ANOTHER WAY OF LEARNING INFORMATION TECHNOLOGY

Kay Fielden
FACULTY OF INFORMATION SCIENCES AND ENGINEERING
UNIVERSITY OF CANBERRA

Adopting a soft-systems approach (Checkland & Scholes, 1990) and an objectively-subjective approach (Reason & Rowan, 1981) to facilitating the learning process in information systems helps to set the scene for other ways of being in the world of information technology. Students take far more than technical skills with them into the world of work. Becoming consciously aware of interpersonal attributes and attitudes during a formal tertiary learning process for the information technologists of the near future is one way to improve the acceptance of technological solutions.

INTRODUCTION
I set a learning task for myself at the beginning of 1990 — a new decade: a new way of teaching. I decided to tune into my intuition and to listen very carefully to the ‘language of the soul’ (Zukav, 1990). I decided to go to my classes and to teach the material I really believed in; teach with enthusiasm and delight; teach with a passion and involve my students in the process of learning at a much deeper level than either I or, certainly, my students had experienced before. This involved letting go of a lot of preconceptions and fears about how things ought to be done. This approach meant that I felt as if I was putting my job at risk. I was doing things differently. Much to my delight these fears have been unfounded, and students really look forward to being in my classes. I teach general systems theory, interface design and technical documentation, and supervise the final semester project unit for undergraduate students in computing studies.

While theories, methodologies, techniques, applications, application development and project management are there, I am not going to concentrate on the ‘hard’ side of information systems but, rather, I am going to take a gentle walk through the process of deepening the learning process; making what is learnt more meaningful. I am going to look at how important it is to be true to our own way of being in the world, how important it is to be truly present, involving the whole person and not just the rational mind. The techniques I use to ‘set the scene’ for my classes are simple and well-known in such fields as humanistic psychology, but these techniques are quite alien to the students that I teach.

I am going to look at how we can ‘know the other’; at other ways of resolving conflict in small groups. I am going to explore ideas around how we can find the balance in a world that is in its adolescent years, struggling to find an identity that may fit a little better than the current chaotic hybrid field (Checkland & Scholes, 1990) that has grown out of endowing the computer with the status of an end, when all it is is a tool: a means to an end.

THE RATIONALE BEHIND MY APPROACH
I see my world of work as one in which the technology reigns supreme. Good solutions are those that involve technology, and innovative teaching methods must involve yet another way to use computers. Not only is there this ‘out of proportion’ regard for technological solutions as opposed to an holistic approach, but there is also much compartmentalisation of learning. Information sciences and engineering covers a multitude of highly specialised and very technical areas: software engineering, information systems, computer hardware, mathematics, statistics, electronic engineering, communications and physics. Each unit within each discipline has its own theories and well-defined field of study. Units are viewed as suspect if the content overlaps another unit. The students are therefore encouraged to learning in a compartmentalised fashion. There is little attention paid to the process of learning; rather the material of the course has to be covered in a semester and examined to satisfy the requirements of the degree.

I see this approach as one which does not give students any sort of conceptual overview of information technology, as one which has taken on the rationalist approach of science to simplify and then specialise in order to extend the frontiers of scientific knowledge.

My approach to researching, learning and teaching in this world is to adopt the ‘objectively subjective’ approach of Reason and Rowan’s (1981) new paradigm research.

This approach takes into account the following:
- the point of view of the researcher (the ‘facilitator’) by quoting from previous works as is done traditionally, giving a picture of the view of the world being considered, whether it be political, social or generally being in the world;
- tracing the history and the patterning of how this world or environment came into being;
- addressing the problem areas of traditional research, such as: stripping people of meaning by
modelling them objectively; reducing people to variables and studying them; turning processes into things; measuring everything in sight; inflicting harm on people in the name of research; being detached, and adopting the scientific method; • taking into account the knowledge gained about the workings of the unconscious in self and others; • acknowledging the importance of experimental learning; and • questioning the object-oriented level of consciousness which is the basis of rational discourse.

Zukav (1990) maintains that it is time for the human race to develop into 'multi-sensory' beings rather than five-sensory beings. Setting the scene for this evolution to happen in learning about information technology is at the core of my approach.

BALANCING DIFFERENT WORLD VIEWS

While I startle my students and colleagues alike by my approach to learning — and feel like a fish out of water at times — I am not deterred. My students come to me with their compartmentalised knowledge; with minimal transfer across unit boundaries. My view is to treat this as a challenge; as an opportunity to take the blinkers off, to broaden the picture, and deepen the knowledge. I believe that being actively involved in the process of learning at all stages lessens the resistance to other ways of gaining knowledge over time. My way is not to tackle issues head-on — not even to talk about doing things differently — but just to do it.

There seems to be some sort of process of osmosis at work as the students from previous semesters talk about my classes. As one student said to me, 'Your classes are famous. Your name precedes you. The students come to expect something different'. As I continue to experiment and to fine tune my teaching methods, my ways are accepted more readily by the students.

CHAOTIC AND LOVING IT

One of the side-effects of adopting the scientific method for teaching in information technology is to simplify any problem. This does not equip students well for real-life situations involving people as well as machines, theories and models. There is much inflexibility in this approach. What I have done is to work within the existing curriculum.

There is much confusion at first when, as a class, we tackle the problem-setting stage of an assignment. While students need guidance at this stage, the sense of autonomy and problem of ownership then belongs with the class as a whole. This is so different from the assimilation of insight into a way of thinking. The moment of truth, the sudden emergence of a new insight, is an act of intuition. Such intuitions give the appearance of miraculous flashes of short-circuits of reasoning.

Koestler (1964) states that:

The creative act ... presupposes a relaxing of the controls and regression to modes of ideation which are indifferent to the rules of verbal logic, unperturbed by contradiction, untouched by dogmas and taboo of so-called common sense. Evidence indicates that verbal thinking in general plays only a subordinate part in the decisive phase of the creative act.

Zukav (1990):

Intuition is perception beyond the physical senses that is meant to assist you. It is that sensory system which operates without data from the five senses. Intuition serves creativity. It is the sense that an idea that has never been tried before might work. Intuition serves inspiration. It is the sudden answer to a question. It is the meaning that takes form in the fog of confusion. It is the light that comes to the darkness. Intuition is the language of the soul.

So, creativity involves a relaxing of controls and a letting go of rational thought processes. Technical education, on the whole, is about refining and perfecting rational thinking. Here we have a dilemma.

Much of the work I do with my students involves creativity. Exploring creativity has long been lost to these students in an education system where an overemphasis on rationality in information technology is the status quo. It is very difficult for these students to design an interface or a piece of documentation, or to conceptualise the scope of an information system, if they do not have access to this part of themselves. Creativity can be released in many ways and they do not have access to this part of themselves. Creativity can be released in many ways and these are skills that can be learned. I start each of my classes with a 'warm-up' exercise. When we do physical exercise we 'warm-up' the body. It seemed to me that the mind would benefit by 'warming up' to a task. I use a variety of five-to-ten minute exercises,
design each student is required to give an in-class presentation and so I deliver a 'formal' lecture on this technique. In Australia we have a candy called a 'Mintie'. On the wrapper are the words, 'It's moments like these you need Minties'. So at the start of this session I distribute some Minties. The students wait for 'the Minties lecture' each semester. I'm not sure whether they get the message — that giving presentations is a high-stress activity — or whether they remember the class because of the Minties. Anyway, many of the feedback stories last semester said that 'the best lecture was the Minties lecture'.

CONFLICT
Conflict arises when there are different points of view and the expression of conflict can take many forms. These points of view can be between people, between roles, people play, between parts of an organisation or between organisations. I have constant conflict between my role as a parent and my role in my working life. We can also have conflict within. Imposed change, lack of control over our own life and any decision that needs to be made is accompanied by emotional reactions. It seems to me that conflict is inevitable and, indeed, necessary to maintain the balance and tension necessary to stay on a path through life. We can choose consciously to be aware of what makes us function and therefore empower ourselves or we can remain unconscious of the choices that are available and be buffeted by conflict.

Traditional conflict resolution comes out of a patriarchal, hierarchical world. Pearson (1989) suggests that men are more likely to embrace the warrior archetype and women the martyr role. So, when there is a difference of opinion, (say a conflict in the workplace), it is most likely to be dealt with by an exchange of incriminating memoranda, or by bitter words across a conference table — by direct conflict — than by:

Two violent and contrary winds, one masculine and the other feminine, met and clashed at a crossroads. For a moment they counterbalanced each other, thickened and became visible.

This crossroads is the Universe. This crossroads is my heart. This dance of the gigantic erotic collision is transmitted from the darkest particle of matter to the most spacious thought. (Nikos Kitzatzis)

My observations indicate that in this tertiary—technical—education environment interpersonal communications skills are undervalued and underdeveloped. Women through the ages have taken on the patterning of being submissive and subservient, and of adopting a giving-in-for-the-sake-of-peace, flee-from-a-dispute, never-fight-in-the-open approach. Much of the literature I read initially makes me feel ashamed of being a woman. And then I get angry. Women have many qualities that can help our world work more smoothly, and it really seems to me that these have been undervalued.

All of us have masculine and feminine qualities. I think that it is the masculine within that meets conflict head-on and battles it out in an open fight and it is the feminine that would rather run from conflict, even leaving it unresolved.

Much of what I experience as conflict is imposed power; that is, power being exerted over me where I lose control of direction. This is more likely to happen with a hierarchical system where decisions are passed down the line, imposing changes on working conditions. I react emotionally with a sense of powerlessness over unexplained change; power in hierarchies is often wielded by withholding information.

One of the roles I play in the project unit is to facilitate the resolution of group conflict. Students work in groups of four or five for a whole semester on one project, going through a project life cycle. While the students have usually gained the prerequisite technical skills by their final semester of study, they do not have the necessary skills to work within one group, work under pressure and handle their own conflicts satisfactorily.

This semester, conflicts have arisen because of:

- lack of technical skills within a group leading to a disproportionate output. This inevitably leads to frustration, negativity and feelings of inequity within the group;
- differing expectations of performance between supervisor and group. Each group is supervised by an academic member of staff. This semester a clash arose because the supervisor expected the group to be able to tackle the design phase smoothly because members of the group had received high grades in previous units. The group had excellent technical skills, but they needed to be directed through the design phase;
- differing expectations within a group of the final outcome. If some members of a group have high expectations of final grades and others are content only to pass,
then this is reflected in the effort each member puts into the group project. Equity issues arise if the group does not articulate its aims at the outset;

- everybody having a different attitude to work. Some people plod through the semester while others need to be threatened and cajoled into getting the adrenalin flowing to start work. A mix of plodders and those who put off starting for as long as possible can cause conflict;

- conflict arising between groups over the amount of time and attention each receives from a member of staff. If the perception is that one particular group is receiving more attention then, as the pressure mounts to achieve the end product, feelings run high on the help being given to others;

- communication problems within a group, where group members have come from different ethnic and cultural backgrounds;

- time constraints placed on the group, each of which has a leader — democratic groups don't work in 16 weeks. Conflict has arisen within a group with a change in leadership. Roles that group members play in relation to each other become confused;

- the project belonging with the student group: academic staff act as facilitators only. If a staff member becomes too involved with the project, then the leadership of the project moves to the staff member. This causes conflict within the group, within the unit and with those in charge of the unit;

- change in implementation language halfway through the semester. When an implementation tool is not evaluated thoroughly and then the tool is found to be inadequate, conflict results;

- groups are formed in the first week of semester and projects are chosen then. If there is any dissatisfaction with either group formation or project selection then conflict arises; and

- lack of support from a supervisor to a group. Supervisors have differing skills and personalities. A process of negotiation is entered into for a 'best fit' between groups and staff.

RESOLVING CONFLICT

No matter what the reason for the conflict, there seems to me to be a generic approach to its resolution. When I first become aware that a problem has arisen, I arrange a meeting with all those involved in the conflict. I also find out as much as I can before the meeting so that I can put myself in the 'right space'. At the meeting I set down some very clear rules about how the meeting will run. Everybody has a chance to tell his or her story, and to state his or her point of view. They have the chance to talk uninterrupted for the allotted time, and I only interrupt if a point is not clear to me. The discussion is only about the stated problem, for in this way the meeting remains focused and resolution more likely. As a facilitator my role is to listen to every point of view and to keep my emotional reactions out of the process. This means that I rely heavily on the inner skills that I have developed to observe, monitor and clear my own emotional garbage. I look for the good that can come out of conflict and reinforce that by giving positive feedback. I find that it is really important to leave the final decision to those actually in the conflict. I don't impose a solution. This has meant that I have had to come to terms with letting go of control of the final outcome. If those involved in the conflict 'own' the outcome, then conflict resolution is much more likely.

CONCLUSION

Learning to use creative ability seems very strange at first. It is much easier to hold onto a set of rules and regulations. These will give predictable results, and surely this is what systems are about. But, keeping sight of what the rules are for involves the creative process.

I have implemented changes in the process of teaching information systems within the existing curriculum by:

- allowing students more freedom at the problem setting stage. Guidance from academic staff seems to be essential for this to work successfully. This can be likened to a 'guided' form of discovery learning (Sebrechts & Marsh, 1989);

- allowing a selection of methodologies and implementation tools so that students make the final choice. Guindon (1989) suggests that locking designers into a strict order of activities may hinder the opportunistic insights critical to discovery;

- allowing time within the design process for free association of ideas. The skills to do this form an important element of 'warm-up' exercises;

- allowing time to 'set the scene' for problem solution. This is the time when the background to the problem can be assimilated and the appropriate skills acquired;

- equipping students with interpersonal skills for the development of cooperative group work; and

- looking at problem solution as a whole-system problem rather than as an intellectual exercise.

A more flexible approach to learning about information systems has helped to set the scene and to provide an appropriate atmosphere for the creative process to emerge. Positive feedback and encouragement, lack of judgment, familiarity with the chaotic first steps of design and learning to trust the insights that inevitably emerge sustain innovation and originality in the whole design process. Adopting a soft-systems approach to learning about information systems, viewing the learning process as a social system which acknowledges the whole person, and not just individual intellectual needs, has certainly improved the quality and depth of the learning process as well as the end product. My students take pride in what they produce.

BIBLIOGRAPHY


Byren, R. (1985), The Share Power Tool Kit or How to Fake Control of Your Life When All You Have is Your Bootstraps, Centre for Office Management, CCAE.


Fielden, K. (1990), Setting the Scene: Creative Learning in Information Technology, Proc 'Out of the Crucible', Centre for Human Aspects of Science and Technology, University of Sydney, December, pp. 59–64.
