Supporting information literacy for starting MBAs through action research

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1. Introduction

The recent past has seen continuous systematic change to the subject of Information Literacy. For business students at all levels mastery of Information Literacy has become an increasingly important skill. There is an expanding range of computing applications that support the office. The subject itself has moved on from the acquisition of basic computing skills in the use of office software packages. There is an increasing distinction between basic use of a package, and between advanced use, or mastery, which typically requires subtle interpretation and manipulation of information. Mastery involves far more than the ability simply to operate the package.

At Cass Business School, a major redesign of the MBA offered the opportunity to make some radical changes to the traditional approach to teaching these skills. Traditionally this was a skill taught early in the course in a fairly mechanistic way, through computing workshops. It had been perceived by staff and students as a simple skill of only moderate importance. The workshops were autonomous, relatively unconnected to other parts of the degree, though some of the material later in the degree was taught on the assumption that students would have a level of basic competence with certain computer packages. Under the redesign, it became possible to integrate these skills into the core programme to a greater degree. It also became possible to attempt to deepen the students knowledge and understanding of the subject.

As the change was designed and implemented, it gradually became clear that this process was unlikely to stop at this stage. The expectation was that further redesign would take place as the course evolved. To the staff in charge of the new skills component of the MBA this project seemed to fit well to the model of Action Research. Other writers have suggested that Action Research methods offer a valuable approach to researching and developing educational courses (Carr, W. and Kemmis, 1986, McPherson and Nunes, 2002). The classic definition of Eden and Huxham (1996) that 'action research involves the researcher in working with members of an organisation over a matter which is of genuine concern to them and in which there is an intent by the organisation members to take action based on the intervention' applies in this case. The academic staff that would design and implement the course changes were in a position to discharge both roles of researcher and practitioner. Moreover the expectation of further interventions that would change the status quo promised the cyclic process of change and evaluation that promotes the opportunity for theory development.

This paper argues that action research is an effective way to approach course design, when major change is thought to be necessary. The case example of the redesign of the Cass MBA programme demonstrates its value. The application of action research methods offers a way to explain and understand the drivers for change and a structure by which further changes can be developed and assessed in a systematic way.

2. The challenges in designing an information literacy module for the Cass MBA

Changing perceptions as to student needs have driven changes to the MBA programme at Cass and hence to the information literacy module. This section describes the original module structure, discusses the theory underlining the changes made to the MBA programme and describes the impact of the redesign on the information literacy module.

2.1 Cass experience prior to redesign

For ten years from 1992 to 2001 the structure of the computer literacy programme for MBA students remained unchanged. During the orientation week there would be a formal introductory lecture at which students were briefed about their computer literacy requirements. This typically took most of a morning and included presentations by both

academic and technical staff. There was also one compulsory hands-on class where the principal objective was to establish that students were able to log into the university's systems and to use some basic functions.

By 1994 e-mail was already used within the university for communication between students, even though most MBAs arrived with little or no experience of using it. So for some time the introductory hands-on class was primarily an e-mail training session. Once e-mail became widely used and most students were familiar with it before starting their MBAs, this initial class became largely a diagnostic session simply to establish that students had access to the network.

Questionnaires were used on occasion to gauge students' level of experience and expertise, but these proved to be unreliable as a measure of the amount of expertise in the cohort as a whole. There was a strong tendency for students to play down any prior experience that they had. In addition, the questionnaires revealed that some students had very substantial IT experience which they could have usefully shared with others on the course, but in practice there was very little sharing of ideas and information through the course.

The first week also included an introductory class aimed at complete beginners, and any other students were strongly deterred from joining this class. After the initial week computing classes were available, and were included in the course timetable, but were voluntary. These classes followed a service teaching approach, that various of the later components of the MBA programme would be structured on the assumption that participants would have a certain level of computer literacy, and that it was the students' responsibility to attain this level but that classes would be available if the students wanted them.

Anecdotal evidence suggested that this arrangement worked well for students with absolutely minimal computing experience – in practice by 2000 less than 5 would be in this category about of perhaps 110 students each year on the MBA programme. It was also appreciated by students who had a high level of computer expertise because they were able to use the optional classes to improve specific areas of knowledge. The approach worked much less well for students between these two extremes, and it was significant that students in this category would often lack some of the requisite skills for other components of the MBA even though they had chosen not to attend the relevant computer classes.

A further issue was vulnerability to technical failures, which was compounded by the likelihood of faults on the computer system appearing in the first weeks of term. Despite collaboration between technical and academic staff, the staff responsible for teaching computer skills were not in a position to do anything to alleviate technical problems. Nevertheless when problems did appear in the first weeks, they were often seen by students as a poor reflection on the learning experience as a whole. Typical problems that occurred included a modification being made to the computers' operating system at the last minute, so that a group of MBAs arrived in a computer laboratory one morning to find all the computers unusable because the software that they carried was being built, and a fault that made it impossible for students to log into the system for the first time on certain computers. These problems create a very bad impression of the entire computer facilities in the university and also meant that for many students their first encounter with the teaching staff responsible for computer skills was watching them wait for the technology to start working.

2.2 Theory development for information literacy

An MBA has three constituent parts – a group of core courses without which the degree could not qualify as an MBA, a set of elective courses and a major piece of individual project work. At Cass, prior to 2002, the MBA followed a traditional structure with the core courses tending to reflect the functional model of a firm. Dissatisfaction with this design had been expressed for some years. Individual modules – both core and elective underwent continuous redesign, but there seemed little opportunity or will to redesign the degree as a whole. The main concerns expressed early in 2002 were:

- Over-reliance on lecturing as a teaching approach
- Lack of integration between modules, especially the core
- Overlap between modules
- Potential imbalance between subjects
- Lack of consistent coverage of skills training for all students and the lack of integration of skills with application
- Potential inappropriateness of the aims of skills training
- Student dissatisfaction with the core courses, despite the acknowledged high quality of the lecturing

Two major theories underpin the design of an MBA degree – the theory of the firm and the managers job role within it and teaching and learning theories. Theories of the firm and the managerial job role have changed over recent decades following research into the changing patterns of business operations. Over the same period considerable research into teaching and learning has led to significant developments to the theories on this subject. It was the perception of the significance of these theoretical and practical developments and the apparent mismatch between these ideas and the traditional course structure that drove the course changes at Cass.

In the spring of 2002, all the teaching staff for the core modules of the MBA embarked on a collaborative project to redesign the core courses (more than half the degree programme) for implementation in the autumn of 2002. It soon became clear that there was substantial agreement as to the key problems. In particular the MBA working group came to the view that the traditional degree structure gave too much weight to knowledge acquisition and too little to application of theoretical ideas and the integration of business knowledge and skills. Over the subsequent period of six months this working group delivered a major redesign of the core component of the degree. By the start of the new academic year, the core course had been restructured into blocks of modules – four blocks of three core modules and three blocks of skills modules. Each block was designed and managed by a small working team of the teaching staff concerned. Information literacy was one of the skills blocks. Perhaps the most radical effect of these developments was the change to the process by which the programme was to be designed. Small teams of academic staff collaborated over the design and delivery of groups of subjects. This was a process that was planned to continue into the future, offering the potential for debate on and change to composition and relative weight of the individual components of the programme. The most significant aspect of the restructured degree for the information literacy module was the agreement as to the need to integrate skills with the other courses on the degree and the allocation of more time to skills training, within the block structure.

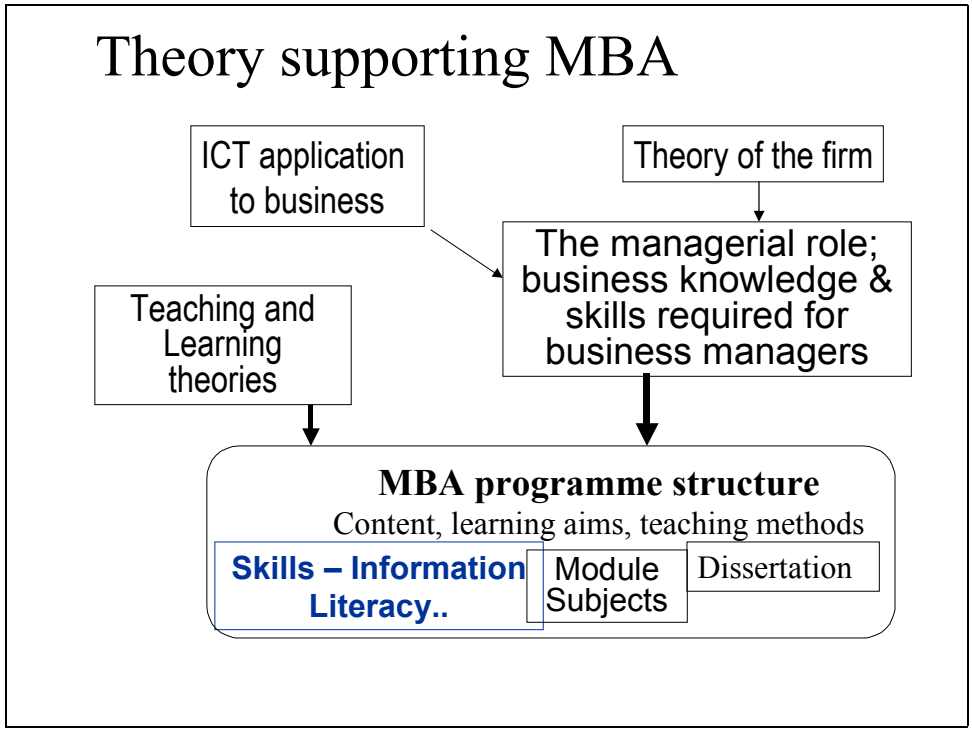


Figure 1: Proposed theoretical basis for an information literacy module design

It is clear that an information literacy module is but one small plank within the structure of the MBA degree course. However it is inevitably profoundly affected by changes to the MBA programme. The enormous scale of developments in information and communications technology over the last half of the 1990s has also played a large part in

changing the requirements of such courses. Many new applications are now considered key tools for the manager. In figure 1, we present a theoretical model that binds together these factors and identifies the basis for developments in our ideas on information literacy.

2.3 Information Literacy for the 21st century

Information literacy refers to students' ability to use and navigate information effectively during their studies. Bruce (1997) identifies a number of different ways in which students might experience information literacy. Her first category, the *information technology conception*, refers to students who view information literacy primarily in terms of using information technology, while subsequent categories imply a greater degree of involvement by students in the use and understanding of information.

Bawden (2001) surveys a number of alternative definitions of Information Literacy. He bases his survey on three general concepts of literacy: 'a simple ability to read and write; having some skill or competence; and an element of learning'. In addition he observes a number of common factors, notably that, as with literacy in its conventional sense, the standard of information literacy expected of different people varies a lot according to their background, and that information literacy represents a skill that people can continue to use and extend once they have acquired it. It can be regarded as a skill that integrates a number of other elements which an information-literate person might be able to build on.

Mastery in this paper refers to a level of understanding beyond basic computer skills. In particular it refers to the acquisition of a level of confidence and understanding that allows people to *extend* their skills and knowledge. For instance it refers to understanding the menu structures associated with a Windows package well enough to be able to adapt to use of a new Windows application with minimal instruction or reading. It refers to being familiar enough with the way that web sites are structured to be able to construct complex web searches and to navigate parts of the Internet that one might not have encountered before. In the context of a search engine such as Google, mastery would reach beyond knowing the search engine's technical features, to possessing the intuition necessary to deal with a large number of search results.

There is a parallel with the concepts of deep and surface learning (Ramsden, 1992). In the context of computing skills, surface learning implies learning mechanistically how to use something. Deep learning implies enough understanding of the underlying principles to give a set up extensible and sustainable skills.

The word 'mastery' has entered the popular business lexicon, partly as a result of its use by Senge (1992) as a desirable attribute for managers. However Senge sees it as a generalised attribute, as a form of self-knowledge, which is rather different from the application of the term to a particular set of skills.

2.4 The redesign of the Information Literacy module

The redesign of the MBA programme included a move away from modules that ran through a complete ten-week term, towards blocks of four weeks interspersed with individual weeks based around particular topics. This offered an opportunity to make computing and information literacy skills one of the components of the first four-week block of the MBA, and this, together with the orientation week that preceded the block, meant that students had a considerable opportunity to learn about computing skills during the first five weeks of their degree programme.

At the same time, the style of the material was changed fundamentally, from mostly hands-on classes to a combination of practical exercises and tutorial classes, where the tutorial classes were structured discussions and did not take place in a computer room. The practical exercises were devised so that they could be carried out by students either using their own computers and Internet connections, or using the facilities at the university. This meant that they mirrored accurately the way that students would work in practice during their MBA programme. It also reduced the dependence on the university's computing infrastructure at a time when it was prone to failure, and so reduced the risk of students receiving a very negative view of the information skills component because of unreliable computers.
To reinforce deep learning, the tutorial classes were based around a series of questions which the students would discuss in small groups. Some of these questions related to simple practical skills, but most of them were about information management skills and issues. For these classes the students worked in the same groups of 6 or 7 that they would use for other

parts of the programme. In each tutorial class one group would lead discussion about a particular question, and other participants would join in with possible answers and suggestions.

In addition to providing an opportunity to reinforce the learning, the tutorial approach addressed the issue of a very wide range of abilities within the cohort. It meant, in principle at least, that students who had a lot of expertise in information management, could share their ideas with other students who attended the same tutorials. In practice this level of sharing could only be achieved with very careful facilitation of the tutorials.

The first few tutorials were well-attended and the discussion there was very lively. The later tutorials were concurrent with other, assessed, exercises within the programme and the level of both attendance and enthusiasm among students diminished. Also some technical problems did become apparent during the first few weeks and it could be difficult to prevent some tutorials from becoming purely opportunities to talk about these.

Nevertheless the new structure averted many of the problems that had affected the computing skills component of the programme in earlier years, and it at least provided a suitable environment for deep learning.

3. Action research and its relevance to course development for the MBA

Action Research has become increasingly prominent not only among organizational scientists but also more recently with information systems researchers (Eden and Huxham, 1996; Carr & Kemmis, 1986; Avison et al, 1999). Despite the practical difficulties of applying the method, its use is being strongly advocated (see for example the forthcoming Special Issue of *MIS Quarterly* on "Action Research in Information Systems"). Dissatisfaction with conventional positivist and qualitative methods has to some extent driven this development. Action research is thought to overcome some of the shortcomings of other research methods (Baburoglu and Ravn, 1992; Greenwood and Levin, 2000; Baskerville and Wood-Harper, 1996). This section outlines the main elements of the method and discusses why it is appropriate for the course redesign project at Cass, described in the preceding sections. The discussion is organised into two sections – the first on goals and the second on process.

3.1 Goals

Action researchers seek solutions of immediate practical relevance to existing problems while simultaneously expanding scientific knowledge (Avison, et al., 1999; Eden and Huxham, 1996). This is achieved through the collaboration of researchers and practitioners. For Eden and Huxham (1996) the most significant characteristic of action research is that these two groups collaborate on a subject of great practical importance to the practitioners and that the expectation of both groups is that organizational change will be enacted based on the results of the work carried out. This emphasis on action is one of the great attractions of action research. The relevance of research carried out by more conventional research methods has come under increasingly harsh criticism especially for those subject domains that are concerned with the social world (Greenwood and Levin, 2000). Action research, by emphasising the practical outcome seems to address this particular problem. For the case discussed in this paper, the course leaders are discharging both roles of researcher and practitioner. Hence collaboration and intent to implement change are beyond dispute. This is similar to the situation that developed at the Tavistock Institution in dealing with the psychological disorders caused by the 2nd World War, in which scientist and therapist were one (Baskerville and Wood-Harper, 1996). The theoretical model on which the course change is based (presented in section 2.2) underpins both the changes to the MBA programme and the information literacy module.

Unlike most research methods action research embraces change. Other research methods seek to study and understand existing organisational and social structures. The action researcher seeks to create organisational change and study the results (Baburoglu and Ravn, 1992). This is an interventionist approach that encourages social experimentation. Indeed Baburoglu and Ravn would go further in proposing that this method could be used normatively to create the future that we want to live in. It is a method of particular relevance to fluid situations that are subject to continuous development and change. This describes much of the business and educational world. In particular it seems well suited for research into the MBA courses at Cass, if our courses are to evolve to meet the needs of a demanding group of customers.

3.2 Process

Many different forms of action research have been applied to IS research problems (Baskerville and Wood-Harper, 1998). However the one chosen for this project is based on an early approach described by Susman (1983). This is a five phase cyclical process (see figure 2), which requires initial agreement on the client-system infrastructure.

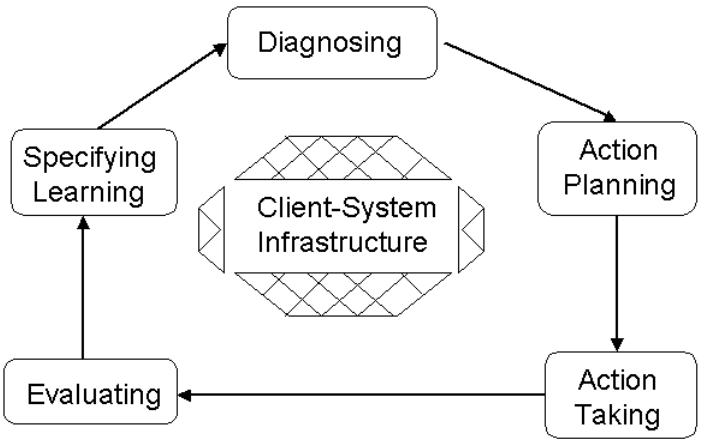


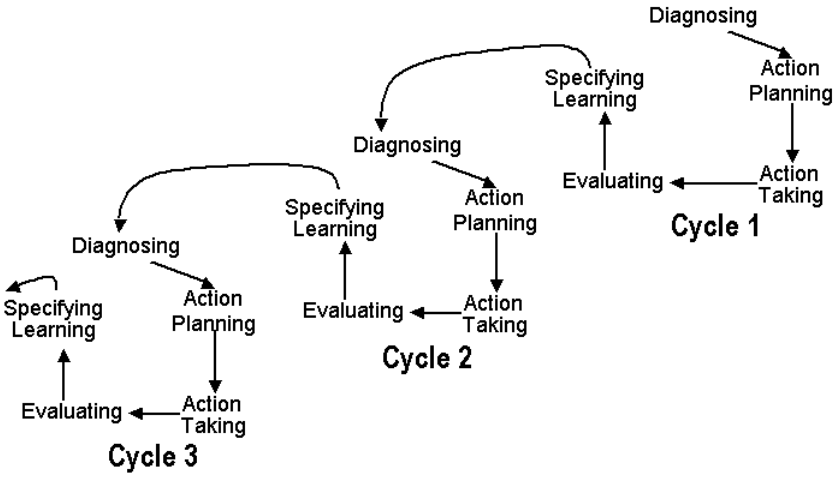
Figure 2 The action research cycle (Baskerville and Wood-Harper, 1998 Taken from Susmann 1983)

The client-system infrastructure is the specification of the environment within which the research is to be carried out. This would cover a multitude of issues like; the level of authority of researchers and practitioners to investigate and act, the boundaries of the problem to be researched, the separate responsibilities of client and researcher. These are all factors that help to define the scale of the intervention and the scope of the research. Where researchers and practitioners come from different organisations and have differing goals, this stage involves much work. It would be important to clarify all contributors needs, responsibilities, contributions before any substantial work is started. This is the stage at which the contract between all parties should be settled. For the Cass project, this stage should be less controversial in that there is less ground for conflicting goals between researcher and practitioner. However the traditional approach to programme design and delivery in which individual lecturers assume responsibility for the constituent modules precludes course changes that depended on collaboration across modules. The creation of the working group for the MBA changed the organisational (the client-system infrastructure) context in a radical way.

The five phases of one cycle are shown in figure 2. Diagnosing is the stage at which the primary problem facing the organisation is identified. Researchers and practitioners collaborate on developing and action plan to relieve these problems and then implement the agreed intervention (the action taking stage). The evaluation stage is perhaps the most critical and difficult to complete successfully. It involves assessing the effects of the intervention on both a practical level ('Did the action relieve the problem') and a theoretical level ('did we obtain new theoretical insights? Did the results support pre-existing theory?'). If further cycles are indicated, some framework for the next iteration will be required. Finally the learning achieved can be categorised into three types, knowledge about and for the client organisation, the basis for designing further iterations and new theoretical insights. The cyclic process of repeated applications of these five phases is one of the distinctive and powerful features of this type of action research (figure 3). Succeeding cycles allow the opportunity for the learning from the previous intervention to be incorporated in the next action. This process of action, feedback, reflection informs the design of further interventions and theory development. It is a continuous process building knowledge and practical understanding from cycle to cycle. For those subjects that are heavily dependent on the social and organisational context and subject to continuous change, this is a more

promising approach than other research methods. For the information literacy course, it was the restructuring of the MBA degree course as a whole that offered the opportunity to make a major intervention and start cycle two.

Figure 3: Spiral of action learning



3.3 Summary

For Baskerville and Wood-Harper (1996) the ideal domain of the action research method is specified by the following characteristics:

1. The researcher is actively involved, with expected benefit for both researcher and organization
2. The knowledge obtained can be immediately applied
3. The research is a cyclical process linking theory and practice'

The course redesign project meets all these criteria. The researchers and practitioners are one and expect to obtain both theoretical and practical benefits. The knowledge gained will be put to immediate use for the next cohort of students. The first cycle has been completed and cycle two is underway with several more cycles expected.

4. Application of Action Research methods to the redesign of the information Literacy module at Cass

The project team was made up of the three authors, all of whom have contributed to the information literacy course over the two cycles. Although we, the team members were generally in substantial agreement as to both research and practical goals, it only became clear how limited our range of options had been as the possibilities offered by the major restructuring of the MBA began to unfold. The client-system infrastructure within which we worked had exerted powerful pressures and imposed severe constraints. This section describes the results of the initial cycles.

4.1 Cycle 1

Cycle 1 lasted many years. The original diagnosis phase identified the need for a set of computing skills training classes to be added to the existing MBA degree programme. Two factors contributed to this perception. Software developers were providing an expanding range of increasingly sophisticated computer packages that contributed to the efficient operation of the office. The managerial job role was undergoing significant change and the direction it was moving in included the expectation that managers could make appropriate use of computer packages. In practice the need for additional classes was driven by the development of a university wide network that all students needed to use and the patchy nature of package training delivered by the individual modules of the degree.

As described in section 2.1 above, the intervention taken was the design of a set of computing classes delivered in the first weeks of the programme. This was taught for many years, with minor changes to course content in terms of additional packages and university network functions, but with no change to the

course process in terms of structure or pedagogic approach.

Evaluations were made every year that surfaced a number of problems and criticisms – all on the quality and effectiveness of the course to meet the formal teaching aims. The evaluations were fairly informal. They comprised the perceptions of the teaching staff, computer support staff and student feedback on an individual and group level, notably the staff/student liaison meetings. An important point is that in a one-year course there are serious difficulties in identifying tangible improvements year on year, because each cohort of students does not really see any benefits from improvements in the course from one year to the next. Many of the issues covered by student feedback on information literacy have been to do with 'hygiene factors' (Herzberg, 1959) that only really generate comment when they are absent. These evaluations resulted in little additional learning with respect to the theory underpinning the course, but a lot of information on the practical problems of delivery. In particular neither the basic learning aims nor the teaching methods of the module were ever seriously questioned.

4.2 Cycle 2

Cycle 2 started in early 2002, with the formation of the working group to redesign the MBA programme. Theory development, diagnosis and action planning proceeded in parallel. The diagnosis stage resulted in a major change in our definition of information literacy and teaching aims for the module, as described in section 2.3. This led to the module redesign described in section 2.4.

Evaluation is proceeding on several levels – for the module individually through the staff and student perceptions, and for the MBA core as whole through student feedback forms and staff/student liaison committees. It is notable that staff feedback now comes from those teaching the core courses not just from the information literacy teaching group and computer unit staff. However it is becoming clear that we need to design a more formal system for evaluating all the elements of the module. Learning aims concern all the MBA participants – staff and students. Much of the assessment of module success relies on the tacit knowledge of staff involved in preceding cycles. For example one of the authors could see a change to the pattern of IT problems from previous years, in that they did not occur quite as early in the term as had happened in earlier years. In his view, that would have translated into a much better initial impression for students. But that depends on his largely tacit knowledge. It would be good to find ways of turning such judgements into explicit knowledge. Assessment of student skills acquisition is also important and needs to be targeted on the new goals. For example assessment through application and use on the core courses that the module has been designed to support.

4.3 The Future

The theoretical basis proposed for the MBA programme and information literacy module offers an explanation of the swelling dissatisfaction expressed about the traditional programme. Further work to amplify the description of the constituent elements would help to clarify the value of the various aspects of the course redesign and enhance continuing change initiatives. Evaluation of this model is key to successful course changes. If it is a poor representation of current business conditions and/or teaching methods, the course design for which it is a base will rapidly become flawed. Continuing change to business conditions could have a similar effect. Effective evaluation methods are far from clear but are the key to further learning. The results of cycle 2 have also established the need to develop more formal systematic evaluation procedures for the practical realisation of teaching aims.

With the review of the MBA core courses for the autumn term 2002, cycle 3 may have started. For the information literacy teaching group, diagnosis, theory development and action planning stages are again proceeding in parallel. The review and planning actions undertaken for the MBA core as a whole are having a significant impact on this process. The scale of the intervention for the following year will determine whether this is a new cycle or a refinement of cycle 2.

5. Conclusions

Action research can be an extremely valuable research method for course leaders. It is particularly appropriate for business degree courses, facing the need for continuous change driven by technology and developments in business theory and practice. The application of this approach to the case of the information literacy course at Cass Business School has suggested several promising lines of enquiry for future cycles of course development.

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