

## IMPLEMENTING BLACKBOARD: A CASE STUDY OF THE CAPE PENINSULA UNIVERSITY OF TECHNOLOGY, SOUTH AFRICA

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### ABSTRACT

Universities, in general, form a critical component of a country's national system of innovation and are its intellectual backbone. However, the capacity of many African universities to lead the process of integrating information and communication technologies (ICTs) into education is woefully inadequate. This paper presents the experience of the Cape Peninsula University of Technology (CPUT) in integrating Blackboard into teaching and learning. The paper discusses the implementation approaches, successes, challenges and lessons learnt. It also provides insights into how institutions can best support academic staff in mainstreaming technology into teaching and learning.

**Keywords:** learning management system, open source, Blackboard, e-learning, mainstreaming, diffusion, innovation, information and communication technologies, adoption process and approaches, integrating

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## INTRODUCTION

A learning management system (LMS) is a software package used for delivering, tracking and managing training and education. There are two types of LMSs: commercial and open source. Blackboard and WebCT are examples of commercial LMSs (Blackboard acquired Web-CT in 2005), while some of the commonly used open-source LMSs are Sakai and Moodle. Educational institutions may adopt a commercial or an open-source LMS to enhance, supplement and support classroom teaching and to offer courses to large populations of learners across the globe. Universities have adopted these software packages on a wide scale. Despite their rapid adoption on the African continent, few studies have documented the implementation and use of these systems (Snowball & Mostert, 2010, Van der Merwe & Mouton, 2005) or the impact they have on lecturers' teaching.

This paper attempts to share the Cape Peninsula University of Technology's (CPUT) implementation processes, approaches, successes, challenges and lessons learnt in the implementation of Blackboard. It is hoped that ideas and insights generated through this institution's implementation process can provide useful lessons to other institutions that are planning to implement this LMS or are grappling with the implementation of learning management systems.

## METHODOLOGY

The research methods used to gather data for this study included in-depth interviews and document reviews. In-depth interviews were carried out with key informants, who included staff of the Centre for e-Learning, staff who use Blackboard in their teaching (20 interviews) and staff who do not use Blackboard in their teaching (20 interviews). The key informants that were used in this study were chosen because they possess special knowledge, status or communicative skills and were willing to share such knowledge and skills with the researcher (Babbie, 1995, Zelditch, 1962). These individuals also contributed insights into the process variables that were not evident to the researcher. They sensitised the researcher to value dilemmas within the project and also the implications of specific findings (Goetz & Lecompte, 1984).

A literature review – based largely on sources from developed and developing countries – was conducted on adoption approaches and CPUT's documentation on ICTs in teaching and learning, which included its vision, strategic plans and policy documentation. The reason for carrying out this literature review was to provide

the researcher with insights into what has or has not been done in the area under investigation. This helped the researcher to learn from and build on research conducted by others, to link the present research to what has been done by others, and to demonstrate relevance by making connections to the appropriate body of literature.

The researcher then analysed in-depth interview data using an analytical induction strategy that involved scanning the data for categories of phenomena and relationships between such categories, as well as developing working typologies and hypotheses upon an examination of initial cases, and then modifying and refining them on the basis of subsequent cases (Robinson, 1951, Znaniecki, 1934). It was the researcher's aim to prepare a report emerging from and supported by available evidence. Therefore, the researcher sought to identify evidence that was repeated by or common to several participants, while at the same time taking into account the ideas and perceptions that were different in the responses of several participants. Direct quotes were used, where necessary, to capture the intended meaning of the speaker as fairly and accurately as possible. Pseudonyms were used to protect the participants' identities.

## INTRODUCTION OF BLACKBOARD

The idea of introducing Blackboard arose in 1998 when the Vice-Chancellor and Deputy Vice-Chancellor of the former Cape Technikon at the time attended a conference where they were exposed to presentations on the use of LMSs for teaching and learning. They saw the benefits of Blackboard for teaching and learning, and in 1999 the implementation of Blackboard commenced at the Technikon, with the aim of improving the effectiveness of teaching and learning.

A few years later, the Cape Technikon merged with the Peninsula Technikon to form the Cape Peninsula University of Technology (CPUT). This was in line with the Higher Education Amendment Act, Act No 63 of 2002 (Republic of South Africa, 2002), which dealt with the transformation of the South African higher education landscape in order to maximise integration and diversity, promote equity and increase access. The use of Blackboard was then introduced on all campuses of CPUT.

The use of technology in teaching and learning is embedded in:

- the University's vision: "...to be at the heart of technology education and innovation in Africa";
- the University's strategic plan;



- teaching and learning plans;
- the assessment policy; and
- many faculty and departmental plans.

The Director of the Centre for e-Learning indicated that the drawing up of an e-learning policy was still in progress as there were aspects that were not included in the abovementioned documents, as they still needed to be addressed.

Despite the existence of these documents in support of the use of technology in teaching and learning, most of the interviewees felt that the University management did not fully support the e-learning initiative. This was primarily due to the fact that the Computer and Telecommunications System (CTS) division, which was tasked with providing information technology support for e-learning at the University, had been unable to provide adequate support. Institutional systems were blamed for this problem not being attended to. Although most of the faculties and departments had included the integration of technology into teaching and learning in their plans, these plans were not being implemented in some of the departments. While the University had a student to computer ratio of 6:1, which could be considered fairly good, it was felt that the infrastructure did not fully support the use of technology in teaching and learning. The reasons for this were that it was underutilised, there was no open access to the computer laboratories and there was no system in place for lecturers to book laboratories for their classes. Sufficient technical support was not provided to the Centre for e-Learning. More often than not, e-learning staff had to either beg for assistance or log calls at the CTS help desk, where the calls were usually not prioritised. Despite the abovementioned challenges, implementation of Blackboard at CPUT is ongoing.

## ADOPTION PROCESS AND APPROACHES

There are different theories on how information technology should be integrated into higher education teaching and learning, what the e-learning strategy should be, who should formulate the strategy and who should drive the integration process. Beller and Or (1998) state that the integration of information technology can either be an evolutionary process, which relies mainly on local initiatives and the personal motivation of individual faculty members, or it can be top management-driven. The results of this study indicate that both these approaches are employed at CPUT. Top management invested money in the purchase of Blackboard, ensured that the

use of technology was embedded in its guiding documents and policies, and gave a directive that every subject should have a minimum web presence. This means that each subject should at least make use of the calendar tool, activate one of the communication tools, populate the Grade Book and have study guides on the LMS. Top management does not force lecturers to use Blackboard and therefore most of the lecturers using it are personally motivated to do so. They also went for training voluntarily and started using the LMS to support their teaching. This point has been expressed differently by most of the lecturers interviewed, and can be summed up in the following quotes: "The factor that encouraged me to use Blackboard in my teaching is my experience with electronics. I studied in the USA and I was able to access notes online at home. I know the advantages from the student's point of view" (Respondent A, personal interview, 16 May 2009). Respondent B had this to say: "What encouraged me to start using Blackboard in my teaching is the fact that I like new technology and feel modern students should use it and I like the idea of saving paper and time" (Respondent B, personal interview, 2 June 2009).

Everett Roger (1995) identifies the following three types of innovation adoption approaches:

- **Optional innovation-decision approach:** The choice to adopt or reject an innovation is made by an individual independent of the decisions by other members of a system.
- **Collective innovation-decision approach:** The choice to adopt or reject an innovation is made by consensus among the members of a system.
- **Authority innovation-decision approach:** The choice to adopt or reject an innovation is made by relatively few individuals (in a system) who possess power, status or technical expertise.

At CPUT, the optional innovation-decision approach is commonly used since it provides maximum flexibility to users and accommodates individuality. This approach allows lecturers to use Blackboard according to their individual needs. The downside of this approach, however, is that it makes great demands on resources such as support services. The authority innovation-decision approach is also used at CPUT, but to a lesser extent. For example, management made the decision to use Blackboard and laid down the rule for every subject to have a minimum web presence. While this approach leads to rapid adoption, it often produces high resistance among particular individuals.



## THE USE OF BLACKBOARD AT CPUT: LECTURERS' PERSPECTIVES

To explain the use of Blackboard at CPUT, Everett Roger's (1995) "diffusion of innovations" theory will be utilised. Roger (1995) explains the categories of innovation adopters as follows: Innovators are individuals who tend to be experimentalists and interested in technology itself. Early adopters are individuals who may be technically sophisticated and interested in technology for solving professional and academic problems. The early majority are those who are pragmatists and constitute the first part of the mainstream. The late majority are those who are less comfortable with technology and are the sceptical second half of the mainstream. The laggards are those who may never adopt technology and may be antagonistic and critical of its use by others. The implementation of Blackboard at CPUT caused the users of information technology in teaching and learning to change from being innovators to early adopters and part of the early majority. Findings of this study indicated that the users of Blackboard at CPUT are innovators, early adopters and a few are part of the early majority, since most of these adopters have stopped using Blackboard in their teaching due to their wariness of new technology (in this case due to network instability and lack of ongoing support after training). Roger (1995) explains the latter by indicating that, despite careful planning, there will always be unintended and unanticipated consequences when an innovation is diffused.

Factors that encouraged the interviewees to use Blackboard in their teaching varied from lecturer to lecturer. The following factors were identified:

- To be able to control large class sizes.
- To help students engage with coursework outside the classroom.
- To try and keep students interested in the subject.
- To ensure more transparency – the fact that one can upload assignments and notes and no student will say they have lost the handouts.
- The accessibility of a variety of features on Blackboard.
- The love of technology and the fact that they know the advantages of using Blackboard for teaching and learning from a student's point of view.

Blackboard is mostly used to supplement face-to-face instruction. Most of the lecturers who use Blackboard for teaching access it from both their homes and the campus, with a small number accessing it on campus only. The majority of the

users have utilised Blackboard for their teaching for more than five years, while a few users utilised it for one to two years. Blackboard tools used for teaching and learning, and their use of these tools are listed in Table 1.

**Table 1:** Blackboard tools used for teaching and learning, ranked from the most used to the least used

Blackboard tools	Use
Communication (mostly e-mail)	To send and receive e-mail to and from students in the course on course matters.
Assessment (mostly for quizzes and self-tests)	To create quizzes that students complete and submit for marks to assess their performance in the course. To create self-tests that students complete and submit for marks to assess their understanding of the course material.
Assignment	To create an inventory of assignments for the courses and for students to submit their assignments by attaching their own files.
Calendar	To post deadlines for course assignments.
Learning modules	To organise and deliver course content and extra reference material to students.
Grading Book	To enter, view and manage grades for all students and auditors.
Announcements	To create and post important information for students about upcoming assignments, tests and other events in their class.
Web links	To compile a list of internet addresses that serve as reference material for the course.

The most liked aspect of Blackboard is the communication tool, in particular e-mail, because it makes it easy to reach all the students from anywhere at any time. The following extract from Respondent C best supports this point: "You don't have to be on campus to interact with your students. You can do it from home. You can answer students' questions and distribute the information to all" (Respondent C, personal interview, 16 May 2009). Other aspects of the LMS that are equally liked by lecturers are the fact that it saves the University money on printing and photocopying, and it provides a rich learning environment. The following quotes from Respondent C and Respondent D confirm these points respectively. Respondent C had this to say: "What I like most about Blackboard is that you don't have to print or photocopy; you upload the material on the system and they [students] print it" (Respondent C,



personal interview, 16 May 2009). Respondent D stated: "What I like most about Blackboard is that it enables a rich learning environment. It is easy to collect a rich variety of resources and I like the diversity of learning activities it allows" (Respondent D, personal communication, 11 May 2009).

On the other hand, the most disliked aspect of Blackboard is the unreliability of the network. The following extract from Respondent E may speak for all: "Network failure is problematic. At one time the system went down for two days and I had to make a large number of copies" (Respondent E, personal interview, 24 June 2009). Other aspects that discourage the use of the LMS are slow internet connections and lack of time on the part of the lecturers to learn to use the different tools and to prepare teaching and learning materials to populate the system.

Interviewees cited varied benefits that they derived from using Blackboard in their teaching. Some of these benefits are that it enables communication between lecturers and students, assists with the submission of assignments, the marking of quizzes and self-tests (the feedback on which helps improve future lessons and addresses students problems), helps students (especially absentees) to access course content from anywhere and at any time, and acts as a portal for other resources. The Grading Book helps students to see their marks anywhere and offers them privacy. Blackboard also helps lecturers practise a student-centred approach to teaching. Most interviewees revealed that students taking courses through Blackboard are in favour of the system because they are able to access course materials and information online. This point is best illustrated by the following statement: "Students are quite positive about the subjects offered through Blackboard. They phone to ask why I haven't put what I promised on the system yet. There is pressure from the students to use the system" (Respondent F, personal interview, 19 June 2009). However, most of the lecturers pointed out that there was a lack of formal training for students to use Blackboard effectively for their learning. Lecturers revealed that subject matter lecturers using Blackboard for their teaching had to train students to use Blackboard and lecturers were not aware of any support offered to students in the Information Technology laboratories. Furthermore, most of the lecturers who were interviewed stated that although the Centre for e-Learning provided them with technical support, no educational support was forthcoming.

## THE IMPACT OF BLACKBOARD ON THE WAY LECTURERS TEACH

On the question of whether using Blackboard had made any difference in their teaching and their students' performance, the majority of the interviewees reported

that it was too early to assess the impact on the students' performance and their teaching. However, a few lecturers believed that using Blackboard had influenced the way they teach. Some of the ideas raised in this regard are that it helped lecturers identify students who are at risk, it forced lecturers to plan thoroughly and to consider the link between what happens in the classroom and what happens on the Blackboard system, and it developed in lecturers an interest in research in order to provide students with up-to-date information.

## PERSPECTIVES FROM NON-USERS OF BLACKBOARD

Eliciting non-users' points of view on the use of Blackboard is vital for CPUT because it is important to get to know the needs of these faculty members as well; not just the innovators and the early adopters. This is due to the fact that CPUT's "technology in teaching and learning" agenda is to accommodate all types of adopters. Data gathered from lecturers who do not use Blackboard in their teaching revealed that the majority of them were not aware of the institutional policy concerning the use of technology in teaching and learning.

Furthermore, most of the interviewees revealed that they were not using Blackboard in their teaching because of a heavy workload, resulting in a lack of time to prepare material to upload on Blackboard. Respondent G said: "I don't use Blackboard because I lecture five subjects, I am the coordinator for WIL (Work Integrated Learning) and I am trying to embrace research..." (Respondent G, personal interview, 20 May 2009). Lack of information regarding Blackboard and its usefulness, as well as a lack of skill to access and use Blackboard, were other reasons given by a good number of interviewees. The following extract from Respondent H could speak for them all: "I don't use Blackboard in my teaching because of a lack of information about it. I don't have the skills to use it and don't know how to access it" (Respondent H, personal interview, 20 May 2009). Network instability was also cited as one of the reasons for the non-use of Blackboard.

However, all the interviewees indicated their willingness to use Blackboard in their teaching. In this regard, the majority of the interviewees indicated that if they were provided with training on how to use Blackboard, information on the usefulness of Blackboard and time off to convert their teaching material into electronic format, they would start using Blackboard and use it effectively. This point is best illustrated by Respondent I: "To start using Blackboard and use it effectively, I need training. I need time to convert learning materials into e-format and I would like to see its



application and its advantages" (Respondent I, personal interview, 20 May 2009). The need to phone someone for help was another aspect highlighted by some of the interviewees.

## SUCCESSSES

Since the inception of the implementation of Blackboard, up to 240 lecturers have been trained on the use of Blackboard each year. About 25–30% of the lecturers who have received training are currently not using Blackboard to support their teaching and learning. This can partly be attributed to the fact that there is no real emphasis on the use of the LMS from management, and due to the network instability and the once-off training provided by the Centre for e-Learning without ongoing support at faculty level. The latter point is clearly highlighted by Respondent J: "The training offered is fine, but when lecturers go back to their offices, they don't know what to do. Continuous onsite training is needed" (Respondent J, personal interview, 15 May 2009).

In 2009, about 380 lecturers were actively using the LMS for teaching, which indicated a decline from 500 in 2008. There were 998 active subjects on Blackboard in 2008 and 390 in 2009. The decline in the number of active subjects and lecturers seems due mostly to network instability. Respondent J expressed this point clearly: "Blackboard is not useful for teaching and learning because of network problems. You can't access it at times, especially when we are writing a test" (Respondent J, personal interview, 12 May 2009). Approximately 50–60% of CPUT students take one or more classes through Blackboard.

In summary, it appears that there has been success, albeit limited, in the integration of Blackboard in teaching and learning, as evidenced in the data presented above. Additionally, there is some success in getting the support of the institutional systems and in the institution drawing up the necessary regulations to guide the use of technology at CPUT, as well as success in winning the support of the students regarding the use of Blackboard for teaching and learning. Success is also shown in the number of lecturers trained in the use of Blackboard each year, although some of these lecturers need ongoing support in order to embrace the use of Blackboard in their teaching.

## CHALLENGES

During the implementation of Blackboard at CPUT, a number of challenges – or what Everett Roger (1995) calls "unanticipated/unintended consequences" – emerged. These are the following:

- A lack of total commitment from management to the integration of technology in teaching and learning. Although management stipulated that each subject should have a minimum web presence, there is no push for the lecturers to implement this rule. The University does not have an e-learning policy and, for many years, there was no committee tasked with the mainstreaming of technology in teaching and learning (this committee was only formed in March 2009). The lack of total commitment from management and the non-existence of a committee to look at issues of integrating technology into teaching and learning can partly explain why some of the departments do not implement the technology aspects in their teaching and learning plans.
- The information technology infrastructure does not fully support the use of technology in teaching and learning. This is because there is limited access to computer laboratories as most of them are locked for security reasons and those that are open normally close at 16:00, thus not allowing students to work after hours.
- Inadequate information technology support to the Centre for e-Learning. Staff indicated that they have to log a call at the CTS help desk whenever the Blackboard system has a problem and their calls are not prioritised.
- Network instability and slow internet connections. Most of the interviewees raised the fact that network instability and slow internet connections discourage them from using Blackboard.
- A lack of ongoing support at faculty level after lecturers have been trained in the use of Blackboard affects the diffusion of technology at the University. About 25–30% of all the trained lecturers do not use Blackboard, although everybody who is trained is expected to do so.
- A lack of formal training for students to enable them to use Blackboard effectively puts a burden on the lecturers as they have to hastily train students who, in some cases, are not fully equipped to learn to use Blackboard.
- A lack of information on Blackboard and its usefulness in teaching and learning. This point was raised by most of the lecturers who do not employ Blackboard in their teaching practices.





- A lack of pedagogical/educational support in the use of Blackboard impacted on the effectiveness of Blackboard in improving lecturers' teaching and students' performance.
- Heavy workloads have either completely discouraged lecturers from using Blackboard or have dissuaded them from using it as much as they would like to because they do not have the time to convert their teaching material into an electronic format.

## LESSONS LEARNT AND SUGGESTIONS FOR FUTURE IMPLEMENTATION

In the CPUT context, the processes of implementation have made it clear that the implementation of an innovation is not an event, but a process. CPUT views all the unanticipated/unintended consequences emerging from evidence on the implementation of Blackboard as learning moments that will inform the future diffusion of Blackboard. At this stage of the implementation of Blackboard in teaching and learning, CPUT has learnt the following:

- The total commitment of management is required in order to integrate technology into teaching and learning (Phillips, 2005). This is because efforts of a committed team of lecturers can be undermined by an unsupportive management or unsupportive heads of schools (Phillips, 2005). To ensure the future diffusion of technology in teaching and learning, CPUT's top management needs to formulate a vision and priority areas for mainstreaming technology into teaching and learning, as well as to establish a technology integration forum (formed in March 2009) to oversee the implementation of the University's policies concerning the use of technology in teaching and learning.
- To speed up the diffusion of Blackboard, departments need to embed technology in their normal teaching (Phillips, 2005). A needs analysis must be carried out to find out the kind of support that the departments require and the kind of support that should be provided.
- A stable information technology infrastructure is crucial and adequate technical support for faculty and Centre for e-Learning staff is needed (Phillips, 2005). The University is in the process of upgrading its servers to ensure a more stable technology environment.
- A high-speed internet connection is needed to enable Blackboard to be a useful portal for other learning technologies and for easy access by students and

lecturers. The University plans to increase the bandwidth by using the low-cost bandwidth provided by the recently launched Seacom optic fibre cable.

- Adequate training in the use of Blackboard and ongoing on-site support for academics is vital. Literature proves that once-off training or workshops (as is the practice at CPUT) are adequate for introducing new ideas to trainees, but to enable trainees to implement those ideas in practice, regularly scheduled follow-up support is needed (Rude-Parkin & Hancock, 1990). This practice is necessary to enable lecturers to fully integrate the new ideas into their teaching repertoire and to ensure that the new approach will not be lost due to disuse (Butler, 1992). The best way to achieve widespread use of new technologies is to provide just-in-time support (that is, assistance and encouragement when needed – not tomorrow, but now!). Therefore, the Centre for e-Learning needs to look at its support strategy and ensure that lecturers are provided with ongoing support in their implementation of Blackboard. Perhaps the Centre for e-Learning should consider a mixed-mode method of training, that is, use the human resources route to offer training to an entire department (this is preferred by lecturers) and – should the need arise – offer one-to-one training to lecturers, especially those who are afraid of the technology and need to be trained at their own pace. The current practice is that training sessions are included in the University calendar and are advertised in the University newsflash (notice board). Those who need to attend the training apply through the Human Resources division.
- A rigorous awareness campaign about Blackboard and its usefulness for teaching and learning is required (Sherry, Billig, Tavalin & Gibson, 2000, Carr, 2006). The Centre for e-Learning needs to produce an awareness campaign on the use of Blackboard in teaching and learning if the conditions and activities that can promote adoption by the early and late majorities and laggards are to prevail.
- There is a need to provide both technical and pedagogical training on the effective integration of technology in teaching and learning (Ferrazzi, 2003). The Centre for e-Learning was praised by most of the users of Blackboard for its provision of technical support. However, most users of Blackboard indicated that there was a lack of educational/pedagogical support in the use of Blackboard in teaching and learning. Educational support should be provided to avoid what Phillips (2005) calls "the surface learning, teacher-centred, content-based approach", which is currently used in many universities where educational technology is widely adopted through the replication of traditional teaching techniques (Reeves, 2002).

- In order to encourage and sustain the use of technology in teaching and learning, a recognition and acknowledgement system of rewards, parallel and equal to that associated with "traditional" academic pursuits, needs to be in place. Such a system is not in place at CPUT, and management needs to encourage lecturers to use Blackboard. They could do this by offering formal Blackboard training for students, thus freeing up lecturers' time to train and support students. Additionally, there could be some recognition or reward for lecturers who use Blackboard appropriately.

## CONCLUSION

Based on the implementation process and the challenges encountered, the inadequacy of CPUT in leading the process of integrating ICTs (in this case, Blackboard) in education is highlighted. As a result of the lessons learnt during the implementation of Blackboard in teaching and learning at CPUT, the researcher can conclude that, in order for universities to lead in integrating ICTs in education, there is a need for the following:

- Total commitment to the initiative from management.
- The provision of an environment that is conducive to the effective use of technology in teaching and learning.
- A stable information technology infrastructure.
- Adequate technical support for faculty staff and units providing e-learning services.
- Adequate training on the use of Blackboard or technology and ongoing on-site support for academics, and the provision of both technical and pedagogical training concerning the effective integration of technology in teaching and learning.
- Just-in-time support to faculties is suggested as a crucial requirement for the widespread diffusion of technology into teaching and learning.

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## EXPLORING STUDENTS' UNDERSTANDING OF VALUES AND MORAL REASONING

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### ABSTRACT

This paper discusses research conducted among distance education students at the University of Pretoria in 2009. The aim of the research was to explore moral reasoning and how it may be guided or influenced by what students regard as important values in their lives. The paper argues that being human means having the capacity to make choices and to act in accordance with the choices made. It is argued that the choices people make are based on their own personal and socially constructed values, assumptions and beliefs. This personal set of values, assumptions and beliefs informs a person's understanding of what is morally right and morally wrong, and of the type of conduct that would be just and ethical. Moral reasoning is therefore seen to be that which an individual regards as being morally right, based on a personal set of values.

In the research, an attempt was made to determine the priority given by students to certain values and how these value orientations may influence their reasoning when they are confronted with a moral dilemma. The aim of the research was to explore students' thinking and argumentation regarding moral dilemmas with a view to understanding how students – who are all practising teachers – take moral decisions. Although the study will run over a number of years, some preliminary findings of a survey undertaken in June 2009 are discussed, indicating some of the initial trends emerging from the data.

**Keywords:** moral reasoning, moral dilemmas, teachers, values, value education, value orientation

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