

A Holistic Approach to Learning and Teaching Interaction: Factors in the Development of Critical Learners

Nandish V. Patel

Brunel Business School
Brunel University, Uxbridge, Middx, UB8 3PH
nandish.patel@brunel.ac.uk
www.brunel.ac.uk/~csstnvp

ABSTRACT

The author independently developed the Holistic Approach to Learning and Teaching Interaction over nine years of reflective teaching practice in the field of information systems and computing across three higher educational institutions. It has been taught on undergraduate and post-graduate degrees and doctoral programmes. Though its roots are in the computing field, the holistic approach can be generalised to other disciplines in higher education. The holistic approach develops students to be critical, confident and independent. It aims to make learning a process of self-improvement that explicitly recognizes the self and the social context of learning and teaching, and recognizing the needs of the individual learner in the interaction. Its premise is that the social context of the interaction is significant. It recognizes that the exchanges that take place within this social action are the foundation for developing critical learners, thus including experiential knowledge of learners and teachers to improve the quality of the teaching situation and levels of achievement of learners. Kelly's Personal Construct Theory (PCT) is invoked to explain how the holistic approach leads to the development of learners as critical thinkers. This paper describes the approach in the context of PCT and shows how it has been incorporated practically into teaching. The result of practicing the holistic approach has been sustained high levels of student attendance at lectures and seminars, improved progression, and appreciative and satisfied cohorts.

1. INTRODUCTION

Post-Dearing has resulted in a focus on learning outcomes as a measure of teaching quality. The teaching, its quality, and the learning environment are all measured or evidenced in some manner. In this climate of educational measures and evidence it may seem contrary to advocate an approach that incorporates notions of the student as a 'self', and 'knowledge' as an emancipatory aspect of higher education. As Barnett argues: 'The challenges facing the university in developing critique-in-action are, in part, concerned with the ontological questions of what it means to be a self in the world, and about the relationship of the self to the world of work.' (Barnett, 1997, p.129). The Holistic Approach to Learning and Teaching Interaction (HALTI) for developing critical learners espoused in this paper dose precisely that. Its purpose is to develop critical learners, whilst accommodating the current emphasis on educational measures. It has been conceptualised as a result of the success of the author's teaching with this approach and appreciative students' comments. It is communicated here as a story of a teacher.

The quality of the learning experience is undoubtedly important, and the current emphasis on improving the quality of the teaching and learning situation is a positive development in higher education. The HALTI approach involves the holistic teacher *deeply* in the experiences of the learner. Thus both the research and practice are phenomenographic as advocated by Prosser and Trigwell (1999). Such phenomenographic research is communicated via stories. The author independently developed the HALTI approach over nine years of reflective teaching practice in the field of information systems and computing across three higher educational institutions. It has been taught on undergraduate, post-graduate, and doctoral degree programmes. Though its roots are in the computing field, the holistic approach can be generalised to all disciplines in higher education. The observed results of applying the

approach are the development of critical, confident, independent learners capable of action in their chosen fields.

Whilst thinking on learning and teaching concentrates on what lecturers can do to improve their teaching, the holistic approach is based on the view that teaching is a social activity. The essence of the social activity consists of the roles played by the learner and the teacher. The holistic learner is assumed to want to achieve the highest aspect of awareness of knowledge, and appreciates the value that it adds to his or her life. The holistic teacher is assumed to want to develop the learner as a critical, confident, independent learner and provide the holistic learner with critical faculties that enable action in real situations. The learning and teaching that takes place in the holistic approach is defined as the social process of allowing critical learners to claim ownership of the knowledge domain, its epistemology, and to make knowledge refutations or claims based on that, such that it enables action in real situations. The interaction between the teacher and the student is a social act that needs to encompass the personal, professional, social, and human needs of the learner. These needs are not merely the need to learn knowledge, but also the need to be heard, the need to be praised, the need to be accepted into the community of learners, as well as other human needs.

The traits of a critical learner are in the HALTI approach are criticality, confidence, and independence. Paul and Elder (2001) state that: 'Critical thinking is that mode of thinking – about any subject, content, or problem – in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them.' In the HALTI approach the critical learner is regarded as an individual who has to act eventually in real situations. Such purposeful action requires critical faculties that enable individuals to make decisions about action based on knowledge learnt to assess validity. Confidence is required to act and the holistic teacher's task is to provide such confidence by developing independent learners. This independence trait of the holistic learner acknowledges that the individual is responsible for their action. A critical learner can only be independent, if they are confident, and confidence only develops if they are capable of questioning established ways.

This paper is a narrative of the HALTI approach. The approach consists of five aspects of interaction with critical learners designed to motivate and develop them as critical, confident and independent individuals and to stress upon them the extra value that education and knowledge adds to their lives. An important consequential benefit is that it keeps students interested in the taught discipline and improves achievement and progression rates. The place of the holistic approach in modern higher education is discussed with references to existing literature, especially the contribution it can make to develop critical thinking in learners. The practical ways in which the author has implemented the five aspects of learning and teaching interaction are discussed. The next section describes how PCT is invoked in the holistic approach. The author's practical experiences are detailed in section 3. The evidence of the success of the approach in teaching is discussed in section 4. The issue of student diversity is addressed in section 5. The broader discussion on the relevance of the holistic approach to modern higher education is developed in section 6 before offering some conclusions and plans for further research in the final section.

2. PERSONAL CONSTRUCT THEORY AND THE HOLISTIC APPROACH

The ways in which Personal Construct Theory (PCT) is invoked in the holistic approach is discussed (for the original description of PCT see Kelly, 2000a), and some problems it raises for the holistic approach are highlighted in this section. A construct is a way of perceiving, construing, or interpreting events. PCT is used in the holistic approach to: (a) Create holistic and critical learners. (b) Elicit students' personal construction system. (c) Through knowledge of students' personal constructs enable them to relate subject knowledge and take ownership of it, and to be critical of methods for establishing knowledge. The outcome is the growth and

development of students through increased complexity and definition of the construction system.

The purpose of invoking PCT is to establish *true* interaction between the holistic teacher and the critical learner. True interaction is defined as the teaching situation in which the student begins to take ownership of the taught knowledge and the methods of establishing knowledge and develops responsibility for them. PCT is used in the holistic approach to elicit students' personal construction system and to enable them to relate their personal constructs to the taught subject knowledge. Four aspects of PCT are relevant to the holistic approach. These aspects are the basis of creating holistic and critical learners. They lead to students learning to know themselves through knowledge and assuming ownership of the knowledge.

One, as the aim of the holistic approach is to develop critical learners it is necessary for the teacher to know what type of person the student is. It is equally important for the student to know what type of person she is. The holistic teacher achieves this by posing the question: What type of person do you expect to become? This question can be made explicit or, as practiced by the author, assumed in the background throughout the teaching interaction. The personal constructs that students develop are at the core of the holistic approach.

Two, the holistic teacher elicits students' 'construction system' (Kelly, 2000b) or their self-characterization in lectures, seminars, and tutorials. The purpose of the elicitation is to design true interaction meaningful to students. It is the basis of introducing subject knowledge, which students then are able to relate to their personal constructs. For example, in teaching how to manage information technology development projects and to impart that planning is important, students are asked what they understand by 'culture'. Responses like culture is: 'a way of life', 'a form of identity', 'a way of thinking' are elicited from students. The latter response is used to show that planning is an aspect of our culture and that it is used to *think* how to develop successful information technology. Students are then able to relate the importance of planning to their personal constructs.

Three, the holistic teacher enables students to elaborate their construction system and then relate the taught subject knowledge to it. As shown in the previous paragraph, this is a way of creating true interaction. It is a way of providing students context, their personal context through their construction system, for relating new knowledge. It is important to provide students this space in which to relate taught material because it engenders *ownership* of the taught knowledge.

Four, as the aim of the holistic approach is to develop critical learners, it is necessary to bring to the surface students' personal constructs that are relevant to achieving this aim. The types of personal constructs that have been elicited are: social, institutional, knowledge, and belief constructs. Knowledge and belief constructs are especially important, because students own understanding of what they regard as knowledge and how it is brought about are central to developing critical learners. By surfacing personal constructs students can begin to *see* themselves *in* the process of knowledge generation, questioning, and learning.

Whilst the above four aspects of PCT provide ways in which critical learners can be developed in a holistic manner, its application to the holistic approach raises more problems than can be resolved conclusively. Two example problems are presented. First, the task of creating ownership of knowledge in students becomes difficult when human motivation is concerned, as Kelly states: 'a person chooses that alternative in a dichotomized construct through which he anticipates the greater possibility of extension and definition of his system.' (Kelly, 2000b. p. 351). The taught knowledge may be contrary to students' personal construction system. In situations of dichotomous constructs, the holistic teacher acknowledges the difference and does not attempt a resolution at that moment. It is stored in the objectified class-view and retrieved in relevant later sessions. For example, some students

from different ethnic backgrounds may not accept the scientific method because it conflicts with their personal belief constructs.

Two, the core of being critical is personal choice. As Kelly states: 'From the standpoint of the psychology of personal constructs it is important that the client himself choose what is a relevant answer to the question.' (Kelly, 2000b. p.298). This is problematic because the choice that students make through their personal constructs may be the opposite of what the syllabus and the teacher regards as required. However, by surfacing students' personal constructs, the holistic teacher creates space for a critical *being*. This is consistent with constructive alternativism, the view that there is no objective reality or absolute truth, but only alternative ways of construing events.

Some synergies between PCT and the holistic approach need to be stated. One, like the holistic approach PCT emphasizes the whole person. The student is not simply a degree candidate, but a person who is interested in developing a personal construct system that will give them a better future. (The future is a fundamental aspect of PCT). Two, holistic learning and teaching is concerned with the students' behaviour in cognitive terms, as PCT is. However, as learning and teaching in the holistic approach is performed in the social context, individuals' feelings are recognized and catered for, through the emphasis is on learning. Three, like the holistic approach, PCT adopts relativist ontology. The holistic teacher is prepared to accept students' interpretations of events, and regards the world as socially constructed rather than as objective. These similarities are significant because they enable PCT to be truly invoked in understanding the holistic approach to learning and teaching.

2.1 THE HOLISTIC APPROACH

The Institute of Learning and Teaching's (ILT) four 'outcomes' of the teaching act are: design and plan a course, teach and support learning in the discipline, assess students' learning achievements, and contribute to the maintenance of student support systems. These outcomes are covered in the holistic approach, primarily in the learning and teaching and discipline aspects of the approach. However, the approach goes beyond these outcomes to address other aspects such as personal and professional development and the development of a community of knowledge seekers. As Prosser and Trigwell (1999) assert teaching is about creating contexts that make learning possible. Professional institutions and the government currently seek to further similar aspects of the teaching process. Similarly, higher education institutions have emphasized in their strategies that a university education can enhance learners' lives. (Brunel University, 2001).

Learning is a human right. It is a need that all humans innately possess and it is expressed in different ways in different societies and in different ways at different stages of a society's history. The development of the holistic approach is based on reflective practice spanning nine years. As a teacher, the author is not only sympathetic to the needs of individual learners but is concerned deeply with their appreciation and awareness of the role of knowledge, not only in their vocational careers, but in their lives and in society too. Over the years, this perspective on teaching has led the author to experiment ways of teaching that develops the critical learner - a person who is critical, confident and independent.

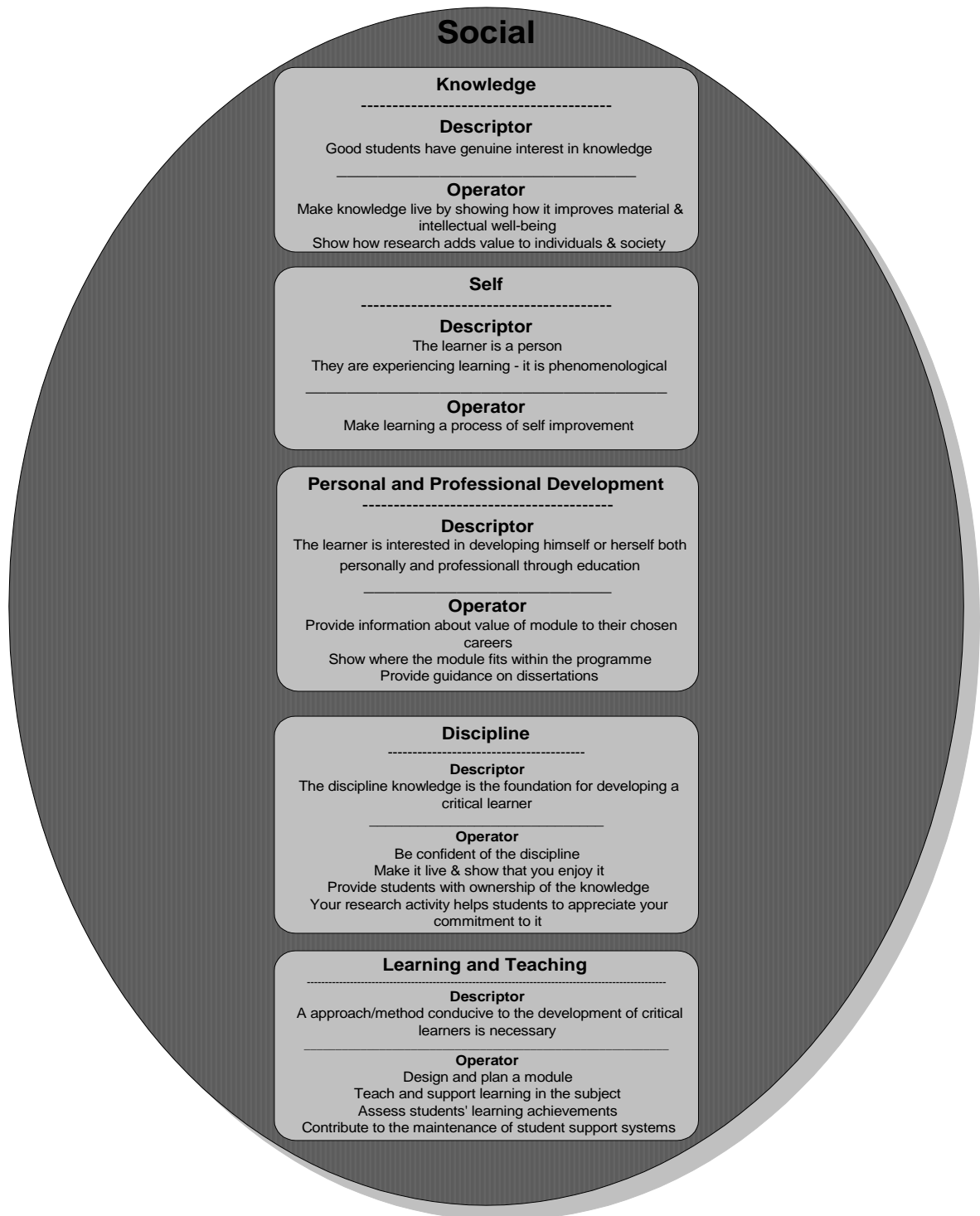
The issue of integrating research in one's discipline and teaching is addressed in the holistic approach. The holistic teacher is a learner too (Patel, 1994). Being a learner, the holistic teacher has to discover new knowledge, and the primary mode of discovering knowledge is to undertake research. As research leads to making specific claims on knowledge, its practice by the holistic teacher provides an insight into the discipline knowledge. A prime concern of the reflective teacher of the holistic approach is the impact he or she has on the learner. The social interaction between the teacher and learner will affect both. But the effect on the learner will

be more pronounced as he or she is predisposed to reception of knowledge in a university setting.

Barnett (1997) argues that the purpose of a modern university is to develop critical thinking. The HALTI approach was developed while pursuing the aim of developing critical learners in information systems and computing. But the approach presented here is scalable to the level of the university. The traits of criticality, confidence, and independence enable an individual not only to act in real situations in relation to the discipline knowledge being taught but also to authorities of epistemology such as universities. In this approach the holistic practitioner is a teacher who passes on the ownership of the knowledge to the student and develops the *feeling* of ownership, and is deeply involved with students' experiences and reflects on his or her own experiences of the learning and teaching interaction. Interest in a discipline, the urge to learn more, and attendance at lectures, seminars and workshops, all are dependent on how involved a learner feels. The holistic practitioner seeks to involve the critical learner in the process of knowledge creation through the subject discipline. This is achieved through teaching devices that develop responsibility for knowledge claims in critical learners.

The holistic approach is presented diagrammatically in Figure 1. It shows five aspects of learning and teaching interaction. The egg-like oval is representative of the social context of learning and teaching interaction (its also symbolic of embryonic and fertile minds of learners). As Barnett suggests, the social refers to the collective, without which critical learners cannot be developed. Critical requires dialogue (Barnett, 1997). The holistic approach transmits discipline knowledge at varying depths, represented by the first four aspects of knowledge, self, personal and professional development, and discipline. Each aspect contains a descriptor section and an operator section. The descriptor section describes the aspect, for example knowledge and its role in the learning and teaching interaction. The operator section states the role of the aspect in the interaction and how teachers can implement the aspect in practice.

Figure 1: A Holistic Model of Learning and Teaching Interaction for the Development of Critical Learners



The diagram in Figure 1 is purely an analytical and transmission device. The holistic approach is not a layered approach or hierarchical, which would imply a progression from one aspect to the next. On the contrary, the approach is *holistic*, and all the analytical layers are intertwined in the social act of learning and teaching, and are therefore described as aspects.

These are not separate blocks but intertwined aspects of learning and teaching that reflect a rich social dynamics between the teacher and the critical learner which leads to the experience among learners of knowledge being lived.

The purpose of the HALTI approach is the development of critical thinking in learners. In the holistic approach, learning and teaching interaction is defined as the social context in which a learner who is seeking to improve the self is taught specific discipline knowledge by a knowledgeable teacher whose aim is to disseminate discipline knowledge and improve the quality of life of the learner by developing him or her into a critical learner. The holistic approach seeks to develop critical, confident, and independent learners capable of action in their professions and in society generally. The task of the holistic teacher is to enable critical learners to direct themselves and to devise ways of enabling learners to do that.

The approach comprehensively caters for the holism of the teacher, the learner, the teaching situation and the purpose of a university education if we accept it as developing critical learners. The first two aspects of the approach indicate that it is possible to develop the 'self' and inspire learners to be concerned about 'knowledge' through the discipline knowledge. The development of a critical learner requires the holistic teacher to address the critical learner's self and how knowledge contributes to the development of self. This does not require the holistic practitioner to deliver a full program on research, but rather develop teaching devices that lead learners to think about the constituents of knowledge and its role in their lives.

The holistic approach contains activities that we all do as teachers. It is unique in its holistic approach, bringing a view of learners as persons seeking to develop themselves as selves through the development of criticality. It regards the process of gaining knowledge as an acceptable learning and teaching aim that develops critical learners. The five aspects of the holistic approach shown in Figure 1 are now described.

KNOWLEDGE

It is assumed that a critical learner will have an interest in the process of knowledge generation in society and how it affects him or her individually. The aim of considering this aspect is to add value to the students' learning and their lives. In the author's experience good students want to gain knowledge, as well as achieve top grades. A holistic teacher seeks to make a critical learner aware of epistemological issues in the discipline knowledge being taught. This is achievable through examples from the discipline.

How can scholarship in the learner be cultivated in the age of learning outcomes? The holistic approach caters for student scholarship by appealing to the self-aspect and creating a culture and environment of appreciating knowledge. The holistic teacher seeks to make learners into inquiring, questioning, scholarly, and erudite individuals.

For example, in teaching how to manage projects for developing information systems, the author made students aware of how project management knowledge is established and whether the method was appropriate to enable practitioners to act on the knowledge available. This made students aware of questioning the validity of project management knowledge, which enabled the author to broaden it to the role of knowledge in their lives.

SELF

The holistic approach recognizes the self as the foundation of the critical learner, and addresses the needs of the self. For normal entry route students, in the age range eighteen to twenty-one, the learning of a discipline is intertwined with learning about themselves and their society. For many students, their interest in knowledge is based on their quest for self-improvement, be it vocational or intellectual. A sensitive aspect of the self is the emotions that students experience. Recognizing the self and its need to develop caters for emotional

intelligence in the holistic approach. As the mind is an aspect of the self, and the mind thinks with knowledge, the self and the knowledge aspects of the approach are closely intertwined. The author has experienced how undergraduate and postgraduate students, whether normal entry or mature students, learn about themselves through specific discipline knowledge. For example, students who were asked to reflect critically on the role of rationality in information systems development also began to ask whether they themselves were rational or not in their actions. Such reflection on the self by students is the basis for considering the role of knowledge in their lives, and for developing critical learners.

PERSONAL AND PROFESSIONAL DEVELOPMENT

In disciplines that are vocational such as information systems and computing, the holistic learner is interested in how the discipline will contribute to their professional development. The holistic teacher needs to show the relevance of the topics taught to students' personal and professional needs. Importantly, QAA assessors examine how degree programmes contribute to professional development, especially at post-graduate levels.

Whilst the discipline being studied is part of an academic programme, the holistic teacher needs to demonstrate its relevance to the needs of society and its components, such as industry or government. This does not preclude arts disciplines such as history or literature as irrelevant to personal and professional development. Their relevance can be demonstrated by citing graduates from these disciplines who develop careers in government or marketing in business.

This is achievable through illustrations from industry. For example, in teaching systems analysis and design from a critical perspective, the author shows its relevance to a system developer in a real situation.

DISCIPLINE

The discipline knowledge is the foundation for developing a critical learner. The holistic teacher should be confident in the discipline being taught. A weak knowledge of the discipline will de-motivate students and a knowledgeable teacher with arrogance and lack of patience will alienate students. A balance is struck when the focus of the interaction becomes the learner.

The discipline should be made to live, and the holistic teacher should show students that he or she personally enjoys it. If a teacher is also active in research it helps students to appreciate the holistic teacher's commitment to the discipline. The discipline knowledge can be made to live by invoking professional, self and knowledge aspects of the approach. Teaching devices can be created that bring the knowledge alive and stimulate the minds of learners. Some examples are discussed in the next section on practice.

LEARNING AND TEACHING

The basis of the learning and teaching situation is a method of interaction between a teacher and a learner. The notion of a method of interaction is wider than simple teaching aides such as whiteboards or the ILT's four planks of the learning and teaching situation.

One example of a method is the holistic approach itself. It was conceived as a method of interaction to develop learners into critical, confident and independent individuals whilst disseminating discipline knowledge. This aim has led to improvements in pedagogy itself, which has been incorporated by the author in practice. The holistic teacher may develop devices to make students think critically. How the holistic practitioner may implement the five aspects of the approach is discussed with examples from experience in the next section.

3. PRACTICE

The practical implementation of the holistic approach requires a dedicated teacher with a genuine interest in the learner and a willingness to elicit and engage with learners' personal constructs. A holistic teacher is someone who is not only interested, but has a feeling for, developing a learner into an inspired critical learner. She develops teaching devices that raise the confidence of learners to move beyond the discipline knowledge to consider its relevance to the self and question the personal construction system.

Practice can be improved through research activity either in the discipline or in pedagogy, as research provides a vantage point on knowledge that would not otherwise be available. Involvement in the knowledge creation process enriches the application of the holistic approach.

Over the past nine years, as a holistic teacher the author has developed practical ways of interacting with students, through their personal constructs, that implements the five aspects of the holistic approach in the learning and teaching situation. The practical ways have been used in various media of teaching, lecture, tutorial, seminar or workshop at undergraduate and post-graduate levels. Some of these practices are described in this section, beginning with the knowledge aspect.

THE KNOWLEDGE ASPECT

The holistic approach introduces the critical learner to the process of knowledge generation and acquisition in society through the discipline knowledge. The holistic teacher aims to enable the critical learner to become an owner of knowledge. The mode of teaching best suited for practicing the knowledge aspect is the tutorial, though the author has used the lecture medium with cohorts as large as 200.

The holistic teacher makes students think about their personal constructs of knowledge by considering what education is. By finding quotes or developing one's own statements on the value of education and knowledge it is possible to make students begin the thinking process and debate the role of knowledge in their lives, either through personal reflection or with peers. The author uses a quote early in the teaching semester to encourage students to reflect on the value that the module, and the degree programme as a whole, will add to their lives. The educational psychologist Skinner (1964) wrote: "Education is what survives after what has been learnt has been forgotten." The author asks students what they remember from their earliest qualifications, invariably the consensus is that they remember nothing. The author then stresses that yet there is a *feeling* of being educated, and asks what is it that remains? This quote begins the process in students' minds of thinking of knowledge and surfacing their knowledge personal constructs.

By relating the holistic teacher's experiences of knowledge and personal constructs, the social nature of the teaching interaction is emphasized. In particular, it brings to the foreground the critical aspect of the holistic approach. It is possible to be critical of knowledge claims only in a social context. The author interjects the teaching session with personal anecdotes concerning the value of knowledge and its process of acquisition. One example is how the author delved deeply into Indian Vedic knowledge before completing a doctorate in information systems because he wanted to compare the Indian and western knowledge traditions. By citing such personal examples, the holistic learner is encouraged to reflect on his or her own experiences with knowledge.

A third device used by the author is interaction via dialectics. This is to emphasize that it is individuals who make knowledge claims and that they should be able to defend them and that it is necessary to challenge all knowledge claims. This view may be uncomfortable to many teachers, and its practice in a teaching situation may lead to chaos, yet it is necessary for the

development of critical learners. On a broader level, such a view may be seen as a challenge to the role of a university itself, as it could itself be challenged as an authority in epistemology. The dialog emphasizes that such claims can, and should, be challenged. The holistic teacher asks a discipline question and when a student answers it, the teacher explores the broader societal issues concerning the particular piece of knowledge with the student. During this bilateral interaction the holistic teacher encourages other students to participate by looking around the room to engage others or asking what others think.

A fourth device is to ask students: "What knowledge do you trust?" It is supplemented by asking: "What would you do to cure a personal illness?" The answer is seeing a medical doctor. This interaction leads to considering how knowledge is established through epistemology and why we trust certain epistemologies and not others. Then the holistic teacher refocuses the debate to the discipline knowledge to discuss how knowledge in the discipline is established. For example, in a lecture session with 90 post-graduate students on managing a project to develop an information system, after asking what knowledge students' trust in the broadest sense, the author brought the discussion back to what knowledge practitioners in project management can trust to achieve their aims. This process leads critical learners to question knowledge claims in the discipline being taught and start to act as owners of the discipline knowledge. The underlying affect is critical learning.

THE SELF ASPECT

The critical learner, whilst learning the discipline knowledge, is also engaged in learning about his or her self. The self is the basis of the personal construction system. This is especially true of adolescents who are in the process of discovering themselves, therefore quite important for undergraduate teaching. The learner's self-discovery, or creation of personal constructs, is an undervalued aspect of undergraduate students' learning in higher education. The holistic teacher needs to appreciate the self-discovery process in students and help to externalize it in the teaching process. This is achieved through eliciting personal constructs and presenting new or alternatives constructs.

The knowledge aspect and the self-aspect of the holistic approach merge into each other more so than the other aspects. There are many definitions of the self, but knowledge and the self are intricately intertwined. The social dynamics between the teacher and the learner is greatest and richest in the inter-play with knowledge and the self.

The critical learner's self discovery process can be externalized in a teaching session in various ways. Ask the student what they would do in a particular situation through analysis of a case study. This encourages students to reflect on how they would use certain knowledge and how it could determine the way they act.

A series of seminar activities on rational approaches to building information systems were developed for a post-graduate module. These led students to reflect personally on their cognitive processes and led to personal statements such as: "I don't think I'm rational" and "We are not rational". Clearly, learners relate taught knowledge to the self as a way of discovering and developing the self.

THE PERSONAL AND PROFESSIONAL DEVELOPMENT ASPECT

The personal development aspect is practical. A holistic teacher appreciates that the student is seeking a way of developing herself professionally or personally through the university degree. The teacher uses the discipline knowledge to help the student develop this aspect. Personal constructs are vital in this aspect. It is on the basis of these constructs that individual students will act and make decisions in their working lives.

In teaching modelling for business processes at undergraduate level, its contribution to professional development was made explicit. The example used in the lecture was related to

industry. Subsequently, a couple of students sent the author emails thanking him for the module and expressing that it helped them secure employment. The implementation of the personal and professional aspect is greatest in sandwich degree programmes, where students' industrial placement experience can be used to demonstrate the relevance of the discipline knowledge.

THE DISCIPLINE ASPECT

teachers concentrate most of their efforts on the discipline aspect of teaching interaction. The transmission of discipline knowledge is critical, but neglecting other aspects of holistic practice does result in uncritical students, divorced from the values and principles of the knowledge creating and transmitting community that is cultivated at universities. Criticality is developed through the subject knowledge. It is through subject knowledge that students will act in work, and subject personal constructs can not only be elicited, but also can be increased in complexity and grown through it.

The practical ways in which the learner can be motivated and kept interested will vary from discipline to discipline. In the discipline of computing and information system the emphasis is on practical knowledge, though some information systems subjects are similar to business and management disciplines that require conceptual and analytical thinking.

The key to transmitting the discipline knowledge for the purpose of developing critical learners is to enable students to become owners of the knowledge. Ownership of knowledge underpins the holistic approach. If a student is shown that people who make knowledge claims are responsible too, he or she will begin to realize the ownership aspect of knowledge. With postgraduate students from a pharmaceuticals company in an industry-based degree programme, the author relates ethical issues in computing to the government regulatory practices in drug trading. Subsequently asking students to reflect on what decisions they would make when developing computer-based information systems that impact on knowledge about drugs and the regulatory process.

Presenting different theories, models or frameworks within the subject discipline enables learners to know that a particular phenomenon has more than one explanation and that different explanations exist because of a critical perspective on knowledge. This leads students to think why there are different explanations for the same phenomenon. Most crucially it gets them to realize that knowledge in the discipline is still growing.

A prerequisite of criticality is the question. A critical learner is capable of assimilating transmitted knowledge and formulating a question that arises from doubt, implausibility, curiosity, or the desire to breakout of established ways of thinking. The holistic teacher demonstrates the value of such questioning through illustrations. For example, the author uses Newton's curiosity of objects falling to earth that led to the theory of gravity. Asserting that it was the question 'why' that led to the theory emphasizes this. Students are then referred to the discipline phenomena and theories.

THE LEARNING AND TEACHING ASPECT

The holistic approach includes the ILT's four planks of learning and teaching, as shown in Figure 1. But their implementation in the holistic approach is focused on the development of critical learners and elicitation and challenging of personal constructs. So, in designing and planning a module, the choice of topics is determined by the scope for criticality, and the assessment seeks to test critical thinking - thus examination papers are open book. The choice of topics is evaluated to ensure that learners have material that leads to development of critical skills.

The author has used various teaching methods in modules on information system development to create a student-centered learning environment for graduate management

trainees on masters and MBA programmes. Cases-based teaching has been used because the cohort is composed of mature students with work experience, which enables them to make use of their experiential knowledge. Published research articles from scholarly journals are used because they enable students to learn research skills by examining and comparing research methods used, learn how knowledge claims are made, develop critical reflection, and question knowledge claims based on confidence in research methods. Short class exercises are used because they facilitate discursive student-centered learning, and enable formative assessment to check students' knowledge and quality of work.

A variety of teaching methods are used because they suite varying purposes. To generate discussion cases are important. To test learners' ability to apply skills learnt, class exercises are needed. To facilitate innovative thinking, as required in information systems system design, dialectic questioning based on a case or class exercise is used. The impact on critical learners of these various approaches is to stimulate their thinking and provide varied perspectives on the taught subject. It is also an aid to retain their interest and keep their attention at the highest levels.

The purpose of assessment in the holistic approach is to examine in a *supportive* manner the knowledge learnt. Formative assessment is suitable as it supports students' learning. Various assessment methods are used in the modules taught. These methods range from individual assignments to groupwork in coursework to traditional and open book examinations.

A critical aspect of assessment and support is providing learners' with feedback. Feedback for undergraduate and post-graduate project tutees has been provided via individual and group discussion, reflecting the social context of learning. Students are asked to prepare draft work, which is read and comments are provided. Those parts of the syllabus that are not formally assessed are examined through self-elected assessments. Peer assessment is used in post-graduate modules. For research students, feedback is provided through critical discussion of the work completed or in progress, and through joint publication of research results.

During the middle of a fifteen weeks module delivery, learners are asked for their comments on the delivery. They are encouraged to tell the teacher whether the delivery methods have been suitable for their learning, and should any changes be made if they are unsuitable. The holistic practitioner, in a self-critical role, seeks comments that lead to improving the teaching. The result of this exercise is usually affirmation of the *modus operandi*, though useful comments are sometimes gleaned that enrich and enhance the module.

From the critical learner's perspective, the mid-semester feedback on the delivery is used to tell them the teacher's thinking about their learning and levels and quality of achievements. Providing such formative feedback to critical learners is a fundamental aspect of the holistic approach because it shows the social nature of learning - the transmission of knowledge from the teacher (and other learning materials such as e-libraries, peers, etc.) to the student. The holistic approach is effective in getting students to check their own understanding of knowledge and levels of learning achieved.

The support of learning is fundamental in the holistic approach. Since it is recognised in the holistic approach that learning is phenomenological, the experience of learning is personal and requires intimate support. The holistic teacher is deeply involved in the learning and teaching processes, and often needs to teach individual students through dialectics. Such a teacher has a personal concern for the affect of the teaching on the learner's self, and on his or her intellectual development, and is aware of the extra support required. Such support is provided in seminars and tutorials. But the basis of the support is the relationship that the holistic teacher establishes with the learner. This relationship consists of empathy for learners' needs and a genuine interest in benefiting people by developing criticality as a constituent part of the self.

The Internet is used to provide support at a distance. An online discussion group has been set up to support and develop a learning community among students. Critical learners are encouraged to ask questions to peers and log their views. The author's personal website provides details of research interests and proposals for undergraduate and post-graduate projects and dissertations. The use of electronic teaching aides is central to teaching of information technology and related subjects.

The holistic approach requires reflection on the teaching and its constraints in a deep manner. This means that the reflection is not limited by the 'objective' measurable evaluation, as discussed in the next section, but is extended to the personal experiences of the teaching interaction, and even the self. Suitable frameworks need to be developed to facilitate and structure such phenomenographic evaluation.

4. THE HOLISTIC APPROACH IN ACTION

The holistic approach has been evolving and practiced in teaching. Its overall result has been to make learning interesting and meaningful for learners. A colleague commented:

"Just in case no one's mentioned this to you personally, I'm passing these comments on! A student (he will remain nameless!) has just said that your lectures are excellent, and that you make the subject very interesting indeed. He said that the core text was excellent, and useful for many things other than just your particular course. He also added that what was particularly appreciated by all the students was your attitude towards students; you were always available, helpful and supportive. This was, he said, not a personal view but one expressed by a great many students that he'd spoken to."

The approach attracts high levels of attendance on modules, whether they are small groups of nine or large groups of 200 students. For example, a post-graduate module taught on a Friday afternoon and an undergraduate module taught on a Monday morning both resulted in high levels of attendance each week.

Departmental module assessment forms are incorporated into the evaluation of the holistic approach. These forms check various aspects of teaching, including handouts, talking, and slides as experienced by learners. Statistics on these aspects and others provide a broad picture of the overall effectiveness of the module delivery. Statistical evidence from these student feedback forms shows the value of the holistic approach to critical learners. These are then used to reflect on areas of potential improvement.

The most poignant evaluation of the approach is provided by students' emails to the author. These emails reveal how the approach works in practice. The approach's claim to develop critical learners is reflected in a student's comment and shows how the approach influences and inspires students positively as these two emails reveal:

"The true benefit of this module is the associated expansion of the mind - Learning to think 'outside the box'". (Undergraduate student)

'Stimulating and enjoyable...' (Post-graduate student on an industry-based programme)

Specific learning outcomes are achieved using the approach. As the following two emails show, an undergraduate module enabled students to appreciate the relevance of the discipline knowledge to industrial practice:

"The module was an excellent insight into the processes of a business, I would like to use this and the HCI module to help support my own design decisions for my idea. The consulting

skills section I carried out with simulation modeling I'd like to use to indicate enhancements to the business / system by way of soft skills advantages."

"Good afternoon,

I was studying your unit on Business Process Modeling last semester and I remember querying why we had to study such a unit, being computing students. However, I am now on my placement with Shell Services International and I have come across many instances where our knowledge on the unit studied directly relates to the industrial world. Decisions of reengineering have to be constantly made to be the best in the market and to withhold the top position once you are at the top of the ladder. I attended a presentation where considerations were being made to restructure the current system of "market pull" to "product push". Unfortunately I cannot divulge any further information on these topics but this is just to let you know that the unit has helped me a great deal to understand the working of the industrial world. Now I am in a better position to understand the aims and the motivation that drive IT Analysts to invent more user friendly systems and systems that can help restructure the businesses to improve them further.

Thanking you.

The holistic approach results in a safe learning environment where a learner feels comfortable. This is especially so for students from different cultures. A Chinese post-graduate student commented:

"I was scared when we started the module as we heard that the result was not good last year. In additional, learning outcomes were quite high, for instance, it required analysis and critique, which we had not done much in the first semester.

I would like to say that I enjoyed the lecture, particular in the following aspects:

- The lectures were well prepared, which were supported by good example, and synthesized by books and journal papers.
- Theories were not just described but given their background and applications.
- The lecture encouraged students to be analytic and critique.
- The lecturer kept close look with how we were get on with the study, for example, we were given additional guide about coursework two weeks after the semester started when some students had done their presentation."

Reflective practice has led to improvements or changes in the approach. Students' textual comments from module evaluation forms are studied to discover gaps in the delivery. Issues arising from these comments are addressed in consultation with the following year's students, and where appropriate incorporated in the delivery. The quality of students' learning is improved through the holistic learning and teaching approach, as evidenced in students' email comments. These email comments are used to discover strengths, which are built upon, and weaknesses which are addressed.

The approach has been disseminated across the author's university and resulted in influencing colleagues, who requested a full version of the paper on the approach.

5. HOLISTIC APPROACH AND STUDENT DIVERSITY

The holistic approach was developed across three institutions each with a diverse population of students. It was developed by a teacher who himself is from an Indian background. Thus the holistic approach is sensitive to the needs of different groups of students. The modern university, especially in a multi-cultural and open society, needs to be able to meet the needs of a diverse student population. Government initiatives such as the QAA seek to ensure that programmes on offer meet the diversity of students' needs.

The holistic approach accommodates varying groups at the aspects of the self and knowledge in two ways. One, it recognizes that different kinds of students and ethnic groups exist. Two, that certain cultural paradigms of knowledge exist in higher education that need to be communicated to students from deprived and different ethnic backgrounds who do not share the same values and aims.

Different needs of students wanting a university education are catered for at the personal and professional and discipline levels too. For example knowledge seekers are catered for at the knowledge aspect; professional developers at the professional and personal aspect; subject experts at the discipline aspect.

One fundamental reason why the holistic approach appeals to all kinds of students is its neutrality. It is neutral in that it seeks only to emphasize knowledge as the central concern for enhancing personal lives and improving society's material gain from the process. Of course it presumes that learners are interested in improving themselves and contribute to society too.

6. HOLISTIC APPROACH, DEARING AND BEYOND

The holistic approach seeks to develop people. The holistic learning and teaching approach leads to a stimulating learning environment, which influences and inspires critical learners. It provides learners with ownership of knowledge and the knowledge creation process by engaging with them. Ownership is vital in the learning processes because it provides confidence and a sense of participation in the knowledge community, leading to independence. The approach engages learners and leads to them generating peer discussion. It also makes critical learners aware of the knowledge creation process. This awareness is important because it is the first step in leading learners to question knowledge claims. The holistic approach is effective in getting students to check their own understanding of knowledge and levels of learning achieved.

Clearly, the holistic approach is sympathetic to improving the teaching situation and other recent developments in learning and teaching. The approach is a synthesis of the success of personal teaching practice reflection, past approaches and the recent developments. The contribution that the approach makes is that it incorporates these recent developments and goes beyond Modern education needs to cater for a society and industry that makes the individual responsible for their actions, and gives the individual responsibility and power to act individually. It goes beyond Dearing in various ways. As one undergraduate student put it, such an approach makes students 'think outside the box', reflecting the successful achievement of the aim of developing critical learners. Such learners could also develop into scholars.

The result of applying the holistic approach is to create genuine interest in the discipline and develop independent learners of the discipline. The prime contributing factor in generating interest and independence is providing learners with the ownership of knowledge. Teaching students how to organize taught knowledge is fundamental to creating ownership. Learning to organize knowledge itself leads to the development of the self, as it requires reflecting on principles of organizing such as what is important and valuable or what leads to enrichment of oneself.

The approach works with research students too. The holistic approach integrates teacher's experiences as a researcher with the teaching. This in turn enhances learner's experiences. The Research Careers Initiative considers the development of people to be equally important to the development of the research itself. The holistic approach's focus on personal development, the self and knowledge caters for this aspect of teaching research students.

Delivering discipline knowledge to learners in new and creative ways is central to the holistic approach. The author has sourced, organized and presented material in new ways relevant to information systems and computing, and made students active participants in the teaching and learning.

The approach is inherently reflective, as its basis is phenomenology. The holistic teacher is by nature reflective. The experiences of the learning and teaching interaction form the fundamental basis of the module delivery and its evaluation, creating a natural reflexivity to practice. The holistic teacher is not afraid to seek advice from colleagues and receive constructive feedback, since all teaching is phenomenological and no absolute measures can be applied. But the aim is to improve qualitatively the teaching situation.

There are some problems, drawbacks and limitations to practicing the holistic approach. It is possible that the holistic teacher may open herself up more than intended during interaction at the knowledge and self-aspects, especially in revealing personal constructs. This may lead to difficult and personally uncomfortable situations developing. The holistic teacher's interpretations of a student's self may be wrong, leading to assertions that harm the student's confidence. In assessing whether a learner has internalized taught material, an incorrect judgement might be made that creates anxiety in a student. Weaker students cannot interact at the first three aspects (knowledge, self, and personal development) because they struggle at the discipline aspect. But the approach is sheer joy with confident and able students.

7. CONCLUSION AND FURTHER RESEARCH

The HALTI approach has been developed over nine years of reflective teaching practice. Its aim is to develop critical learners who are confident and independent enough to act in real situations. The approach consists of five intertwined aspects of the teaching situation that reflects a rich social dynamics: knowledge, self, professional and personal development, discipline, and learning and teaching. Each of these aspects has a descriptor and operator element that describes what its composition is and how to implement it into teaching practice. Its practice is underpinned by recognizing the centrality of the social context of the interaction between the teacher and the learner.

The pragmatic argument for practicing the holistic approach is that it attracts students to lectures, seminars, and tutorials and improves the levels and quality of interaction between the student and teacher. As student retention and progression are issues of concern among admissions tutors, any contribution to improving attendance and learners' interest is likely to be welcome by decision-makers. If knowledge, self and personal development are not satisfactory to students, they will stop attending. Excellence in the discipline and learning and teaching aides alone will not guarantee student attendance. In times of mass education, the individual learner still demands to be the focus of interaction to ensure a valid learning experience. Validity here refers to what is of value to the development of the self.

The holistic approach requires further research. Its success has been limited to an individual practitioner, but it has the potential for generating general principles for the development of teaching practice to develop critical learners in higher education. Modern companies require critical employees, who in turn need a 'personal epistemology'. The knowledge and self-aspect will form the basis of phenomenographic research. The research will investigate the role of knowledge and the self in the development of critical learners studying an industry-based post-graduate degree in information management, and will seek to identify factors that lead to the development of a self-referential capacity in learners. As Barnett argues '...dissatisfaction of employers with the 'products' of higher education can be seen as a sign that graduates are *insufficiently* critical of the world around them.' (Barnet, 1997, p.125).

REFERENCES

- Barnett R (1997) Higher Education: A Critical Business. OUP, Buckingham.
- Brunel University (2001) Widening Participation Strategy.
- Kelly G A (2000a) The Psychology of Personal Construct. Volume One: Theory of Personality
- Kelly G A (2000b) The Psychology of Personal Construct. Volume Two: Clinical diagnosis and psychotherapy. Routledge. London.
- Patel N V (1994) A Comparative Expositions of Western and Vedic Theories of Education. *International Journal of Educational Management*, 8 (6) 9-14. ISSN 0951-354X
- Paul R and Elder L (2001) Critical Thinking: Tools for taking Charge of Your Learning and Your Life. Saddle River, NJ: Prentice Hall.
- Pervin L A and John O P (2001) Personality. Wiley, New York. Third Edition.
- Prosser M and Trigwell K (1999) Understanding Learning and Teaching. OUP, Buckingham.
- Skinner B F (1964) *New Scientist*.

