are preferred (von Glasersfeld 1984, 1995a,b; Duffy et. al 1993). A study by Tynjälä (1998) showed that students studying in accordance with constructivism, writing assignments and discussing them in groups, showed more development in thinking skills (classifying, comparing, evaluating and generalizing issues) than students reading books and attending lectures. There are five significant features that distinguish the constructivist approach of project-based learning from other forms of learning (Helle et al. 2006):

- a problem or question serves to drive learning objectives;
- constructing a concrete artifact (cf. problem-based learning in which students work on paper cases without concrete end product);
- learner control of the learning process (pacing, sequencing, actual content);
- contextualization of learning (what we learn in a particular context we recall in similar contexts); and
- projects are complex enough to induce students to generate questions of their own.

PjBL does not inherently require real-world tasks, but at university level such tasks are often utilized to provide students with as authentic an experience as possible. Developing generic skills such as teamwork is an essential element in many models of PjBL. The characteristics of project-based learning and the existence of project courses in IS curricula (Tourunen 1992; Scott et al. 1994; Moses et al. 2000) make it a promising possibility to advance students' moral development in terms of FCM (Rest 1984). When students construct an artifact, an information system or other IS related development project, it should be natural to consider the production process and the end result from a moral viewpoint (Vartiainen 2005b). To prompt in-depth reflection, students need to be guided to critically evaluate their own thinking processes.

We now introduce the results of two studies on experiencing ethics in computer science and consider what light these throw on developing students' moral sensitivity in the PjBL environment.

3. THE TWO STUDIES OF ETHICS IN COMPUTER PROFESSIONALS

3.1 Computing professionals' awareness of ethics

An empirical study of 30 IT professionals in Australia revealed that they experienced ethics in terms of their relation to other people (Stoodley 2009). The professionals acknowledged the rights of an ever broadening circle of other people and this influenced how professionals thought about their own rights. The professionals also acknowledged their responsibility for an ever widening circle of other people. Thus, professionals' rights and responsibilities were increasingly defined in terms of others. This expanding awareness of ethics is represented in five 'citizenships': *Citizenship of my world*, *Citizenship of the corporate world*, *Citizenship of a shared world*, *Citizenship of the client's world* and *Citizenship of the wider world*. Table 1 summarizes these citizenships. In the table the beneficiary is what

is directly in view when the professional is acting ethically. In other words, it is the intended recipient of the professional's moral act. The act is how the professional expresses their morality. In other words, it is the way the professional works out concretely their ethical convictions. The intention is the outcome the professional desires from their actions. In other words, it is the professional's goal in engaging in the act. The citizenships are described in more detail below.

Table 1: The citizenship categories of IT professionals' experience of ethics (Stoodley 2009)

Citizenship category	Beneficiary	Act	Intention
1. My world	Inner circle	Guarding	Self-preservation
2. The corporate world	Corporation	Devolving	Corporation success
3. A shared world	Client and professional	Sharing	Win-win
4. The client's world	Client	Bearing	Client Success
5. The wider world	Humanity	Serving	Do the 'right thing'

Category 1: Citizenship of my world

When experiencing ethics as Citizenship of my world, the professional focuses on themselves and their close circle of friends and associates. They see themselves as defensively guarding their existing rights, with the intention of self-preservation.

in this particular industry there are two things that get you jobs - your security clearance and your reputation. If your reputation is bad you are not going to get jobs... So, I'm not going to sabotage my career for a company that I work for and I've always had that philosophy. (Participant 11)

Category 2: Citizenship of the corporate world

When experiencing ethics as Citizenship of the corporate world, the professional focuses on their employing organization. They see themselves as loyal employees who devolve the responsibility for decisions to their superiors, with the intention of enabling the corporation to succeed.

if you identify risks to the organisation or to a process then you have a duty of care... to your managers to... bring it to their attention... Provided that you have done your job in identifying that risk, addressing possible recommendations. If they choose to ignore those recommendations then you have devolved your duty of care to them (Participant 28)

Category 3: Citizenship of a shared world

When experiencing ethics as Citizenship of a shared world, the professional focuses on themselves and their clients. They see themselves as sharing equally with the client so both of them benefit and neither are unduly disadvantaged, with the intention of achieving a win-win result.

I'd say that's my clearest picture of ethics in IT and again it's more of the win-win. I think we have an obligation to let the

customer win and you win. Don't harm yourself but don't harm the customer. (Participant 6)

Category 4: Citizenship of the client's world

When experiencing ethics as Citizenship of the client's world, the professional focuses on their client. They see themselves as bearing responsibility for the client's welfare, with the intention of enabling the client to succeed.

I still think it goes beyond that and it's this ethical obligation to do what is necessary to meet that client's expectations. It's no good building a system that might meet what was specified to the letter but if it still doesn't work for them or if it's still going to cause them problems, then you've got an obligation to address those. (Participant 2)

Category 5: Citizenship of the wider world

When experiencing ethics as Citizenship of the wider world, the professional focuses on the needs of humanity in general. They see themselves as generously serving others, even those they may not know personally and even to personal disadvantage, with the intention of doing the right thing.

My ethics have caused me at times to pursue certain paths in my career, so they've been an influence on my choices... particularly of who to work for and what to work on, for example I... once responded to a job ad and I found out... that the job was with a company making gaming machines and I decided to decline to even go for an interview because I... didn't feel it'd be ethical... (Participant 9)

These experiences of ethics build on each other. For example, a professional who experiences the client's world does not loose sight of their own world, however the client's world influences how they see their own world. Thus, these are not developmental stages in the sense that the earlier stages are left behind as professionals adopt the later stages. Rather, they are states of awareness which are built on and broadened as the professional experiences ethics in an increasingly comprehensive way.

3.2 Moral conflicts perceived by students in a project course

A Finnish study on moral conflicts perceived by students of a project course is next briefly reviewed (Vartiainen 2005, 2006). In the course groups of five students implemented a project task defined by a client, typically an IT firm such as a software house, or the IT department of an organization such as an industrial plant (Tourunen 1992). Each student was expected to use 275 hours in implementing the project task, and 125 hours to demonstrate project-work skills related to project leading, group work and communication, for example. In total, a group of five students used 1,375 hours in planning and implementing the client project. Each student was expected to assume the role of project manager for about one month during the process, which lasted from five to six months. The projects ranged from extreme coding assignments to developmental projects and research.

Data about moral conflicts was gathered with diaries, interviews, drawings and questionnaires. The study resulted in six categories, with two aspects (Table 2). The structural aspect or the "how" aspect uncovers the intention behind the deliberation, which may be self-centred or other-directed. Students experiencing self-centred moral conflicts face temptations to break societal or group norms for egoistical reasons, such as getting software without

paying for it and laziness in carrying out work duties. However, not all self-centred moral conflicts relate to breaking a norm, as some involve concern for one's own welfare. The referential aspect or the "what" aspect of moral conflicts is divided into those involving outside parties, the project task and human issues. Outside parties are parties not involved in the particular project co-operation, but who are indirectly or directly influenced by it. Task-related moral problems refer to the attainment of objectives and the implementation of the tasks. The third group, human issues, relates to how individuals are treated in the project work. In total, 13 individual students (coded S1…S13) and six student groups (G1…G6) wrote diaries, 17 students (not involved in the ethics course) responded to a survey, and a total of 20 students produced drawings of moral conflicts during related exercises during the project course. Next, an example from each category is presented.

Category 1: Benefiting at the expense of outside parties

In this category, student deliberation is focused on outside parties but is motivated by self-centred interests. While outside parties are recognised, duties and obligations towards them are not followed. As an example, producing unauthorised copies of software was considered a morally wrong act but it was nevertheless common: some students confessed that they had done unauthorized copying during the project, such as the copying of installation CD-ROMs.

Other student groups are considered as outside parties. The students in one group noticed that every user in the university network was able to read the other group's documents – including the contract and the results of their project. One student stated in his questionnaire response that they could have stabbed the other group in the back:

Our group noticed about one month before the end of the course that all were able to read the results of one group. The project contract, the project plan and the results were found. We told a member of that particular group, who was completely astonished. We were open about the issue. The other possibility would have been to stab the group in the back. This kind of data-protection problem would have been a very serious issue... (a questionnaire response)

Category 2: Taking care of outside parties

In this category, student deliberation was focused on outside parties and was motivated by concern for them. These parties include the whole of society, other groups and people dependent on the client. As an example, the next extract represents concern for how the business line of the client of the student group affects society and employees. Although students express concern for themselves in deliberating about earning their living, they also engage in social responsibility related thinking:

The business line of the client of [name of the project group] is questionable. … one is able to destroy and seize firms, which would be capable of surviving…. On the one hand, for us as a project group, do we want to work in favour of creating a society based on ownership and speculation? … suffering is caused to the weak … and the rest of the employees are made to burn out by assigning unreasonable number of work tasks for them. (G2)

Table 2: The classification on moral conflicts perceived by students in a project course (Vartiainen 2005, 2006)

	The structural aspect	Self-centred	Other-directed
The referential aspect		Motivation and concern is based on the self.	Motivation extends from self-centred deliberation to fulfilling one's duties and obligations and to concern for others.
Outside parties	Relations with parties outside the project group	Category 1: Benefiting at the expense of outside parties	Category 2: Taking care of outside parties
Project task	Attaining the objectives of the project and implementing the tasks.	Category 3: Self-centred deliberation related to the project task	Category 4: Fulfilling the project tasks
Human issues	Treatment of the individuals, who are participating in the project.	Category 5: Taking care of oneself and one's interests	Category 6: Taking care of the individuals in the project

Category 3: Self-centred deliberation related to the project task

In this category student deliberation was focused on the project task and was motivated by self-centred interests. Although other parties were recognized, obligations or duties towards them were not fulfilled. As an example, in the next extract students showed that individual interests overcome the project's interests:

During the final phase of the project the possibility of getting a job from the client led the group members to intrigue for their own interests, regardless of the project. As a consequence, some

of the group members could continue in the service of the client and some could not... (G1)

Category 4: Fulfilling the project tasks

Student deliberations in this category were focused on the project task and motivated by concern for fulfilling the duties or obligations related to it. Although there were still self-centred concerns in the descriptions, there was also real concern about fulfilling duties and obligations for other parties. As an example, in the next extract a student observed that their aim to learn new technologies would not be most efficient for the client. Instead, to use the equipment known to the students would be most beneficial for the client:

The project group should select the development equipment, with which the application is produced. The existing infrastructure of the client offers two alternatives: a platform of [Software #1] or the software is produced in [Software #2]. Of the group members, three quarters have worked with [Software #2]. Two students' feel themselves to be at a level in which they would like to learn something else than [Software #1]. The group is obligated to produce a reasoned proposal about the implementation environment. Could the group members' wishes affect the choice of the development environment – particularly if it would be undoubtedly useful for the client to use the environment about which the group has the best experience? (S6)

Category 5: Taking care of oneself and one's interests

Student deliberation in this category is focused on human issues and the motivation is self-seeking. Although the needs of other parties are recognized, the real concern is with oneself. As an example, in the next extract a student deliberates about one's own welfare when the project started:

You do not want to let your group down. Everything proceeds at a great pace– you feel compelled to do something. I feel that some are doing too much. One must learn to say that one doesn't have

time, and to be honest about one's abilities – otherwise one burns out. (S3)

Category 6: Taking care of individuals

Student deliberation in this category is focused on individuals and is motivated by concern for other people's well-being or for fulfilling duties or obligations towards other individuals. Moral conflicts seemed to be most obvious in the project manager's job. Students taking the role of project manager were concerned about the fellow-students to whom they assigned work tasks in terms of their ability to complete the tasks, their other activities that may be in conflict with the project tasks and their efficiency. A student, in the project manager's role, confronted a moral conflict related to assigning a work task to a fellow-student whose ability to complete it was in doubt. On the one hand, he thought that, for the sake of honesty, he should probably tell the student of his concern, although the truth might hurt him. On the other hand, if he assigned the work task to him without taking any precautions, he might endanger the project:

If there's someone in the group you don't believe is up to the task, on what theory can you lean? If you're honest and tell this person about it, he either understands your concern or he gets hurt. If you don't reveal your preoccupations but allocate the task to that person (such as in a situation in which he is the only one available), it may go wrong, or then again it may succeed. You're not duty bound to blindly trust the other group members. The duty (if we're thinking about the project manager) is to have a good look at the project, to set it in motion with the given resources. If the person in question is not suitable for the task, you just have to calmly assess the risk you're taking in allocating it to him. (S2)

3.3 Comparing the results of the two studies

Although the two studies had different research objectives, the studies and their results resemble each other in many ways. In both of the studies the focus was on perceptions of ethics and morals in real-life environments (the business and PjBL environments) and the subjects were asked to describe themselves in an open-ended manner. Both studies also recognized the importance of intentions. In Vartiainen's study thinking based on self-centred intentions and on intention to uphold relations emerged. For self-centred thinking, the underlying motivation in both egocentrical and harm-making deliberations was to take one's own interests into account. This resembles the *My world* category with a self-preservation intention in Stoodley's study. In Vartiainen's study, outside parties are those outside of the project team, for example, employees of the client. In Stoodley's study,

the division is more fine-grained, as the outside parties include clients, users and those affected by technology, and are represented in *A shared world*, *The client's world* and *The wider world*. We interpret the corporation in Stoodley's *Corporate world* category to correspond to the student group in Vartiainen's study and thus similar intentions are found in those project task and human issues related conflicts which are other-directed in nature. This comparison of the two empirical studies is summarized in Table 3.

Table 3: The comparison between the two studies (Stoodley 2009; Vartiainen 2005, 2006).

Stoodley's study	Vartiainen's study
My world	Self-centred moral conflicts (Categories 1, 3 and 5)
The corporate world	Project task and human issues related moral conflicts which are other-directed in nature (Categories 4 and 6)
A shared world	Project task related moral conflicts which are other-directed in nature (Category 4)
The client's world	Project task related moral conflicts which are other directed in nature (Category 4)
The wider world	Outside parties related moral conflicts which are other-directed in nature (Category 2)

The above comparison shows that the awareness levels of Stoodley's study of IT professionals can be aligned with students' perceptions as found by Vartiainen. Therefore, we argue that it may be possible to use the citizenship awareness levels in order to stimulate moral sensitivity (Rest 1984) in the PjBL environment. In the next section we reflect on the implications of this proposal for the PjBL environment.

4. INTEGRATING AWARENESS LEVELS INTO PjBL

In this Section we reflect on the application of the insights offered by these studies to stimulate moral sensitivity in students in PjBL environments, calling on the educational theory called 'Variation Theory' which is associated with phenomenography (the approach used in both studies' analyses). Variation Theory understands that a key objective of a learning environment is to stimulate expanding awareness by building on the learner's current understanding of the phenomenon in focus. The goal of an ethics education is therefore not understood to entail moving the learner from wrong experience to right experience, but from incomplete experience to a more complete experience. Learners' existing conceptions are not discarded, rather they are enhanced. According to Variation Theory (Marton and Booth 1997), a means of stimulating a learner to grow in ethical awareness would lie in:

A. Helping the learner acknowledge their current way of seeing ethics;

B. Presenting the learner with alternative views of ethics; and

C. Stimulating the learner to reflect on the difference between these.

Variation Theory may permeate the various levels of the PjBL environment. We next consider how this may work out at the following levels:

- the interaction between instructor and a student group,
- managing the whole PjBL environment, and
- the strategy of an IS department.

Instructors need to be aware of the context students are dealing with and react appropriately in order to prompt the three steps (A, B, C) above. The relation between instructor and students may be very sensitive (see Vartiainen 2005, 2007). To become better aware of such relations, Tourunen and Vartiainen (2002) determined five levels of instructor intervention towards a student group: 1. outsider; 2. observer; 3. inspirer; 4. participant; and 5. decision maker. Ideally, an instructor should stay at observer and inspirer levels to guarantee independent functioning of a project group and to give students the whole responsibility of their own project (see also Vartiainen 2007, 703). At the inspirer level an instructor may be able to direct students' attention towards what the students perceive to be ethical aspects of project work (step A above) and to the wider Citizenship experiences that students could be expected to experience (step B above) in the client context and engage in dialogue with the students about the implications of those experiences (steps B and C above). To avoid indoctrination, imposing a body of doctrines held by the teacher on the student (Warnock, 1975; Macklin, 1980), the instructor should avoid becoming a participant of the group. This means that the instructor could suggest wider ways of perceiving ethics as represented in the Citizenships, however he or she should not prescribe those wider perspectives. In more concrete terms, the instructor could reflect back to the students the way they seem to be approaching the PjBL situation (step A above), then offer an alternative point of view (step B above), for example, "*It seems to me that you are looking at this situation from the viewpoint of your group, but what about the client's point of view. Can you think of how they may see this?*" This question offers inspiration to move from *The corporate world* to *A shared world* point of view. For another typical example, in a situation in which an instructor perceives ego-centric behavior among students (Vartiainen 2005, 2007), he or she could say, "*It seems to me that you may not all be committed to the project task and its implementation. If your group belonged to a software house, how would your attitude be tolerated by your supervisor?*" This question stimulates the students to consider moving from the *My world* to *The corporate world* point of view. Given the partial alignment of students' perceptions with professionals' perceptions, it would appear that open discussion of moral issues amongst students in an open forum would bring students into contact with a breadth of viewpoints. Inclusion of the client in such discussion would serve to enhance the possibility of alternative viewpoints to be expressed. It remains for the instructor to offer a supportive environment in which such discussion may take place and to be alert to perspectives which are not being represented, with a view to ensuring these are heard. The Citizenships offer a framework upon which such intervention may be based.

From the viewpoint of managing a project course (see an example in Vartiainen 2005, 2007), there are several ways that the Citizenships can be used. When negotiating with prospective clients the question needs to be asked, "*Does the client maximize*

the likelihood that students will be exposed to the widest possible range of ethical views?" Some clients, for example, may only operate within Citizenships 1 to 3, whereas other clients will also embrace Citizenship 4 or even Citizenship 5. Engagement in a project that had benefits to the wider community would be likely to introduce *Wider world* perspectives and if this project was being supported by a corporation then it would also quite possibly introduce *Corporate world* perspectives. Also, to expose students to a full range of Citizenship views may not require the direct involvement of every student with every client, but in a project course community the students could be encouraged to talk with students from the other student groups as well as get to know the clients of the other student groups. Thus, the ideal project chosen as a stimulus for instruction would be one which has the highest likelihood of students confronting their own views of ethics, views which differ from their own and views which represent the widest possible perspectives. For example, a project which would help provide such a stimulus would impact a wide range of people, and require the students to communicate between each other and other stakeholders in order to find solutions.

From the viewpoint of an IS department and the curricula, the department should define a strategy to collaborate with industry in such a way that, as a whole, students were exposed to the full range of Citizenship views over the course of their IS studies. However, the exposure of students to moral argumentation and moral conflict solving skills (Ruggiero 1997) should not be neglected, in order for all the processes of Rest's FCM to be drawn on. Instructors involved with the project course should be educated to recognize the Citizenship levels in students' deliberation and to react appropriately. In instructor recruiting the capabilities of university teachers for this kind of ethics integration could be assessed.

Thus the combined insights gained through Stoodley's and Vartiainen's studies, applied to the PjBL environment through Variation Theory, offer a means by which moral sensitivity may be stimulated in students. This approach may be applied immediately in instructor-student interactions, However, it also suggests the possible need for a comprehensive review of the entire educational setting. Our approach may challenge existing educational objectives, since as we understand it what is typically expected in IS curricula is that students adopt the *Shared world* or *Client's world* perspectives, we propose that when thinking from an ethical viewpoint curricula should include *The wider world* perspective

5. EVALUATION

Given the contextualization feature of PjBL (what we learn in a particular context we recall in similar contexts) (Helle et al. 2006), it is noteworthy that the PjBL environment does not necessarily resemble the business environment and therefore presents a challenging goal for the educational institute which aims to prepare students to confront moral conflicts in the business environment. Using the awareness levels (Stoodley 2009) which represent IT professionals' perceptions is a promising means of attaining this goal. Given the control exerted by the learner in PjBL (Helle at al. 2006), it is noteworthy that our proposal aims to take into account the avoidance of indoctrination by giving students the opportunity to make their own decisions (the instructor adopting the role of inspirer). In addition, in PjBL environments the projects should be complex enough to induce

students to generate questions of their own (Helle et al. 2006). Our proposal is in line with this feature as morality as such is considered complex (Packer 1985; McNeel 1994). Therefore, according to our proposal students are exposed to discussions and thinking which will require them to take into account the complexities of practical morality.

Our proposal has at least the following restrictions: The empirical evidence comes from phenomenographic analyses in two culturally different environments, albeit both environments representing Western worldviews. The participants in one study were students and in the other study practicing professionals, although in both studies they were in a computing environment. Our proposal is restricted to the first component of FCM, moral sensitivity (Rest 1984). How to integrate development of other components of FCM to PjBL is left for future research.

The recommendations of this study have not been tested in practice. This is left for future research.

6. CONCLUSION

In this paper, PjBL and the results of two phenomenographical studies on professional ethics and moral conflicts in PjBL were reviewed and compared. Based on the similarities of the studies, we argue that the Citizenship levels can be used as a sensitizing method in PjBL. We offered recommendations for instructors to stimulate students to think in more comprehensive ways, for management of project courses to plan for students to be exposed to the full range of Citizenships and for IS departments to integrate ethics across the curriculum. Our approach may challenge existing educational objectives, we propose that when thinking from an ethical viewpoint curricula should include *The wider world* perspective.

7. ACKNOWLEDGMENTS

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