

**Multiple Intelligences for Information Literacy:
A Guide for Library Practitioners.**

Multiple Intelligences for Information Literacy: A Guide for Library Practitioners.

This document provides a concise introduction to Gardner's multiple intelligences theory, and describes ways in which it could be applied to the teaching of information literacy in academic libraries. In particular, multiple intelligences theory is discussed as an effective framework for addressing the diverse learning needs of the current student population in UK higher education.

Suggested reading is listed at the end of this guide. The best way to develop effective implementations of multiple intelligences theory is to read about the theory, and the techniques derived from it, then to select the points which seem most relevant to local circumstances.

Contents

1. Introduction: The Changing Face of UK Higher Education
2. Gardner's Theory of Multiple Intelligences
3. Issues in Information Literacy
4. Individual Implementations of Multiple Intelligences Theory
5. Techniques for Teaching and Promoting Information Literacy using Multiple Intelligences Theory
6. Collaboration with Academic Colleagues to Integrate Information Literacy into the Curriculum
7. Suggested Reading
8. Other References used in the Preparation of this Guide

1. Introduction: The Changing Face of UK Higher Education

Increasing student numbers, widening participation, and other changes in broader society, not least technological advances, have made higher education a very different environment from what it was even ten years ago. Academic libraries are not immune to these changes. In particular, changes in the student population, and in the nature of library resources, mean that new approaches to information literacy are needed.

Institutional attempts to standardise the higher education experience, in response to internal and external pressure to be accountable, may lead the homogenisation effect which Ritzer (2000) terms “McDonaldization”, which is potentially alienating and demoralising for students. In response, libraries have the potential to create humanised spaces within the higher education environment. Some aspects of potential humanisation include: developing a learner-centred, diversity-friendly approach to library service provision; empowering students to take control of their own learning; and offering learning options such as customisable e-resources.

An approach informed by multiple intelligences theory (Gardner, 1983) could contribute to these aims by providing a paradigm for addressing diversity and accommodating individual differences. As well as formal classroom or computer lab-based sessions, information literacy promotion includes: one-to-one tutorials and reference interviews; the overall atmosphere of the library in terms of signage, guides and online help; and the attitude of individual staff members.

2. Gardner's Theory of Multiple Intelligences

Gardner's research into intelligence grew out of his dissatisfaction with traditional notions of intelligence. Gardner developed his theory of multiple intelligences, first described in *Frames of Mind* (Gardner, 1983), as an alternative paradigm for understanding intellectual ability. The essence of multiple intelligences theory is that humans possess a range of intellectual abilities, rather than the single aptitude measured by conventional IQ tests. From careful analysis of a wide range of empirical and other data from cognitive science, education and neurology, Gardner identifies eight distinct intelligences:

- linguistic
- logical-mathematical
- musical
- spatial
- bodily-kinesthetic
- naturalist
- interpersonal
- intrapersonal.

The exact number of intelligences is, however, less important than the notion of multiple intelligences as separate, albeit inter-dependent, facets of intelligence. All normal individuals possess all eight intelligences to a greater or lesser extent. What varies between individuals is the particular array of strengths and weaknesses in the different intelligences; their "profiles of intelligence". A brief description of each intelligence is given below.

Linguistic Intelligence

Linguistic intelligence underlies verbal processes and linguistic abilities. It is the ability to make sense of the world through language. An individual with strengths in linguistic intelligence could, for example, be adept at clearly expressing complex ideas, be able to create innovative word-forms such as

poetry, or be good at learning foreign languages. Linguistic intelligence is emphasised in traditional school education.

Gardner notes that two facets of linguistic intelligence are particularly valued in the business world. One, seen in the “conversationalist”, uses “skilled questioning and discussion with others [to] secure useful information”. The other is characterised by the “rhetorician” who is “able to convince others of a course of action through... stories, speeches or exhortations” (Gardner, 2004, p. 31).

Logical-mathematical Intelligence

Logical-mathematical intelligence is the capacity to handle figures and to approach problems in a logical fashion. It enables individuals to appreciate and analyse abstract relationships, and is utilised in mathematical reasoning and scientific investigation. Along with linguistic intelligence, logical-mathematical intelligence is emphasised in school education and conventional intelligence tests.

Musical Intelligence

Musical intelligence comprises skills in appreciating and utilising musical patterns. Some commentators equate strong musical intelligence with an auditory learning preference, although this does not fully represent the complexities of musical intelligence. Gardner notes that certain aspects of musical intelligence overlap with linguistic intelligence, for example, sensing rhythm and the ability to recognize timbre and tonality variations. Music also involves a symbol system, which relates to logical-mathematical intelligence.

Spatial

Spatial intelligence is the ability to form and manipulate mental images of objects and environments. Strong spatial intelligence may involve a preference for illustrations and graphical representations over text. Spatial intelligence also operates at a metaphorical level, whereby individuals create and work on products, performances or concepts by thinking about them in spatial format.

Bodily-kinesthetic

Bodily-kinesthetic intelligence involves using the whole body or movement of parts of the body to solve problems or to create useful artefacts. Gardner makes a distinction between two types of bodily-kinesthetic intelligence. One is the direct use of the body to carry out work, as characterised by artisans, surgeons and athletes. The other is the use of bodily metaphors and imagery to understand or explain various concepts.

Naturalist

Naturalist intelligence is the ability to identify and classify plant and animal species. It allows individuals to solve problems by using features of the natural world. This capacity to create a taxonomy of the natural world may also be applicable in the urban environment. The ability to make consequential discriminations is certainly useful for both vendors and shoppers in the retail world.

Interpersonal Intelligence

Gardner describes interpersonal intelligence as “a person’s capacity to understand the intentions, motivations, and desires of other people and, consequently, to work effectively with others” (Gardner, 1999b, p. 43). It involves learning or problem-solving through recognising and distinguishing the feelings and intentions of others. Naturally effective salespersons tend to have strong interpersonal intelligence.

Intrapersonal Intelligence

Intrapersonal intelligence involves an understanding of one’s own states of mind and reactions to situations. Individuals with strong intrapersonal intelligence have an accurate mental model of themselves, and tend to “make sound choices about their life and work” (Kornhaber et al, 2004, p. 6). Intrapersonal introspection underlies intelligent actions when it is used to solve problems, or otherwise to operate effectively in the social world.

Intrapersonal intelligence affects learning in many ways, including: students' motivation and willingness to study; their awareness of their own learning preferences and cognitive profiles; their ability to handle stress and the pressure of deadlines; their study techniques; and their reflections on previous learning experiences. Students' self-image as learners affects their motivation to study. For example, students who have internalised a hereditarian view of intelligence may believe that they are incapable of academic achievement. As Goleman (2004) notes, "when people believe that their failures are due to some unchangeable deficit in themselves, they lose hope and stop trying" (p. 153).

3. Issues in Information Literacy

In the extensive literature concerning the teaching of information literacy, a number of themes emerge:

- the integration of information literacy into course materials, so that it is presented in context
- the importance of collaborating with academic staff
- attempts to improve the learning experience during formal teaching sessions for information literacy
- debate over the pros and cons of e-learning
- questions surrounding the role and status of the library within higher education.

Multiple intelligences theory has some relevance in addressing all of these concerns. The use of a multiple intelligences-informed approach could improve the efficacy of information literacy in a number of ways, by providing a framework for accommodating a range of learning preferences. Presenting information in a variety of ways helps to make the material more engaging and memorable for the users. Implementations of multiple intelligences theory, discussed in the guidelines below, are divided into three levels:

- the individual level, at which the responses and attitudes of practitioners may have considerable impact on students' experiences of the library
- the service level, which includes formal elements of information literacy promotion, such as taught information literacy sessions and the development of library teaching materials and resources guides
- the institutional level, concerning collaboration with academic colleagues to integrate information literacy into course curricula.

4. Individual Implementations of Multiple Intelligences Theory

It is possible for practitioners to apply the multiple intelligences ethos to their daily interactions with students in a number of ways. Multiple intelligences theory provides a framework for understanding the diversity of students' learning needs and preferences. Gardner (1999b) asserts three propositions as the basis for effective implementation of multiple intelligences theory:

- we are not all the same
- we do not all have the same kinds of mind
- education works most effectively if these differences are taken into account rather than denied or ignored.

These ideas contradict some of the received notions of what a university student is like. In the past, when much more emphasis was placed on the traditional academic intelligences, it may well have been the case that all students were roughly alike in terms of their intelligences. More recently, however, widening participation means that students vary a great deal in their cognitive profiles, their intellectual aptitudes, and their approaches to study

Multiple intelligences theory can help the practitioner to develop an informed flexibility for dealing with individual students, including a repertoire of responses for different situations. For example, if a student does not readily understand a verbal explanation of a library resource, a diagram or a physical demonstration could be offered. Over time, and as multiple intelligences techniques in formal teaching situations become more familiar, the practitioner will incorporate the principles of multiple intelligences theory into his or her mental models of students and the different ways in which their minds work. This in turn will have a subtle influence on the practitioner's day-to-day interactions with students.

5. Techniques for Teaching and Promoting

Information Literacy using Multiple Intelligences Theory

Traditional academic approaches favour logical-mathematic and linguistic intelligences, although some areas of pedagogy are beginning to diversify. For example, textbooks and other learning materials make greater use of diagrams and illustrations, tapping spatial intelligence, than has been the case in the past. Multiple intelligences theory can contribute to the development of more accessible and learner-centred library materials, whether for library induction sessions, guides and handouts, or e-learning packages. In addition, pedagogic techniques derived from multiple intelligences theory may enhance students' understanding and retention of material during formal teaching sessions in the library. Three areas are considered below:

- direct applications of multiple intelligences theory
- the “entry points” technique
- developing multiple intelligences-informed e-learning materials.

Direct Applications of Multiple Intelligences Theory

The most basic implementations of multiple intelligences theory directly address individual intelligences. This is a useful starting point, although it can become a reductionist approach if it is overdone. In practice the intelligences work in combination.

Spatial Intelligence

Spatial intelligence, sometimes colloquially referred to as visual intelligence, is the ability to construct and manipulate mental images as part of the learning process, and may translate into a preference for images, diagrams and graphical representations rather than linear text. The common practice of using technology to demonstrate searching the online catalogue or using bibliographic databases is one obvious application of spatial intelligence. Other ways to address spatial intelligence include:

- making judicious use of visual aids during teaching sessions
- incorporating screen shots into library guides and handouts
- suggesting visual note-taking techniques, such as mind mapping, clustering, and mind-scaping, or providing handouts in these alternative formats.

Bodily-kinesthetic Intelligence

Students with a preference for bodily-kinesthetic intelligence learn through doing, involving a range of physicality from fine motor skills to whole body movements and object manipulation. Any physical activity which assists intellectual processes utilises bodily-kinesthetic intelligence, for example, some students find that going for a walk improves their thought processes. Whilst not universally suitable, bodily-kinesthetic techniques should not be dismissed out of hand, as some students may find them useful. If students seem unengaged with a lecture-demonstration, for instance, a different, more bodily-kinesthetic activity could be substituted if time and the situation allow.

Some techniques for involving bodily-kinesthetic intelligence are as follows:

- encourage students to touch and handle information resources as they are discussed during a library induction session
- use a library tour, moving around the library building to introduce various resources in situ and to offer hands-on use of equipment
- include activities that involve moving around, such as a library quiz presented on posters displayed around the teaching room.

Interpersonal

Material which incorporates personal narratives or character scenarios helps to involve interpersonal intelligence. Techniques for tapping interpersonal intelligence include:

- narrative techniques, for example, a library induction session could be structured around a story about a student's first week at university

- group work, for example discussing possible solutions to information needs or working together on an information project
- interaction with peers through media such as discussion boards.

Musical Intelligence

Background music may enhance learning. Morgan and Davies (2004) report that they use music at the start and end of information literacy classes because they “believe that it can have an uplifting effect on the mood and atmosphere of a session” (Morgan and Davies, 2004, p. 7). Selection of suitable kinds of music, as well as the practicalities of when and how to use it, will depend on the situation. The practitioner needs to make appropriate choices. Some experimentation may be necessary, in consultation with students. Good quality sound equipment is essential.

The “Entry Points” Technique

As noted above, techniques which address a single intelligence may be somewhat superficial. More sophisticated applications of multiple intelligences theory engage several intelligences simultaneously. Practitioners can develop their own multiple intelligences-based learning activities by using the theory as a framework. It is also useful to analyse the successful practices which are already in existence, for example those described by Kornhaber (2004). The entry points framework is one such tool. Gardner lists the entry points as:

- narrative
- numerical
- logical
- aesthetic
- hands-on
- interpersonal

Explaining a topic through different entry points helps to make the information more accessible to a range of differing learners, addressing their strengths

whilst challenging their weaknesses. It also makes the material seem more interesting and relevant to the students, encourages a multi-faceted understanding of the topic, and helps students to keep their minds focused on the material.

It is not necessary to use all entry points every time, just enough variety to accommodate different ways of learning. The choice of entry points will depend on the circumstances as well as the nature of the material. For example, it is difficult to provide a “hands-on” experience of databases unless sufficient access to computers is available.

E-Learning

Multiple intelligences theory can contribute to the development of effective e-learning materials by providing a framework for addressing individuality, and by informing a multi-faceted approach to presenting information. In addition, the technology could be set up so that students can monitor their progress, which encourages them to be responsible for their own learning. E-learning provides opportunities to develop new techniques for presenting teaching material. Gardner is enthusiastic about the possibilities of technology for improving learning, particularly its capacity for customisation. There are a number of ways in which a multiple intelligences-informed approach could enhance e-learning materials. The following areas are discussed below:

- customisation
- multimedia materials
- multiple representations.

Customisation

Gardner argues that an education which is “individualized and personalized” (Gardner, 1999a, p. 72) is more likely to nurture deep learning. It is possible to tailor material to individual needs: this could take the form of customisation to a particular course, for example creating subject-relevant search examples.

More ambitious forms of personalisation are becoming technically possible, such as individual e-portfolios of learning achievements.

Multimedia Materials

Technology does not automatically improve education: it is important to create e-learning materials which go beyond simple dissemination of print-equivalent material. The multimedia capacity of e-learning is an important element in this. For example, the availability of sound is valuable in making provision for students with visual impairments, and other students may find it useful. There may, however, be practical or technical problems with this, which require support, and the correct equipment and software is needed.

As noted above, music may enhance learning. E-learning technology makes background or incidental music possible, computer equipment permitting, so it could be included as an option. The advantage of e-learning here is that whether or not to use the music becomes a personal choice. Whilst some experimentation with the possibilities of e-learning may be helpful, it should never be a case of using technological features for their own sake, the challenge being to use e-learning to enhance learning, without succumbing to distracting gimmicks. For example, video clips can be helpful, but could equally have the negative effect of sending students into passive TV observer mode.

Multiple Representations

The “multiple representations” approach is another incarnation of the multiple entry points technique discussed above. In a formal teaching session, students only have access to the limited number of representations selected by the session leader; they cannot pick and choose. E-learning provides a means for offering a greater choice of explanations in alternative formats, or multiple representations.

6. Collaboration with Academic Colleagues to Integrate Information Literacy into the Curriculum

Integration

Gardner stresses the importance of relevance in effective learning: something is much more likely to stick in the memory if it is learnt in response to a real-world problem or challenge. Contextualising information in this way encourages deeper understanding. Many commentators agree that integrating information literacy into the curriculum, preferably with the cooperation of academics, is the best way to achieve relevance. This could take a range of forms, from linking generic information literacy e-learning material with course-specific resources, to running a compulsory or credit-bearing module of information literacy. Multiple intelligences theory provides an additional angle on this process of collaboration. It could be useful to analyse the mindset of different subjects, and to create material which emphasises the intelligences favoured by that discipline, thus developing more subtly tailored material which reflects the intellectual make-up of the subject itself.

Projects

One established, multiple intelligences-inspired technique is inquiry-based learning. Projects may, for example, follow a question-based approach structured around three broad questions:

- what do you know?
- what do want to know?
- how will we learn/find out?

This approach could be adapted for information literacy topics such as: basic library use from opening times and library rules to finding and using relevant library resources; correct referencing and avoiding plagiarism; or critical thinking. A project-like structure could be used for a library teaching session, or, in collaboration with academics, could form the basis for a library assignment, with activities run over a period of time.

Projects embody the multiple intelligences principle to emphasise “depth of engagement rather than broad coverage” (Kornhaber et al, 2004, p. 35). For information literacy, this could mean focusing on one bibliographic database, especially transferable aspects such as the principles of the search process, rather than trying to cover every conceivable resource in one session. Bearing in mind that most groups will include a range of previous knowledge and abilities, this process should be supported by clear handouts outlining the key principles, and written instructions for using the relevant resources.

Faculty Mindsets

Another angle on the process of collaboration is that multiple intelligences theory provides a framework for analysing and predicting students’ learning preferences. By analysing the mindset of different subject areas, it is possible to tailor information literacy teaching and delivery methods to different faculties, and to create material which emphasises the intelligences favoured by the academic discipline in question. This provides a more subtly tailored approach: not simply using subject-specific examples, but reflecting the intellectual make-up of the subject itself.

This process does not go against the principle of individualisation, as long as generalisations are used flexibly, with a willingness to adapt and respond as necessary during teaching sessions. This involves being aware of responses from class participants, and being ready with alternative approaches if the selected techniques seem ineffective. For example, a practitioner may decide to emphasise verbal explanations for a group of Literature students, as they are likely to have a preference for linguistic intelligence. If, however, these students have been sitting in lectures for several hours already that day, they may prefer something different. When the practitioner notices that the students seem unengaged with the session – perhaps they are fidgeting or looking around the room – an activity involving different intelligences could be substituted, for example group work involving a hands-on activity using reference resources.

7. Suggested Reading

Campbell, L., Campbell, B. and Dickinson, D. (1996). *Teaching and learning through multiple intelligences*. Needham Heights, MA: Allyn and Bacon.

Describes techniques for implementing multiple intelligences-based teaching, discusses related issues, and provides extensive practical advice.

Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences*. New York: Basic Books.

Gardner's first exposition of multiple intelligences theory.

Gardner, H. (1993b). *The Unschooled mind: how children think and how schools should teach*. London: Harper Collins.

Considers how multiple intelligences-based teaching can counter superficial learning and flawed, intuitive conceptions of the world.

Gardner, H. (1999a). *The Disciplined mind: what all students should understand*. New York: Simon and Schuster.

Includes multiple intelligences as a framework to suggest improvements to education, particularly the development of deep understanding as opposed to surface learning or erroneous intuitive understandings of real-life phenomena. Includes a description of the "entry points" technique.

Gardner, H. (1999b). *Intelligence reframed*. New York: Basic Books.

A revised and updated account of multiple intelligences theory and its implications for educational practice.

Gardner, H. (2004). *Changing minds*. Boston: Harvard Business School Press.

Gives a reiteration of multiple intelligences theory, and applies its broad principles in new contexts, including business. Includes a detailed description of the "multiple representations" technique.

Gardner, H., Kornhaber, M. and Wake, W. (1996). *Intelligence: Multiple perspectives*. Fort Worth, TX, USA: Harcourt Brace.

Provides a detailed account of the research behind multiple intelligences and its continued development.

Kornhaber, M., Fierros, E. and Veenema, S. *Multiple intelligences: best ideas from research and practice*. Boston: Pearson.

A detailed study of a number of US elementary schools which have implemented a multiple-intelligences-based approach throughout the whole institution. Focuses on practical techniques as well as theoretical aspects.

Other References Used in the Preparation of this Guide

Appleton, L. (2005). "Using electronic text books: promoting, placing and embedding." *The Electronic Library* 23 (1) pp. 54-63. [Online. WWW.] Available at: www.emeraldinsight.com. [Accessed 10th May 2006.]

Atherton J. (2005). *Learning and teaching: deep and surface learning* [Online. WWW] Available at: www.learningandteaching.info/learning/deepsurf.htm. [Accessed 13th June 2006.]

Bawden, D. (2005). "Virtual learning environments." *Managing information* 12 (5) pp. 42-43.

Boyle, F (2005). "The Implementation of a VLE: not so virtual after all." *Serials* 18 (3) pp. 175-183. [Online. http.] Available at: <http://uksg.metapress.com>. [Accessed 6th March 2006.]

Cipkin, C. (2002). "Using a virtual learning environment to integrate information skills into the curriculum: a subject librarian's experiences." *Sconul Newsletter* 27 pp. 7-10. [Online. WWW.] Available at: www.sconul.ac.uk/pub_stats/newsletter. [Accessed 6th March 2006.]

Farber, E. (2004). "Working with faculty: some reflections." *College and undergraduate libraries*, 11 (2) pp. 129-135.

Forsyth, R. (2003). "Supporting e-learning: an overview of the needs of users." *The New review of academic librarianship* 9 (1) pp. 131-140. [Online. http.] Available at: <http://ejournals.ebsco.com>. [Accessed 6th March 2006.]

Hadengue, V. (2004). "What can e-learning do for university libraries?" *Library Review* 53 (8) pp. 396-400. [Online. WWW.] Available at: www.emeraldinsight.com. [Accessed 6th March 2006.]

Joint, N. (2003). "Information literacy evaluation: moving towards virtual learning environments." *The Electronic library* 21 (2) pp. 322-334. [Online. WWW.] Available at: www.emeraldinsight.com. [Accessed 6th March 2006.]

Morgan, N. and Davies, L. (2004). "Innovative library induction - introducing the 'Cephalonian Method'." *Sconul focus* 32 (Autumn/Winter 2004) pp. 4-8. [Online. WWW.] Available at: http://www.sconul.ac.uk/pubs_stats/newsletter/32/2.rtf. [Accessed 1st August 2006.]

Owusu-Ansah, E. (2004). "Information literacy and higher education: placing the academic library in the center [sic] of a comprehensive solution." *The Journal of academic librarianship*, 30 (1) pp. 3-16. [Online. WWW]. Available at: www.ebsco.com. [Accessed 29th January 2006.]

Quinlan, N. and Hegarty, N. (2006). "Librarians outside the box." *New Library World* 107 (1220/1221) pp. 37-42. [Online. WWW.] Available at: www.emeraldinsight.com. [Accessed 10th May 2006.]

Ritzer, G. (2000). *The McDonaldization of Society*. New century edition. Thousand Oaks, California: Pine Forge Press.

Thaxton, L., Faccioli, M. and Mobsy, A. (2004). "Leveraging collaboration for information literacy in psychology." *Reference services review*, 32 (2) pp. 185-189.

Veenema, S. and Gardner, H. (1996). "Multimedia and multiple intelligences." *The American Prospect* 29 (November/December 1996) pp. 69-75. [Online. WWW.] Available at: www.howardgardner.com/docs. [Accessed 18th July 2006.]

Whitsed, N. (2005). "Learning and teaching." *Health information and libraries journal* 22 (1) pp. 74-77. [Online. WWW.] Available from: www.blackwell-synergy.com. [Accessed 14th May 2006.]