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# **INFORMED LEARNING**

Christine Susan Bruce  
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Informed learning is simultaneously about information use and learning. I am deeply grateful to several mentors and colleagues who inspired my early interest in learning, especially Phil Candy and Rod Gerber, Ference Marton, Lars Dahlgren and Lennart Svensson. On the information side, leaders in the Queensland University of Technology Library made possible my early work with information use and learning; especially Tom Cochrane, Janice Rickards and Jan Novak. In other parts of the world, Nancy Fjällbrant and Patricia Breivik motivated my interest in information literacy education.

Most importantly my family has supported me inexhaustibly throughout the writing process.

All the summaries of research outcomes included throughout the book have been adapted by me, from the authors' original work, to highlight the interest of those studies to the informed learning agenda. These summaries are all considerably reduced versions of the full descriptions available from the cited sources. The material from six frames of informed learning in chapter two has been adapted with permission from the journal issue editor, Susie Andretta.

The original sources for the six frames and seven faces of informed learning have been published by AUSLIB Press, Adelaide, Australia ([info@auslib.com.au](mailto:info@auslib.com.au)). Dr Alan Bundy has been a leading advocate in Australia for the convergence of information use and learning. His special interest in the relational approach to information use and learning has made the work of the Queensland University of Technology information literacy research team and the thinking of many other leaders in the field, widely available. Informed learning has been made possible by Dr Bundy's early sponsorship of the research underpinning this work.

## PREFACE

*Once upon a time a little girl drew a picture of a teddy bear, which she called Rosie. Rosie's fur reflected the colours of the rainbow; Rosie sat on a canvas chair beside the beach, with the sun shining, grass growing and a spider spinning a web along side a brightly coloured beach ball. When I looked at the picture I asked the little girl what information she had used to create the picture. She was most puzzled. "But there are no words in the picture, Mummy", she said.*

*The little girl had already come to believe that text and information were closely related. So I tried again, "What do you know about that helped you make the picture?" This time she gave a different response. "Well, first of all there's Rosie," she said, picking up her teddy bear and giving her a hug. "Last holidays we went to the beach, and the spider came out of Charlotte's Web. The grass is growing outside and how I put it together was my imagination."*

*This little girl was engaged in informed learning. She was using information of different kinds, physical, tangible objects, memories and other things to create something new. If she remembers my questions, and thinks about them, as little girls can naturally be expected to do, she may come to understand her creative act as an act of information use, to see inspiration and information as related, and to recognise the importance of feeding her imagination. She may even come to appreciate how the processes apply to other pursuits. Will her teachers encourage her along the path of informed learning?*

Welcome to *Informed Learning*. If you have opened this book, it is probably because you are interested in how people learn. It may also be because you are interested in how learners interact with their information environment and would like to help them do so in ways that help them learn better. What should we teach and how, so that our students will use information successfully, creatively and responsibly in their journey as lifelong learners?

*Informed learning* provides a unique perspective on helping students become successful learners in our rapidly evolving information environments. It presents a new framework for informed learning, that will enable teachers, librarians, researchers and teacher-researchers to work together as they continue to respond to the need to help students use information to learn.

Do you want to help your students engage with the information practices of their discipline or chosen profession? Are you looking for ideas to invigorate and refresh your curriculum? Are you looking for ways to help your students write better essays or search the internet more successfully? Are you looking for strategies to enhance your research supervision? Are you trying to discover how information literacy and information literacy education can contribute to academic curriculum? *Informed Learning* can help you.

Informed learning is using information, creatively and reflectively, in order to learn. It is learning that draws on the different ways in which we use information in academic, professional and community life; and it is learning that draws on emerging understanding of our varied experiences of using information to learn.

Indeed, we cannot learn without using information. It is problematising the interdependence between information use and learning that is the foundation of this book. Most of the time we take for granted that aspect of learning which we call information use. What might happen to the learning experience if we attend to it?

*Informed Learning* examines research into the experience of using information to learn in academic, workplace and community contexts, that can be used to inform learning and learning design at many levels. It draws on contemporary higher education teaching and learning theory to suggest ways forward for a learning agenda that values the need for engaging with the wider world of information. In doing so, it offers a new and unified framework for implementing curriculum that recognises the importance of successful, creative and reflective information use as a strategy for learning as well as a learning outcome; and proposes a research agenda that will continue to inform learning.

*Informed Learning* reconceptualises information literacy as being about engaging in information practices in order to learn; engaging with the different ways of using information to learn. Based on the author's work in developing the seven faces of information literacy, it proposes the need for teaching and learning to 1) bring about new ways of experiencing and using information, and 2) engage students with those information practices relevant to their discipline or profession.

This book is written for a diverse audience of educators from many disciplines, curriculum designers, researchers, and administrators. While this book both establishes a new approach to learning design and an associated research agenda, it is also intended to be practical. I have sought to ground the ideas in practice through:

- using Steve and Jane as academics from different disciplines on a journey; experiencing the implementation of informed learning;
- using examples from the literature and personal experience;
- using reflective questions towards the end of each chapter.

In this book you will find many examples of how people experience information use as they go about learning in different contexts. The research reported here shows that as people go about learning they interact with information in different ways. They may be learning about a content area in a formal context, they may be engaged in informal learning as they go about their everyday work, or they may be learning through doing original research.

The emphasis on experience and ways of seeing comes from the work of researchers into student learning such as Ference Marton, Paul Ramsden, Shirley Booth, Michael Prosser, Keith Trigwell and others who have shown that, if we are to help students learn, we must first be aware of how they experience those aspects of the world about which they are learning.

### **Different ways of reading this book**

The first three chapters of this book establish the broad theoretical framework for informed learning; and the remaining chapters consider the out workings of this in a range of contexts.

If you want to browse the general directions of this book, read the narratives at the start of each chapter.

If you want to see how the book might influence your practice, read the narratives and the reflective questions at the end of each chapter.

If you want to help your students become informed learners in their discipline or profession, focus on chapters one, two, three and five.

If you are looking for help with students engaged in information practices such as internet searching or essay writing, focus on chapters one, three and four.

If you are interested in informed learning in the community or workplace, focus on chapters one, two, three and six.

If you want to help your research students become informed learners, focus on chapters one, two, three, seven and eight.

If you are working with colleagues to promote information literacy education and are looking for ideas, read chapter nine.

If you are interested in researching informed learning read chapter ten

## **Chapter One            Informed learning**

This chapter develops the idea of informed learning. I identify the key concepts associated with informed learning and the agendas that have contributed to its emergence. I also describe informed learning as underpinned by information practices; and our ways of experiencing information and information use as being critical elements of informed learning. In this chapter I explore the relationship between learning and information use, establishing that content is learned through effective interaction with information; and also that 1) learners' views of, and approaches to the content of learning appear to influence information use 2) learners' approach to information use appears to influence the content of learning. We can help our students become informed learners by introducing explicit attention to information practices in curriculum.

## **Chapter Two            Six Frames For Informed Learning**

Informed learning draws from what we know about variation in the experience of learning and teaching. In this chapter I explore how the idea of informed learning may be approached differently in the curriculum depending on the conceptions of learning, information and other dimensions adopted by those involved. Six frames for informed learning identifies several dimensions that may vary depending on the personal experiences and view of those involved; including approach to assessment, information use, teaching, learning, information, content.

## **Chapter Three           Seven Faces Of Informed Learning**

Informed learning draws from our understanding of how we use information as we go about learning. In this chapter I explore the seven faces of informed learning as an transdisciplinary model of learning through engagement with information. The Seven Faces of Informed Learning is a model that underpins most applications of information practices in academic settings. It is a relational model, developed through investigating people's experiences and contributing to the relational frame for informed learning described in chapter two. Selected examples show how the faces may be applied to the design of learning tasks and to invigorate curriculum.

## **Chapter Four          Students' experiences of informed learning**

Informed learning draws from our understanding of students' experiences of using information to learn. Helping students become better at using information to learn begins with understanding their experience of informed learning. In this chapter I examine information use from the student perspective, how they use information as they go about learning. I then review insights into students' experiences of specific information practices that influence learning such as essay writing, assignment writing and internet searching that are of interest across disciplines and cohorts. In the latter part of the chapter I explore strategies for encouraging reflection to bring about learning.

## **Chapter Five          Informed learning in the disciplines and professions**

Informed learning is grounded in disciplinary and professional information practices. In this chapter I review research into information use in discipline-specific and professional contexts. The chapter opens with academics' perspectives of information literacy in specific disciplines. It then explores different experiences of information literacy and use in specific professions. Senior managers' experiences of information literacy, views of use of the internet for information sharing in the construction industry, and the information practices of auditors, all contribute to the growing picture of the informed learning experience. The chapter goes on to explore the diverse experience of information in a range of disciplines and provides examples of curriculum design.

## **Chapter Six          Informed learning in the community and workplace**

Using information to learn is central not only in the academic context, but also in the workplace and community. As we extend students' learning experiences into workplace and community contexts they have the opportunity to come to experience or reflect on informed learning in those settings. In this chapter I introduce the GeST windows for considering informed learning in the workplace and the community. I explore the character of informed learning in the workplace and the community, adapting the seven faces model to suggest what the experience of informed learning might look like in those settings. This chapter invites exploration of what it might mean to prepare students to be informed learners in the community or workplace, and to respond to workplace and community issues in their professional practice.

## **Chapter Seven          Informed learning in the research community**

This chapter explores the idea of informed learning in the research community, and its applicability to research degree study and supervision. It mirrors the early chapters' examination of what we know about the experience of using information to learn. In this chapter I review developments in uncovering the experience of research, examine the notion of six frames for informed learning in the context of learning to research, and adapt the seven faces of informed learning to the research setting. I focus primarily on researchers and what we know of academic experiences in that role; in the next chapter I focus on the experience

of research students. Towards the end of the chapter I make some suggestions about possible relationships between information use and research.

## **Chapter Eight      Research higher degree students and informed learning**

In this chapter I explore informed learning in the research higher degree context. It opens with an overview of how research is experienced by students. The idea of informed learning itself is envisioned from a research student's perspective. The literature review is explored as an example of an information practice experienced differently by research students. Different ways of experiencing the literature review itself and the scope of the literature review are described. Reflective strategies for expanding students' experience are suggested.

## **Chapter Nine      Championing Informed learning across the organisation**

What conditions need to be put into place for informed learning to thrive? How can different members of the university community work together to promote informed learning? In this chapter I explore how we might influence a university, raising awareness of informed learning. I propose RACER as an approach to bringing about curriculum change. RACER identifies five points of focus: Recognise different roles and perspectives, Accept diversity, Change with support, Engage in the scholarship of teaching, Research the future. I then look at how the six frames and seven faces models might be used for academic development, and highlight disciplinary perspectives on information literacy pedagogy.

## **Chapter Ten      Informed learning: A research agenda**

The idea of informed learning has taken form through problematising using information for learning, and applying the idea that learning is about experiencing variation to that problem area in a sustained way. Implementation and ongoing development of informed learning rests on furthering our understanding of using information to learn in different contexts. What are the information practices that enable ongoing learning in the work of the different professions, the information practices that enable people to learn with and from each other? What are the information practices that underpin the many disciplines being taught and learned? What are the forms of information engaged with and how are they used? In this chapter I propose a research agenda that may be contributed to by members of all disciplines, by information literacy, information, and learning researchers.



## Chapter One

### INFORMED LEARNING

#### Opening narrative

*Jane and Steve are new academics who come to the university after several years of professional practice. Steve is an artist and Jane is an engineer. In conversation one afternoon they realise that they are both committed to wanting their students to be able to keep learning after they complete their courses. How can they design students learning experiences to meet this goal?*

*Steve is an artist and he believes that it is important for artists to explore the work of other artists, to recognise and be in touch with whatever might inspire art, and to journal or document in some way the ongoing journey. Steve asks his students to form learning circles to share their explorations and inspirations each week, and to collate an electronic portfolio recording their learning.*

*Jane runs her class by asking students to work towards a student-managed conference, where they write and present their own papers, invite key industry players and researchers as keynote speakers, and web-publish the proceedings of the day. Both have **identified key information practices** in their profession and found ways of integrating those practices into the learning experience.*

*These practices reflect some of the ways in which informed learning is experienced in their professional area. In each case **the information is very different** – visual, oral, or textual. In each case their students need to engage in some aspect of informed learning – using technology for awareness or communication, identifying sources of relevant information, organising information, developing their personal knowledge bases, and using the information acquired with wisdom or professional judgement.*

*Jane and Steve are succeeding in engaging their students in relevant information practices. They will enhance their students' professional capabilities with information if they share the character of informed learning with their students and invite their students to reflect on what they have learned about information use in the professional context. They are on their way to reaping the benefits of **informed learning**.*

This chapter develops the idea of informed learning. I will first identify the key concepts associated with informed learning and the agendas that have contributed to its' emergence. I also describe informed learning as underpinned by information practices; and our ways of experiencing information and information use as being critical elements of informed learning. In this chapter I will explore the relationship between learning and information use, establishing that content is learned through effective interaction with information; and also that 1) learners' views of, and approaches to, the content of learning appear to influence information use 2) learners' approach to information use appears to influence the content of learning. We can help our students become informed learners by introducing explicit attention to using information in curriculum.

#### What is informed learning?

This book is about how we interact with and use information as we go about learning, formally at universities, while studying or doing research; and informally in community contexts and at work. It is about the experience of informed learning, examining how students, teachers and researchers use information as they go about learning in their professional careers, through coursework and research. It is about empowering learners to continue to learn in the many facets of their lives.

It is also about how we see ourselves as informed learners; about how we see our information practices, and the ideas that inform our practices. It is about how we can help students become informed learners by introducing them to the different facets of the informed learning experience. It is about the importance of understanding informed learning in the community and workplace as part of all our professional journeys.

When we ask students to use information to learn, we can also help them to become more creative, reflective and successful information users. For example, a teacher may require students to prepare a range of communications about the impact of global warming. Her students may use a wide range of information sources, including media sources, research databases, websites and blogs, as well as interviewing local members of the community. They may establish a position regarding the range of viewpoints on the topic and be able to communicate what they have learned to different audiences. This teacher is asking students to use information to learn. She can enhance their learning experience by helping them to understand, enhance and expand their own experience of informed learning, and by encouraging them to use information in ways that reflect those of experts in the field.

Informed learning is using information to learn. It is learning that draws on the different ways in which we use information in academic, professional and community life; and it is learning that draws on understandings of our varied experiences of using information to learn. Informed learning is also learning that is informed by academic and professional information practices (those regular activities we undertake, within which we use information), and learning that is informed by an understanding of how such practices are experienced. It is about how we interact with information while learning or how we use information to learn; and the information and knowledge construction practices that are relevant to discipline-centred curriculum. It is about the creative, reflective and ethical use of information for learning.

In today's information rich society, high quality interaction with the information environment is the cornerstone of all learning. Being a creative and reflective information user makes it possible for us to learn, and to continue learning in any field or walk of life. As educators, information use and its relationship with learning need to be part of what we think about when we design learning. We need to emphasise both discipline and information use outcomes in our learning design and implementation; discipline mastery is achieved through the processes of creative and reflective information use. Once we recognise what is information, and how we are using it, we can be more in charge of the information environment and how we encounter, source, control, engage with and use information. We cannot assume that learners are aware of these processes or that they are empowered to implement them. The learning experience that prepares today's students for tomorrow's professional practice brings such practices into the curriculum, and encourages reflection upon them.

Informed learning requires us to pay closer attention to the experience of using information to learn. Informed learning promotes learning through effective engagement with information. It brings to our attention those information practices that bring about learning, and draws on our understanding of the experience of informed learning to improve the quality of learning. Informed learning attends simultaneously to the content and context of learning (discipline–focussed outcomes) as well as to information use, including relevant professional and disciplinary practices.

Informed learning makes it possible for learners to experience information use in its diverse forms. Informed learning brings information practices and insights into the experience of information use, into the curriculum. It draws on workplace and community information practices, as well as those prevalent in the academic and professional communities.

Informed learning involves experiencing information practices and making learning about those practices explicit via a process of reflection, enabling transfer of learning process to new contexts. In doing so informed learning helps students walk the path of lifelong learning.

The keys to informed learning are experiences of information use, the experiences of all learners – students, teachers, researchers and other information users. The adoption and implementation of informed learning requires the perceptual worlds of learners as information users to be understood.

### **Where does the idea of informed learning come from?**

The idea of informed learning comes from recognising that information use and learning are close companions; in formal learning environments, discipline content and effective information use need to be learned together, as inter related phenomena. I have devised informed learning by bringing together an evolving research base, represented in this book, that explores the experience of using information to learn amongst academics and students, in professional practice and the community.

In my involvements with the information literacy agenda (for an overview of this important agenda, see Horton, 2007) I have come to see that the term is often used to represent many concepts which should be recognised as separate. For example, information literacy and information literacy education are separate concepts in the same way that science and science education, or art and art education are separate concepts. Similarly, informed learning and information literacy are separate ideas in the same what that problem based learning and problem solving are separate concepts.

Presently the terms information literacy and information literacy education continue to be understood, in some places, as being about the acquisition of technological skills, library skills and information skills; while elsewhere they are used to refer to the experience of using information as we go about learning. While all these skills are necessary, sometimes we stop with the skills and do not focus on how students and others must use information to learn. Confining information literacy to such skills denies learners the rich potential which may be gained from the broader attention to the different ways of experiencing information use in the disciplines, professions and the community that are promoted by informed learning.

When we see information literacy as a complex of different ways of using information to learn, we open the door to informed learning. Informed learning brings learner-centred, experiential and reflective approaches to the information literacy agenda. Informed learning provides the language and the umbrella that allows us to focus on understanding and improving students' use of information as they learn.

**Towards a common understanding of the key terms used in this book.**

There are many concepts used in this book that appear closely related, and that are sometimes difficult to separate. Below I identify a selection of these key concepts and define them as I am using them. A more extended set of terms is included in **chapter ten**.

- Informed learning:** is using information to learn.
- Information:** is anything which we experience as informing; information will appear differently in different contexts and different disciplines.
- Learning:** is coming to experience the world in new ways.
- Information literacy:** is experiencing different ways of using information to learn.
- Information skills:** are the building blocks which make information literacy possible, in the same way that the ability to read and write makes literate practice possible.

As a way of highlighting the differences in their meaning, Table 1.1 compares the concepts of informed learning with the concepts associated with a different agenda, problem based learning, that may be familiar to readers. For example, for some readers the difference between informed learning and information literacy may be easier to see when compared against the concepts of problem based learning and problem solving ability. The latter two concepts stand in the same relationship to each other as do the former. In this book I do not explore any possible relationship between informed learning and problem based learning, although such a relationship may indeed be possible. Problem based learning is simply used here as a counterpoint to reveal more clearly the nuances in the informed learning agenda.

<b>Informed learning</b> is using information to learn	<b>Problem based learning</b> is solving problems to learn
<b>Information literacy</b> is being able to draw upon different ways of experiencing using information to learn	<b>Problem solving ability</b> is being able to draw upon different ways of experiencing problem-solving
<b>Information practices</b> are the processes and contexts within which information is used, eg professional development, essay writing, research and others	<b>Problem solving practices</b> are the processes through which problems are solved, eg conducting interviews, research and others.
<b>Information</b> is anything we experience as informing	<b>A problem</b> is anything we experience as unresolved
<b>Information skills</b> are the building blocks that make information literacy possible, eg database search and creation skills,	<b>Problem solving skills</b> are the building blocks that make problem solving possible, for example numerical skills,

referencing skills, computer skills, library skills and others	communications skills, interviewing skills, analysis skills, creativity.
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Table 1.1 Comparing basic concepts of informed learning against concepts associated with problem based learning

### **What are the characteristics of informed learning?**

- Informed learning draws from our understanding of the experience of learning and teaching. It is supported by research into student learning, and different ways of experiencing teaching and assessment.
- Informed learning draws from our understanding of the experience of using information to learn. Informed learning draws from insights into the experience of information literacy and information use amongst students, and academics, teachers, and researchers, as well as in the community and workplace.
- Informed learning brings the different ways of using information to learn to students' attention. Informed learning seeks to expand the repertoire of students' experiences and to help them adopt the full range of possible experiences.
- Informed learning is grounded in academic/discipline or professional information practices. Informed learning is dynamic, flexible and creative, mirroring real life experiences, its character will reflect the disciplines in which it is being experienced.
- Informed learning brings information practices, and the different ways of experiencing them to students' attention.
- Informed learning considers information use and professional information practices at the same time as the content being learned. It underpins independent and collaborative learning. Informed learning supports innovation and evidence-based practice. It fosters intuition and understanding. Information use for informed learning is fundamentally critical, creative, reflective and ethical. It encourages students to reflect on aspects of information use and information practices, including what they have learned about their discipline or profession through such practices.
- Informed learning accepts the diverse forms that information might take. It engages students with the kinds of information important to their disciplinary or professional practice; ensures an appreciation of the context from which information has been created, derived etc. Information might take the form of pictures, sound, text, be static, moving, two – or three dimensional. It may take the form of research outcomes or community discourse.
- Informed learning supports social engagement and development; cultural understandings; social networking; community and peer support (including volunteer); shared learning; communicative learning. Informed learning is transformative. It has the potential to bring about change in the way students see themselves, their profession and their professional practice. Informed learning is empowering, brings about personal and social development.

□ Informed learning is balanced. It can redress the imbalance between students' digital competence and their less developed critical awareness. Informed learning may or may not engage new ICTs. While up to date ICTs are an advantage, the real priority is engagement with information; creative, reflective and transformational information use.

□ Informed learning is socially responsible. It supports wise use of information; recognises rights and responsibilities of information use; respects intellectual property and supports online security and safety.

□ Informed learning is a shared responsibility amongst discipline educators, content experts, information and ICT professionals, industry and the community.

### **What are information practices?**

Information practices are those academic, professional and civic activities that require interaction with the information environment; sometimes within a technological context and sometimes not. Much of what we do as professionals, students and researchers in all disciplines takes the form of an information practice. Whether we are decision making, seeking new knowledge, writing for a grade or a publication, preparing a report for a client, developing a web page, composing music or programming new software, we are engaged in an information practice. As we learn through our encounters with information, as we seek out information, work with information and give others the benefit of our learning, we are engaged in important learning processes in today's information and knowledge contexts.

Some of the academic information practices that may inform learning are keeping up to date in the field, essay writing, participation in journal clubs, workshops, conferences and symposia, decision making, seeking new knowledge, writing for a grade or for publication, searching the internet. These practices allow us to learn content through the process of information use. Information practices rely on creative, reflective and ethical information use. How information use, in a general sense, is experienced, in the academic environment, the workplace and the community is the topic of **chapters three, and six.**

Some of the professional and discipline information practices that already influence learning include broad processes such as evidence-based practice, design, problem-solving and research; as well as specific tasks such as preparing a report for a client, developing a web page, composing music, programming new software. Individual disciplines and professions will have specific practices that belong to them. Professional and discipline specific practices are discussed in **chapter five.**

### **Sample engagements blending information interactions and content learning. Each one could be undertaken in on-line, blended or traditional learning environments**

Individuals or groups could design a strategy for maintaining professional or research currency and discuss what has been learned through the implementation of that strategy over time.

Individuals or groups could develop a package of materials for a client; and prepare a covering statement about how information has been gathered, the assessed quality of the information, and how that information might be used by the client.

A class group could review existing information on a current topic and develop a series of journal articles/conference papers, to inform each other or external audiences.

‘Reading groups’ could be formed, focused on a key text or series of texts, where students repeatedly address key questions about the content of the text to deepen their understanding of the field. ‘Journal clubs’, where students share and interpret current articles on a topic of interest, may achieve similar ends.

Students could work in teams to research and create a learning resource for the unit’s learning community; they may critique the other teams’ resources.

### **Why attend to academic and professional information practices in designing learning?**

From a pragmatic perspective, we need to simply improve the quality of learning. Practically speaking, there are internal and external imperatives to meet institutional and quality assurance requirements. In this context, as educators there are a range of issues we may be concerned with, including the need to:

- prepare students for independent, informal learning at work as well as in civic and personal life;
- help students work in innovative learning contexts - eg inquiry problem-based or action learning;
- equip students to learn in ever changing information and technology environments;
- meet the requirements of accrediting bodies, professional associations and employers;
- satisfy both ‘earner-learners’ and those seeking a liberal education;
- develop intercultural perspectives for academic, professional, community or social learning in global environments.

Whatever our reasons, we need to remember that using information creatively, reflectively and ethically, to interact confidently with our ever changing information environment is not a ‘pre-requisite’ to learning. It is a learning strategy that belongs to all disciplines at all levels, and that can be explicitly designed into the learning experience to benefit those being prepared to enter the field. Learners should be introduced to the forms of information practice that are prevalent in the disciplines or professions they are studying.

Many educators already include information practices in their learning design. Most learner-centred approaches to curriculum design, such as inquiry learning or problem-based learning rely on individuals or teams engaging in information practices. Research students and researchers are heavily engaged in information practices as a matter of course.

## Teaching for informed learning

Informed learning is based not only on drawing upon information practices to bring about learning. It is also based on the idea that informed learning, and the information practices in which information literacy finds expression, can be experienced in different ways. This is the key to the relational frame for informed learning described in **chapter two**.

In the relational frame we as teachers, and our students, experience those things that we are learning in different ways. Our different experiences are a result of seeing or looking at the world differently; and further, we see differently because we are focussing our attention on particular aspects of those things we are teaching or learning. In this approach, teaching is helping learners to see the world differently by focussing their attention on relevant parts. Chapters three onwards provide many examples of how we focus differently in our experiences of information use, and how our different experiences may be used in learning design.

This way of thinking about teaching and learning has been developed and described by Marton and Booth (1997). They propose a *pedagogy of awareness* in which powerful ways of seeing lead to powerful ways of acting. When we see some part of the world in a particular way we could say that we are wearing a particular set of lenses (Edwards, 2006). These lenses establish what we are paying close attention to, or focussing on. They also establish what is more in the background of our awareness, what we are not attending to closely. These ways of seeing are often referred to as *conceptions* in the research literature.

Revisiting the above paragraphs will reveal that I have commenced with writing about experiences and concluded by writing about ways of seeing, and the lenses through which we see. This is because the word *experience* emphasises the meanings that we associate with the things we are learning; and *ways of seeing, or the lenses through which we see*, emphasises the structures through which we derive those meanings.

Marton and Booth's (1997) pedagogy of awareness suggests that learning occurs when we become aware of the different lenses through which we might see the object of our learning. The intention is to bring about a qualitative change in the way learners see, experience, understand or conceptualise something, rather than changing the amount of knowledge they possess. Indeed knowledge is considered to be about discerning the world in particular ways. For example, music is learned when different sounds are discerned; reading is learned when the relationship between written words and spoken sounds is discerned; information use is learned when different ways of experiencing it are discerned; information searching is learned when different ways of experiencing that are discerned. In the latter example, a person must discern the difference in searching based on knowing that a database is structured, and searching without understanding the structure, to appreciate the powerful influence of structure on searching. Bringing about learning through widening experience, and thus revealing variation, is the underlying principle. This way of thinking about learning, is also now known as variation theory (Marton & Tsui, 2004).

A considerable amount of research into teaching and learning has been conducted using this approach; including the sub set of studies drawn together in this book which shed light on informed learning. In each of these studies, the outcome is a series of ways of seeing the



concept or activity in question. In some studies the different ways of seeing range from simple to complex, in some they are simply different, and in other studies some ways of seeing are considered better than others for various reasons. Such studies make available a research base from which teachers can exercise professional judgement in determining which experiences are important for their students.

### **What are the principles of informed learning?**

*Informed learning takes into account learners' experiences.* The power of informed learning comes from bringing to students' attention the character of informed learning, and helping them to reflect on their own capacity to learn as they engage with information. Within the context of informed learning this means:

- developing a picture of students' experiences of informed learning;
- building relevant experiences into curriculum that will encourage them to adopt the desired experiences;
- building reflection on those experiences into curriculum; and
- making it possible for students to apply their experience to novel contexts (adapted from Bruce, 2002).

*Informed learning promotes the simultaneous development of discipline and process learning.* In order to do this we need to have a sense of how our students are experiencing both information use and the content they are learning. Learners need to use information practices appropriate to their discipline or field of study, and to be equipped with the appropriate lenses to help them use information powerfully. They also need to be learning discipline content as they work with information. Students should be learning about something (discipline content) as they engage in learning to use information; coming to see both the content and information use in more powerful ways. This assumes that content is learned through effective interaction with information. Informed learning is not about mastering a skill set, but rather 'a process that should transform both learning and the culture of communities for the better' (Breivik, 2000).

*Informed learning is about changes in experience.* If learning is about coming to see the world in new or more complex ways (Marton & Booth, 1997) then learning to be an information empowered professional, researcher, scientist is about developing new and more complex ways of experiencing informed learning. As teachers we need to help students develop new and more complex ways of working with information, helping them to be informed learners. From a discipline perspective, this may relate to their understanding of particular topic areas, or the wider discipline. From the information use perspective this may relate to their experience of the information practice, the tool, or what they are willing to admit to their information universe (see the following section on the relationship between using information and learning).

In the following chapters of this book I will show how we can apply these principles by investigating the experience of informed learning and then by designing learning to strengthen informed learning in university contexts.

### **On the relationship between using information and learning**

Most of us who design learning experiences around information practices do so because we know, or believe, that these practices bring about learning. Research is now showing us that there is a unique relationship between information literacy, which finds expression in information practices, and learning; information use is an important mediator in the learning process. We have growing evidence of an interrelationship between learners' experience of the content of learning and their experience of using information to learn. Because the experience of information use influences learning in several ways, attending to aspects of the information literacy experience becomes an important strategy in helping us to influence learning. Insights into the relationship between information use and learning are emerging as follows:

*Students' experiences of information seeking are related to their learning outcomes.* For example, Louise Limberg (2000) demonstrates the relationship between learners' different ways of seeking and using information and the depth of understanding they achieve about the topic being studied (see **chapter four**).

*Students' experiences of academic information practices, are related to their information use processes and approaches to learning.* For example, Mandy Lupton (2004) shows how students' approaches to essay writing is closely associated with the ways in which they use information in their course of study and also closely associated with their understanding of what they are doing when learning. Sylvia Edwards (2006) demonstrates that university students are likely to search the internet in different ways; the more sophisticated searchers are aware of their research topic, the structure of the information environment and the quality of the information they are engaging with, taking a more fruitful approach to their learning (see **chapter four**).

*Learners' views of their discipline are related to the extent of their information universe.* For example, recent research into learning to program at the introductory level suggests that students with more sophisticated views of the nature of programming experience a more complex information environment (see **chapter four**).

*How learners engage with information, and what information they engage with, depends on how they interpret the learning task* For example Lupton (2008) suggests that music students' experiences of composition are related to what they interpret information to be, and how they work with that information. She also shows that students who perceive personal and professional relevance in their learning draw upon different forms of information and use the information in more complex ways (see **chapter four**).

*There is no apparent link between mastery of information searching skills and the quality of students' information use experience.* Sylvia Edwards (2006, p.71) pre-tested students' library and database searching skills, before she investigated their experience of learning to search the internet. She discovered that students' test scores were not a predictor of the quality of their searching. Students with high skills scores often took less critical and reflective approaches to web searching.

*Learners reflecting on information use are likely to improve the quality of their information use processes.* Susie Andretta (2008) and Bill Johnston and Sheila Webber (2003) show that students regularly reflecting on information use adopt more sophisticated approaches to their work (see **chapter three**).

*Treating information seeking and information use as integrated processes promotes learning.* Studies by Louise Limberg (2000), Clarence Maybee (2006), and Christine Bruce (1997) suggest that seeing information seeking, and information use, as separate processes, may lead to surface approaches to learning and impoverished learning outcomes, while the view of the two as interrelated and synergistic promote more complex thinking. This is in fact the cornerstone of informed learning (see **chapters three and four**).

As we have just seen there is a growing body of evidence suggesting that information and information use could be regarded as mediators between learning intent and learning outcomes. If we understand information literacy as being about using information to learn, we can draw on information use or information practices to help secure the learning outcomes we seek. Information use becomes one dimension of that complex phenomenon we know as learning. Being aware of the role of information and its uses becomes an avenue for improving learning. Treating information use and learning as closely related enhances the learning experience.

### **ICTs and informed learning**

The twenty first century higher education learning context shares much in common with the professional context. At its heart are the twin foci of discipline concerns and professional practice. Transforming both are the information and communication technologies that have rapidly evolved in recent years.

The twentieth century was dedicated to allowing technologies to influence teaching and learning. From the invention of radio, television, computers, the internet and the increasingly micro mobile technologies we have sought ways of using these technologies to reach learners in different places and to give flexibility to the learning experience. We have sought to create interactive and communicative virtual learning environments that replicate face to face classroom experiences, and we have developed new learning objects and contexts that only technology has made possible, for example the development of animations or videoconferencing.

Largely as a result of technology, discipline learning and professional practice take place in an increasingly information rich environment, and in an environment where professional and academic practices, including information practices, are increasingly transformed by new technologies. Communication with clients takes place via e-mail and the web; journals are contributed to and read online; conferences are attended online; evidence for professional decisions is sought from a wide-array of sources including online hosts; brokers and other information professionals, especially librarians, play a vital role in ensuring the flow of reliable or high quality information; professional meetings are conducted via chat groups. These are just a few examples of the **information practices** that sit at the heart of day to day learning and work in many professions, in an online environment that continues to be chaotic. Particularly in social networking spaces, new phenomena such as blogs, wikis, Second Life, You Tube and Myspace continue to change the ways in which we experience our virtual worlds.

In some cases, technology may make it harder for people to be informed learners. ICTs are important and influential but often do not provide solutions for those struggling to use the

technologies. Today's digital/virtual environments make it harder for people to be 'information savvy' (Lorenzo & Bziuban, 2006). The sheer volume of content and software available makes successful and creative use of what is available an ongoing challenge.

While many information practices are now inextricably entwined with technology, the conceptual skills involved transcend technology; the more complex forms of informed learning are less dependent on technology, and these practices must be privileged in order to ensure that when technology is available it can be used to maximum advantage. For example, a writer must seek history, context, inspiration, collaboration and review with or without technology. While technology may simplify or make the process more complex, may act as a barrier or may add new facets to the experience, the basic practices remain. A scientist must understand how knowledge has developed in her field, who has contributed, what they have contributed, the potential nature of her own contribution, what constitutes scientifically acceptable knowledge and acceptable practices for generating that knowledge; a decision maker or problem solver must have the required heuristics to engage in those processes if technology is going to facilitate or enhance their experience. Again technology may make a range of contributions, scientific information practices have evolved from scientific letter writing to the possibilities of e-research. Nevertheless, technology itself is powerless unless in the hands of an informed learner.

At the same time, we are aware that people need to be creative and reflective information users in both ICT rich and poor contexts. While there are reasons why we might wish to provide access, lack of access to new technologies need not inhibit informed learning. We must avoid imposing the norms of information and ICT use that have evolved in developed and hi-technology contexts. We must learn to understand the character of information that is considered important in different discipline, professional, community and other contexts. We must bring the information practices of the many privileged and underprivileged communities we serve to the fore. We must learn to understand and facilitate the information practices of people of all genders, ages, cultures, and race.

Creative, reflective and ethical information use brings about learning, and is the foundation of the evolution of our future learning organisations and communities; in short the evolution of our global future. As we build curriculum in formal contexts, we need to both prepare students for the learning organisation and learning communities, as well as prepare them to participate in and develop community information practices which empower all people.

### **How is informed learning achieved?**

The prospect of informed learning requires the commitment of a wide academic community, including educators from all disciplines, researchers, industry partners, learning advisers, librarians and other information and technology professionals. Partnerships are forged between members of these groups for many educational purposes. Such partnerships may be built upon, or new ones created, in support of informed learning. Schools and libraries have an important role in starting and helping people walk the informed learning journey.

As we have seen above, informed learning relies on educators attempting to establish the different ways of experiencing information literacy and information practices amongst their learners. Being able to do so may involve drawing from existing research, conducting

classroom research, or seeking out our own professional insights and intuitions in this area. Once we have sought out variation we are then in a position to encourage more appropriate experiences, or widen the range of students' experiences so that they may draw upon relevant experiences in future.

Throughout the book I address a number of key challenges we face as we attempt to give students curriculum experiences that will help them become learners, researchers, practitioners, and in their turn, mentors and advocates in all walks of life.

*First, the challenge of diverse ways of approaching informed learning in curriculum design.* I will examine the six frames for informed learning to explore the different ways in which teaching and learning through the adoption of information practices can be approached by educators, students, and administrators (see **chapter two**).

*Second, the challenge of diverse ways of experiencing informed learning and information.* I examine the seven faces of informed learning and some of its implications for how we might design learning experiences (see **chapter three**).

*Third, the challenge of adopting informed learning in coursework and research programs,* including an appreciation of informed learning in the community and workplace. While the distinction between coursework and research is somewhat artificial, I use it here to allow a special focus on students engaged in higher degree research (see **chapters four, five, six, seven and eight**).

*Fourth, the challenge of taking the informed learning agenda forward through staff development and cultural change.* I present the RACER approach for the successful implementation of informed learning programs as a framework for tackling key cultural issues; and to reveal some of the complexities of a university's socio-political environment as we tackle the curriculum change agenda (see **chapter nine**).

*Fifth, the challenge of taking forward, through research, the informed learning agenda* (see **chapter ten**).

Clearly the world of information use and learning is experienced in many different ways. How we, as learners and educators experience aspects of our world has a profound influence on the character of our learning and our students learning. In the next chapters we will look at:

- the six frames for informed learning – this is the curriculum framework supporting informed learning, the different frames through which informed learning might be viewed (see **chapter two**); and
- the seven faces of informed learning - this is the phenomenon underpinning informed learning, the experiences of using information to learn with which we want students to become familiar (see **chapter three**).

**Key questions arising from this chapter – what can we do as educators to take this agenda further?**

Each chapter in this book concludes with a few questions which may prompt us to think further about the key issues raised and implications for our contexts. Readers various contexts may involve diverse institutions or different student cohorts, perhaps with varying levels of expertise or varying cultural backgrounds. The questions are offered in the spirit of focussing attention on particular areas of the emerging informed learning agenda, with a view to opening up a wider and systematic approach to research and scholarship in the area.

#### *Informed learning and your philosophy of teaching*

- Describe examples from your own experience that illustrate why informed learning is important for your students.
- Describe examples from your own experience that point towards the relationship between information use and learning.
- How might informed learning support your learning and teaching?

#### *Informed learning and your students*

- Why might informed learning be important for your students?
- How might/ do ICTs contribute to the experience of informed learning for your students?
- How might/do ICTs distract from the experience of informed learning for your students?

#### *Informed learning and your curriculum practice*

- What learning strategies are you already using that reflect the informed learning agenda?
- What is working well with these strategies and what do you see as in need of improvement?
- Who could you work with to take further steps towards informed learning?

#### *Informed learning in your field*

- What are the important information practices in your discipline/profession?
- What learning strategies are used in your discipline, that reflect the informed learning agenda?

## **References**

- Andretta, S. (2008, in press). Facilitating Information Literacy Education (FILE). In A. Brine (Ed.), *Handbook of library training practice and development*, v.3. Aldershot: Gower Publishing Ltd.
- Breivik, P. (2000). Foreword. In C. Bruce & P. Candy (Eds.), *Information literacy around the world: Advances in programs and research* (p. xi). Riverina: Centre for Information Studies, Charles Sturt University.
- Bruce, C. S. (2002). Information literacy as a catalyst for educational change: a background paper. White Paper prepared for UNESCO, the US. National Commission on Libraries and information Science, and the National Forum on Information Literacy, for use at the Information Literacy, Meetings of Experts, Prague, The Czech Republic, September, 2003 (pp. 1-17). [Retrieved October 7, 2006] from <http://www.nclis.gov.libinter/infolitconf&meet/papers/bruce-fullpaper.pdf>
- Edwards, S. L. (2006). *Panning for gold: information literacy and the net lenses model*. Blackwood, South Australia: Auslib Press.
- Bruce, C.S (1997). *The Seven faces of information literacy*. Blackwood, South Australia: Auslib Press.

- Bruce, C. S. & Candy, P. (2000). Information literacy programs; people, politics and potential. In C. Bruce & P. Candy (Eds.), *Information literacy around the world: Advances in programs and research* (pp. 3-10). Riverina: Centre for Information Studies, Charles Sturt University.
- Horton, F. W. (2007). Understanding information literacy; a primer. Paris: United Nations Educational, Scientific, and Cultural Organisation.
- Johnston, B. & Webber, S. (2003). Information literacy in higher education: a review and case study. *Studies in Higher Education*, 28(3), 335-352.
- Limberg, L. (2000). Is there a relationship between information seeking and learning outcomes? In C. Bruce & P. Candy (Eds.), *Information literacy around the world: advances in programs and research* (pp. 193-208). Riverina: Centre for Information Studies, Charles Sturt University.
- Lorenzo, G. & Bziuban, C. (2006). Ensuring the Net Generation is Net Savvy. Educause Learning Initiative, September 2006, ID: ELI3006: 1-19.
- Lupton, M. (2004). *The Learning connection: Information literacy and the student experience*. Adelaide: Auslib Press,.
- Lupton, M. (manuscript, 2008). Information literacy and learning. PhD thesis. Brisbane, Australia: Queensland University of Technology. (Final version to be available at: <http://adt.library.qut.edu.au>)
- Marton, F. & Booth, S. (1997). *Learning and awareness*. Mahwah, NJ: Lawrence Erlbaum.
- Marton, F. & Tsui, A.B.M. (2004). *Classroom discourse and the space of learning*. Mahwah, NJ: Lawrence Erlbaum.
- Maybee, C. (2006). Undergraduate perceptions of information use: the basis for creating user-centred student information literacy instruction. *The Journal of Academic Librarianship*, 32(1), 79-85.