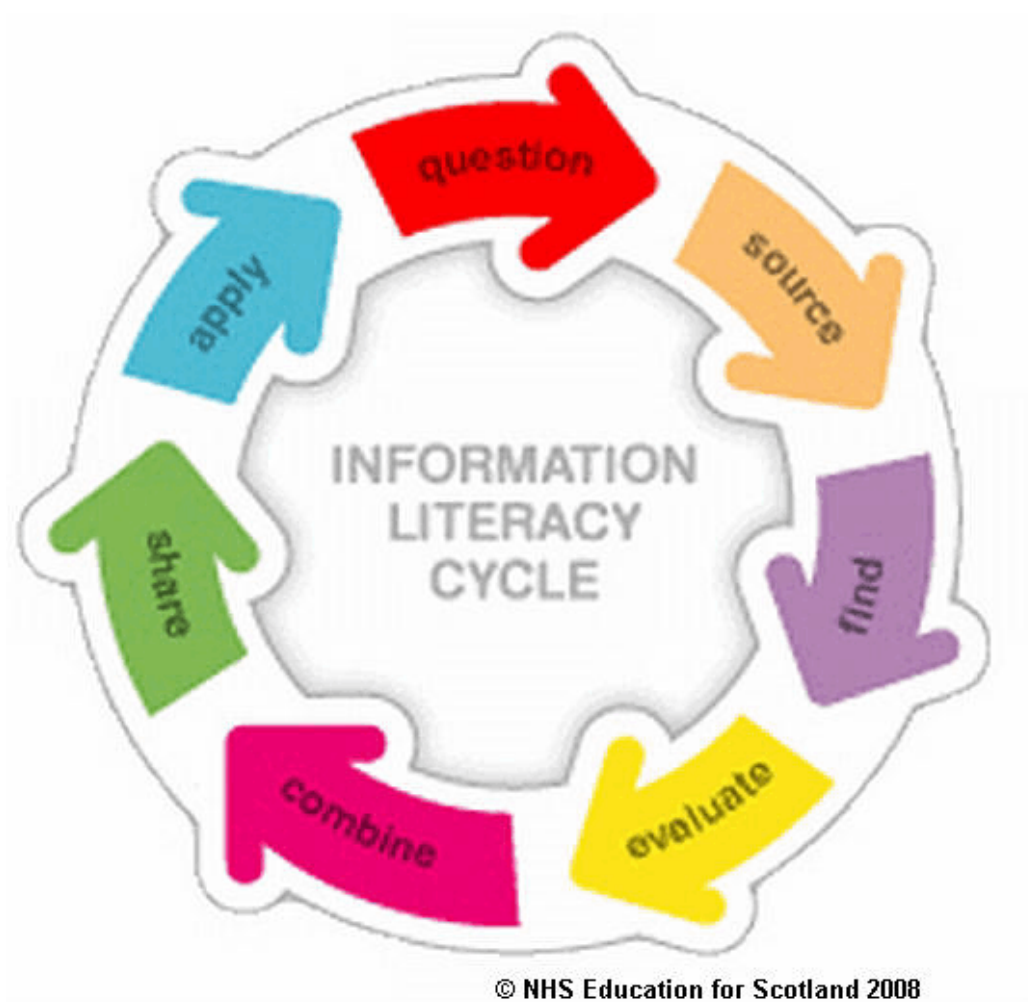


# Better informed for better health and better care

## *A framework to support improved information use for staff and patients*

*Please note that this document is not yet in final form. It is expected to evolve and to link with the additional resources, models and tools identified and/or developed during pilot trials of the Framework's application.*



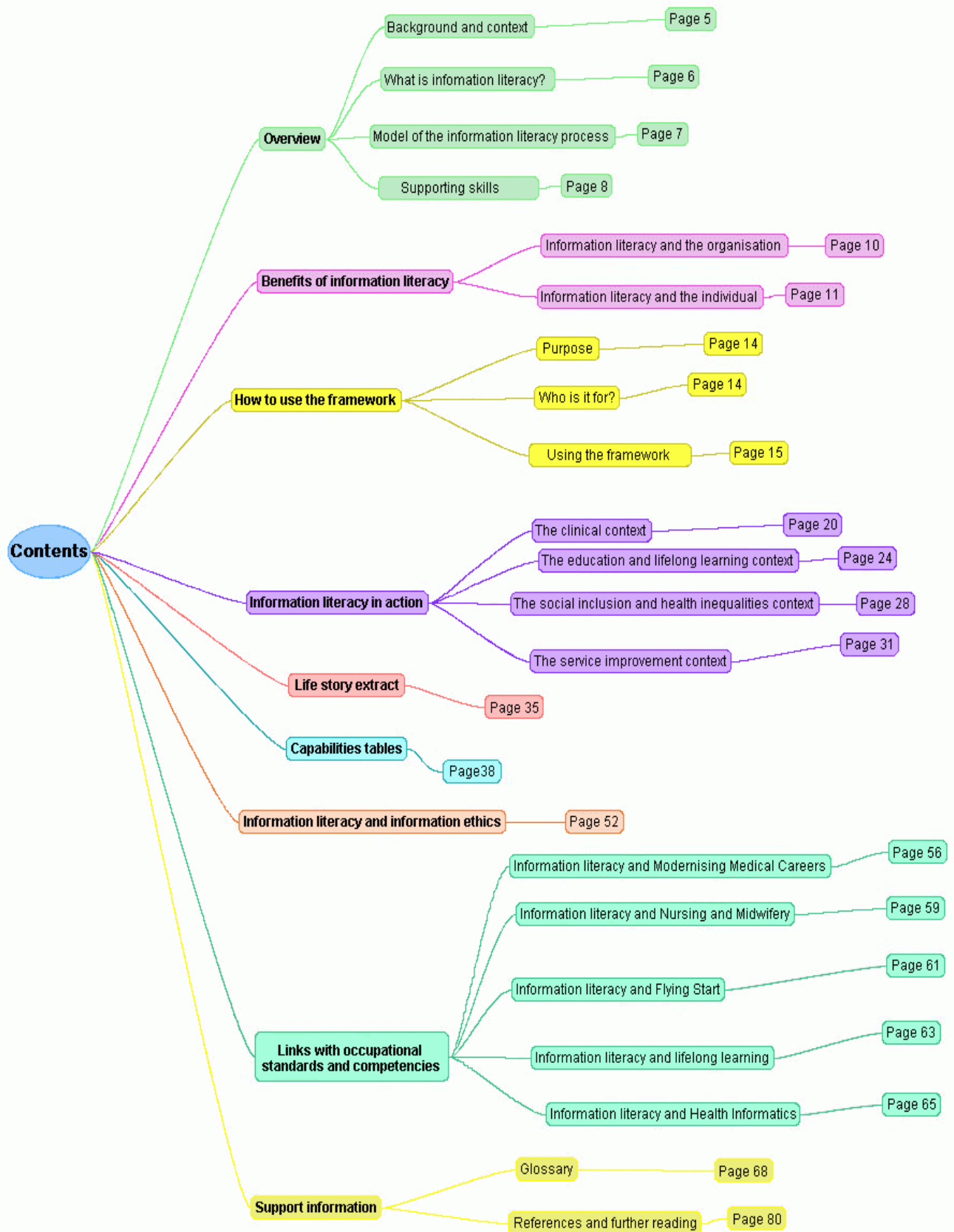
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# Overview

## Background and context

*As a general rule, the most successful man in life is the man who has the best information.* Benjamin Disraeli (1804-1881)

On first sight, the quotation makes perfect sense. However, on further reflection, it becomes clear that it is not just information, nor the most information that makes for success but the **best** information.

Although the quotation dates from the 19<sup>th</sup> century, the connection has been made between 'good' information and success. It has taken some time for the link to be acknowledged in the 20<sup>th</sup> and 21<sup>st</sup> centuries. So, how do you decide what is the best information or even good information? This is just one of the attributes of an information literate person : s/he assesses the quality of information in order to decide whether it is relevant, valid, reliable and accurate for the purposes to which it is to be put. However, simply **having** the best information leads neither to success nor anywhere else. Having, sharing and **using** the information appropriately is what makes for success. All of these activities form the basic skills and abilities of an information literate person. In addition, an information literate individual is a critical thinker and problem solver who has learned to make informed decisions and who has the ability to adopt and adapt, create and recreate, contextualise and recontextualise. (Lloyd, 2003).

It follows that an organisation employing and actively supporting information literacy throughout the workforce is likely to be more efficient than one whose workers do not have these skills and abilities.

This framework aims to contribute to the achievement of the goals of The Scottish Government's action plan **Better Health, Better Care** (The Scottish Government, 2007). The Plan acknowledges the need for the confident and competent use of information, in order to meet the Government's aspiration for a healthier Scotland. **Better Health, Better Care** states : *Health and social care professionals need quick access to information and to have the skills to use the knowledge appropriately.*

However, these aims are not limited to NHS employees. There is a commitment in the document to create a National Health Information and Support Service which will ensure that patients and public *get support to find the information they need ; understand the information provided and develop the skills and confidence to use it effectively in order to become an active partner in their own care.*

The idea of a National Health Information and Support Service, supported by the development of information literacy among staff, patients and carers, originates in the coordinated national strategy for NHS Scotland Knowledge Services (**Enabling Partnerships : Sharing knowledge to improve patient care in NHSScotland**, NES, 2008). The document argues that *Information and knowledge are powerful tools that can be used to strengthen patient care and improve people's health.* The strategy goes on to describe various ways to help ensure that *in future patients, the public, healthcare staff and partner agencies have access to the information they need, when they need it.* Information literacy is also acknowledged as being *key to empowering individuals and communities to take more control over their health and wellbeing and life circumstances.*

The importance of information literacy has been acknowledged by organisations and governments worldwide :

UNESCO's *Prague Declaration*, (2003) emphasised the importance of information literacy for all, from nations to individuals. One of the basic principles of the document is that : *The creation of an Information Society is key to social, cultural and economic development of nations and communities, institutions and individuals in the 21st century and beyond.*

In 2006, the European Parliament identified 'digital competence' and 'learning to learn' as two of eight key competencies 'necessary for personal fulfilment and development, social inclusion, active citizenship and employment'. Digital competence is described as the confident and critical use of information age technology, including basic skills in information technology. Learning to learn is regarded as the ability to pursue and organise one's own learning, either individually or in groups, in accordance with one's own needs, and awareness of methods and opportunities. The acquisition of these competencies is regarded by the European Parliament as essential for every individual, in order to *provide added value for the labour market, social cohesion and active citizenship by offering flexibility and adaptability, satisfaction and motivation.*

Information literacy contributes towards organisational efficiency by :

ensuring that a sharable and accessible information pool exists,

containing only relevant and accurate documentation ;

identifying and eliminating duplication within the information pool,  
thus reducing overall storage requirements ;

empowering individuals with the knowledge, ability and tools to identify  
needed information from the shared pool and other sources ;

reducing information search time and thus enhancing productivity,  
efficiency and effectiveness ;

increasing consistency of organisational responses, as these are based  
on information drawn from the shared pool.

The purpose of this Framework is to encourage and support the development and enhancement of “*the information finding and evaluation skills, values and attitudes of the people involved in improving health and caring for patients*” (NES, 2008).

It is intended for NHS Scotland staff, partner organisations, patients, carers and members of the public who wish to further their information literacy capabilities and consequently, health improvement and better service delivery.

*The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn.*

**Alvin Toffler**

## **What is information literacy?**

If “information literacy” is so important, what precisely is meant by the term?

The following quotations are two of the most often cited definitions of the term *Information Literacy* :

*Information literacy is usually described as the ability to locate, manage and use information effectively for a range of purposes. As such it is an important ‘generic skill’ which allows people to engage in effective decision-making, problem solving and research. It also enables them to take responsibility for their own continued learning in areas of personal or professional interest.<sup>1</sup>*

*To be information literate, an individual must recognise when information is needed and have the ability to locate, evaluate and use effectively the information needed... Ultimately information literate people are those who have learned how to learn. They know how to learn because they know how information is organised, how to find information, and how to use information in such a way that others can learn from them.<sup>2</sup>*

The Steering Group supporting this Framework has developed the following working definition of the term :

*An information literate person can recognise an information need and is able to apply the set of transferable skills, attitudes and behaviours needed to find, retrieve, assess, manage and apply information in any situation, throughout life.*

<sup>1</sup> Bruce, Christine (1997), *Seven Faces of Information Literacy in Higher Education*, Queensland University of Technology, at URL <http://www.perceptualworlds.fit.qut.edu.au>.

<sup>2</sup> American Library Association (1989), *Presidential Committee on Information Literacy*, at URL <http://www.ala.org/ala/acrl/acrlpubs/whitepapers/presidential.htm>

*Information literacy supports individual and organisational learning, creativity and innovation and contributes to improved healthcare delivery through a continuously evolving, reliable information base.*

The Steering Group's definition of what is meant by "information literacy" is the one used in this document.

### **Model of the information literacy process**

Recognising the critical importance of information literacy to health in Scotland, NES Knowledge Services Group has begun the development of a variety of tools and resources to assist staff, partner organisations, patients, carers and members of the public on their journey towards information literacy. The first of these is the seven-stage model shown below which illustrates the process of applying information literacy skills.



The image is intended to display seven basic stages of the information literacy process :

**Question** : what do you need to know? Defining the question related to your information need is vital to finding the right solution : you must ask the right question to get the right answer. [Acknowledge and articulate an information need and formulate a question]

**Source** : where can you look for the information? Your sources will include people as well as written and electronic materials. Perhaps there is someone you know or can contact who would be able to supply the information you need? [Identify potential sources which may provide the needed information.]

**Find** : which words do you use in your search? At the *question* stage you will have identified the key words in your question and are now ready to use them to search the sources you have selected. [Apply the question to the selected source(s) to find the needed information]

**Evaluate** : have you found 'good' information? Look closely at the information your search has retrieved to check whether your question has been answered. Do you believe the information? [Assess the value and reliability of retrieved information]

**Combine** : have you learned something new and useful from your search? Blend this with what you knew before searching. [Add valid retrieved information to the existing knowledge base]



- Share :** would other people in your work-group/family find your new information useful or interesting? How would you share it with them? [Communicate the information to others]
- Apply :** how will you use the information? Will this help improve management or treatment of your condition? Improve your work practices? Help you write a new policy document? [Use information in everyday work activities]

The capabilities tables which appear later in the document are based around this model. They use **illustrative examples** of the types of skills, abilities, attitudes, behaviours, personal facilitators and organisational climate which might be expected at each stage of the process.

### **Supporting competencies**

When the phrase *information literacy* is used, several subsidiary skills are implied. Competence in the basic literacies of reading, writing and numeracy is always assumed. A reasonable level of ability and confidence with IT is usually also expected. Thus, the essential underpinnings of "information literacy", are :

- a reasonable level of ability with words – literacy ;
- with numbers – numeracy ;
- and, with technology - IT literacy.

A person with these skills and abilities has the basic tools necessary to begin developing information literacy.

Therefore the term is used to encompass abilities in literacy and computing, together with some level of proficiency in identifying, retrieving, evaluating, sharing and applying "information" in a practical context. *Information* in this instance is intended to describe material which is available in any format : audio, visual, electronic, book, journal article or other written document, advice received from another person or, an exchange of views between two or more people.



# **Benefits of information literacy**

## Information literacy and the organisation

Without information one cannot have knowledge and similarly, without information literacy, one cannot have knowledge management (Goad, 2002). To achieve the aim of a knowledge-competent workforce (NHS Education for Scotland, 2006), it is first necessary for that workforce to be information literate.

The drive towards information literacy is based partly on the shared perception and acceptance of information resources as an organisational asset, equally as valuable as any physical asset (such as computers or medical equipment). As such, this asset needs to be used efficiently and effectively in order for the organisation to derive benefit from it (Burk and Horton, 1988). The more skilled and confident information users become, the greater is the benefit achieved by the organisation.

As already indicated, abilities with computer-related tools are *supporting* skills for information literacy. The facility to operate computer equipment and to make use of supplied software does not necessarily indicate that a person has the additional abilities required to find, assess, manage and use information efficiently. In many cases, people continue to experience information overload and anxiety, disinformation or misinformation and may have insufficient time or inadequate skills to locate or share identified information. (Kirton and Barham, 2005).

A common reaction has been to invest in more technology or to throw more information at the problem but this can aggravate rather than resolve the problem. (Moody and Walsh, 1999). A more satisfactory solution is to enable and support people in coping with the information which already exists.

Information literacy incorporates understanding of, and respect for sensitive, unpublished information as well as an appreciation of the value of publicly available, factual information. Its development flourishes in a culture of open, equitable access to information resources.

An information literate workforce able to locate, evaluate and use information for the benefit of the organisation is key to the success of many organisations (Lloyd 2003 ; Oman 2001 ; O'Sullivan 2002). This is particularly true of NHSScotland, since the organisation aims to operate on evidence based practice. The intention behind this goal is to ensure that decisions, advice and activities are based on considerations of the best available research evidence, best practice examples, most current information and the experience and expertise of those involved. Thus information literacy should not be regarded simply as the "program of the month" (Lloyd) but rather as a vital set of abilities and skills which can improve the overall efficiency of any organisation.

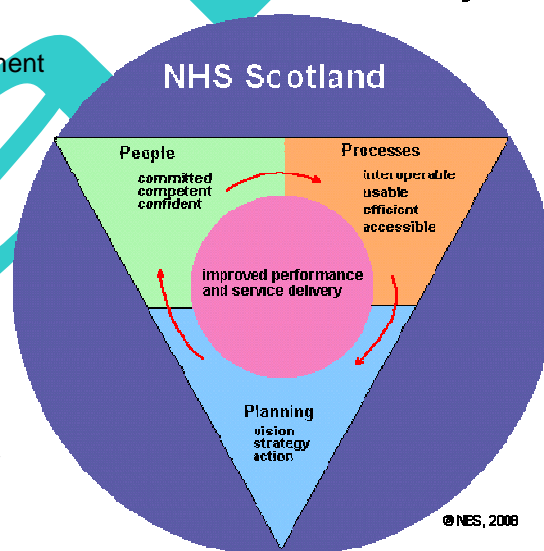
One consequence of widespread information literacy throughout the organisation is the increasingly efficient arrangement and description of information resources. This, in turn, results in a more orderly information pool which assists decision-making and business activity. When shared across the organisation, this enables all employees to identify and access needed information much more quickly than otherwise would be the case (State Records Authority, NSW, 2004). This reduces information search-time and ensures that staff operate from a shared knowledge base.

This shared information can also be used to develop new knowledge and insights which may result, after analysis and reflection, in challenges to traditional workplace and professional practices and the development of improved procedures (Bruce, 2007). This, in turn, leads to the development of service improvements based on evidence and best practice.

In order to support the acquisition and development of information literacy, the organisational climate should be supportive and encouraging to individuals trying out new ideas and new ways of doing things in order to learn. Mistakes will be tolerated and expected as the learning takes place since new ideas and processes do not always work first time. (Brefi Group, 2007).

**Enabling Partnerships** (NES, 2008) sees information literacy as being *at the heart of the shared understanding and empathy that underpins the patient-professional relationship*. As it strives to operate as a learning organisation (**Learning Together**, 1999), NHS Scotland should be well-placed to support staff, partners in other agencies, patients, carers and members of the public in their self-development activities.

### Effects of information literacy



NHS Scotland is committed to developing its structure, culture and processes to assist the learning of the whole organisation as well as of the individuals associated with it.

In order to support and encourage information literacy, the organisation should share some or all of the following characteristics :

- believes in and expects continuous learning and improvement ;
- recognises that there are many ways to learn and grow and provides opportunities to do so ;
- opens itself to new ideas and is prepared to adapt to them ;
- promotes creativity and innovation as common events ;
- allows people to make mistakes and helps individuals and the organisation to learn from these ;
- thinks in terms of the total system ;
- practises and encourages widespread collaboration at all levels ;
- believes in and promotes the concepts of competency and mastery of core competencies of both the organisation and the individual – ie. performance at the highest level ;
- orientates itself toward teamwork with teams the norm and people functioning as team players ;
- facilitates the acquisition of new skills before they're needed ;
- spells out organisational mission and goals clearly and ensures that they are shared by all who work in the organisation – and all actions are based on them. (Goad, 2002)

In the work situation, it is important that sufficient time is allowed for self-directed exploration and learning. Supervisors also need to appreciate the challenges faced by the novice, perhaps through recall of their own learning experiences.

An information literate NHS Scotland, *able to develop and use information and technology to support faster access to diagnosis and care* will be in a better position to deliver the objectives of the Service Transformation Programme (**Better Health, Better Care : Action Plan**) for *quicker access to services whilst improving patient safety and reducing health care inequalities*.

### **Information literacy and the individual**

The arrival of the so-called Information Age means improved access for everybody, to millions of information resources. However, easy access and abundant resources do not mean that information users are retrieving 'good' information. Often, the retrieval process results in feelings of being overwhelmed by an avalanche of information and little idea of how to separate what is needed from what is irrelevant. The ability to focus an information search and to evaluate and select appropriate results requires, amongst other things, self-awareness, practice and experience – in short, information literacy.

The steps of the information literacy process are applied in every walk of life. They are as relevant in social situations, such as finding details of a forthcoming broadcast of a sports match or identifying the location of the nearest NHS dentist, as in work activities. In order to become successful and efficient in information use, each of us needs to apply information literacy with conscious awareness rather than processing through the phases with little planning or thought. We need to be aware that effective information use recognises and exploits the *interdependence amongst colleagues and information and communication technologies appropriate to the needs of the group*. (Bruce, 2007)

Generally, the education sector worldwide has been aware of these needs for decades and has redesigned academic courses or supplemented these with library-based training to support students in acquiring and

developing competence in information literacy. However, employers have tended to be somewhat slower in recognising the need for, and value of, information literacy among the workforce.

The Scottish Government is currently encouraging the spread of information literacy and participation in lifelong learning throughout the population in its **Skills for Scotland** strategies. These are intended to support the development of a 'smarter Scotland'. In its publication **Skills for Scotland: A Lifelong Skills Strategy** the Government aspires to a country *Where employers improve productivity by investing in their own staff and are able to access a skilled workforce that is increasingly literate and numerate with good ICT and problem solving skills*. As noted above, **Better Health, Better Care** sees information literacy applied not only to NHS Scotland staff but also to partner organisations, patients, carers and members of the public as one way of achieving a "healthier Scotland".

Among other skills and abilities, information literacy uses and develops :

reasoning, reflective thought and intellectual flexibility both to gather information and to understand the relationships between new information and improved practice ;

the ability to objectively assess and critically appraise retrieved information ;

personal awareness of the existing information pool ;

critical thinking and problem solving ;

improved ability to influence others and negotiate from the basis of current learning.

Information literacy has gained recognition by governments, business and other organisations as an essential feature of good citizenship, competent and confident employees and more confident and creative individuals. It is a necessary accomplishment required by everyone to be able to find and select from the millions of articles available, the information needed to make reliable decisions, to carry out research, for study purposes or to participate fully in their own healthcare.

For patients, information literacy should mean a better understanding of their own health care needs, better-informed and more confident discussion with their healthcare practitioners and shared decision-making on the treatment or management of their own health.

For healthcare practitioners, information literacy should mean enhanced abilities in and opportunities for maintaining current awareness, improved information sharing with colleagues and patients and, informed decision-making.

# Using this framework



## Purpose

The document is intended as a tool and reference which provides support to NHS Scotland staff, partner organisations, patients, carers and members of the public in acquiring and developing information literacy to support care, health and well-being.

It does this by providing ;

- a working definition of the term information literacy ;
- a simple model of the information literacy cycle ;
- a selection of scenarios demonstrating explicitly some of the ways in which information literacy may be applied in a variety of healthcare situations (Appendix/Page ?) ;
- a series of tables offering examples of some of the typical attitudes, behaviours and skills experienced in the ongoing journey of information literacy development (Appendix/Page ?) ;
- a series of tables linking information literacy with several occupational standards and competencies.

\* The scenarios in the **Information Literacy in Action** section of the document are based around four different contexts : clinical ; education and lifelong learning ; social inclusion and health inequalities ; and, service improvement.

## Who is it for?

### Patients, carers and members of the public

Information literacy supports patients, carers and members of the public to participate more effectively as partners in their own healthcare and in taking control of their own health and well-being. The explanations and demonstrations included in the document are intended to show how information literacy can help in forming and asking focussed questions, in finding needed information from healthcare professionals or written and electronic sources, and in using retrieved information to make decisions about the treatment and management of health conditions.

### NHS Scotland and partner organisations staff

Information literacy supports staff in locating, evaluating and using information in their everyday work. The intention is to ensure that decisions, advice and activities proceed from considerations of the best available research evidence, best practice examples and most current information.

### Healthcare practitioners

Information literacy enables healthcare practitioners to maintain the currency of their professional information and practice by supporting them in locating and using the latest evidence and information from research and best practice. It also encourages information sharing so that new knowledge is communicated throughout networks of colleagues and is shared with patients.

### Educators and learners

Information literacy is a way of learning how to learn which supports all educational activities. Information literacy skills and abilities support the development of critical thinking and problem solving and encourage innovation and creativity. An information literate person has broad set of transferable skills, abilities and attitudes which can be applied throughout life.

### Service Managers

Information literacy can help the service manager to analyse and reflect on current service delivery practices and procedures and to implement service improvements based on evidence and best practice.

### Organisations

Information literacy incorporates understanding and respect for information arising from personal experience and expertise as well as factual information based on research. An information literate workforce able to locate, evaluate and use information for the benefit of the organisation is key to the success of many

organisations (Lloyd 2003 ; Oman 2001 ; O'Sullivan 2002). Therefore, information literacy is critically important to NHS Scotland as the organisation aims for a culture of evidence-based practice and to function as a learning organisation which recognises the knowledge of its staff as one of its most important assets.

### ***How to use the framework***

The simple model of the information literacy cycle describes seven individual steps in the process. The model illustrates a pathway from formulating an initial search question through to applying retrieved information in everyday activities. This model may seem overly simplistic to those familiar with information literacy as their experience means the process is applied without conscious reference to a defined framework. However, it will confirm their current practice. At the same time, it will provide support to those who are less familiar with the process.

The use of the model of the information literacy cycle, together with the capabilities tables and the sample scenarios, are designed to demonstrate the practical application of the steps of the process. The document is structured to enable readers either to read from start to finish, or to pass over the introductory and explanatory text and move directly to the contextual example(s) most relevant to their current information need or work area.

Each contextual example included in the **Information literacy in action** section is intended as a mini, stand-alone tutorial in how information literacy skills and abilities might be applied to resolve an information "problem". These can be used in self-directed learning or may be expanded and re-focussed to form a starting-point for group-based training sessions.

The contextual examples are followed by a series of tables intended to provide illustrative examples of the capabilities which might be expected at each stage of the information literacy process. There is also a set of tables showing the links between information literacy and selected occupational standards and competencies.

The final sections of the document incorporate a glossary and a list of references used during the construction of the framework. The references may provide useful "further reading" for those who wish to learn more about the topic and its various applications.

It is recommended that the cycle model is used in combination with the descriptions of capabilities in order to support continuous improvement in information literacy.





# Information Literacy in Action

*Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young. The greatest thing in life is to keep your mind young.*

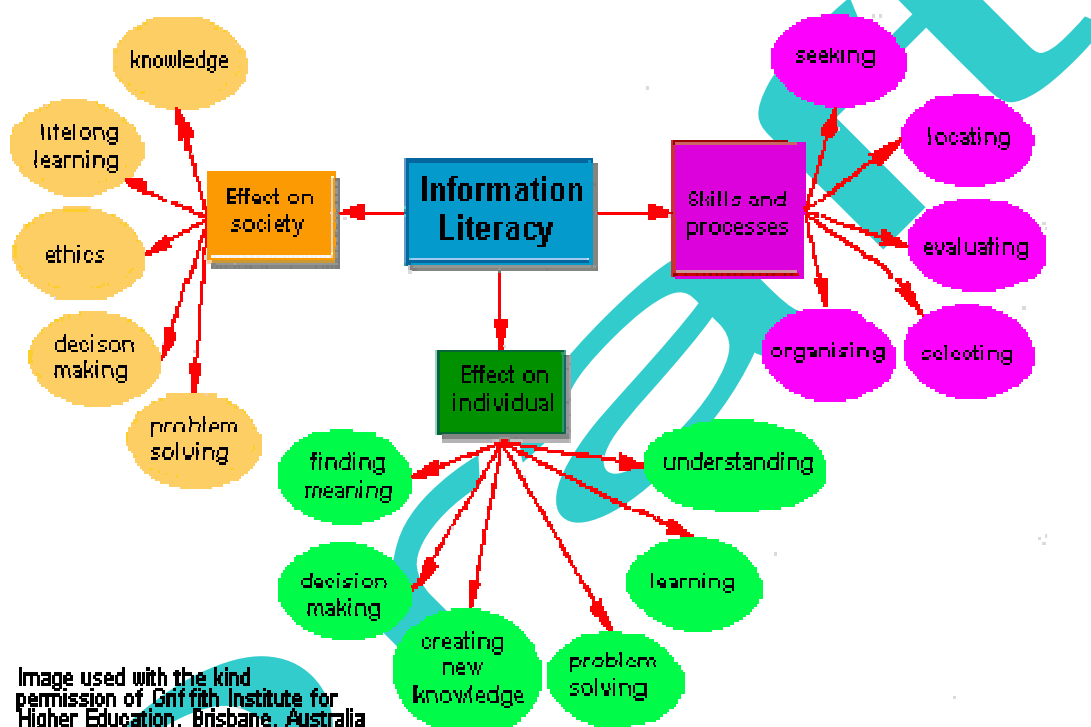
**Henry Ford**

## Information literacy in action

This section contains context-specific demonstrations of the application of information literacy. Each example is intended as a stand-alone, mini tutorial in how to apply information literacy skills and abilities to resolve an information need. They can be used in self-directed learning or may be expanded and re-focussed to form a starting-point for group-based training sessions.

The diagram below shows the consequences of information literacy for the individual and for society generally. The pink bubbles show the skills and processes acquired, applied and developed through information literacy. Also displayed are several of the abilities gained by the individual through the development and application of information literacy skills and processes (green bubbles) and some of the effects on society of an information literate population (tan bubbles).

**Results of the application and development of information literacy**



In each scenario in this section, the related phase of the information literacy cycle is identified (in coloured text) within the “story”. This is followed by a commentary describing the actions taken and is completed with a guided reflection aimed at encouraging the reader to consider possible additional or alternative activities. Johari window diagrams are used to illustrate the range of information sources available for consultation. These are sources **available** to the information-seeker and it is likely that only a selection of these will be used in a search for information.

All of the following demonstrations are based on the structure of the example below, which illustrates briefly the resolution of a recognised information need.

## Sample Scenario

### Management of Jill's high cholesterol levels

Jill has problems with high cholesterol levels and was prescribed a 10mg statin by her GP. She has been taking the medication for seven years and is concerned about whether this treatment is still appropriate or the best available for her condition [QUESTION]. Jill decides to check with a variety of sources to update her information and understanding of possible developments in the treatment of high cholesterol over the past few years. These include : her own GP, Google, the NHS24 website, a friend who takes 20mg of the drug and her husband who has also been prescribed 20mg [SOURCE]. She collects a range of information which she reads, discusses with friends and then reflects on [FIND, EVALUATE, COMBINE]. She decides to make an appointment with her GP and to request a review of her treatment as she is now doubtful that 10mg is appropriate to her condition [SHARE, APPLY].

### Commentary

Jill begins at the **question stage** with : *Is 10mg statin daily the best treatment for my high cholesterol?*



Jill's application of the information literacy process	
<b>Question</b>	Is 10mg statin daily the best treatment for my high cholesterol?
<b>Source</b>	Family, friends, NHS24 website
<b>Find</b>	Information from family and friends, articles from NHS24, Internet
<b>Evaluate</b>	Retain only reliable information
<b>Combine</b>	Compare recovered information with existing knowledge
<b>Share</b>	Discuss possible treatment(s) with family, friends, GP
<b>Apply</b>	Review current treatment with GP and introduce a new management/treatment plan if necessary

To find the information she needs, Jill must be aware of her information environment, in other words, the information sources available to her. The following image is intended to illustrate this.

From Jill's point of view, the information in both the **open area** (represented by the tan square) and in the **hidden area** (represented by the lilac square) is obvious. The **open area** includes known sources of information available to everyone such as medical texts, the information leaflet enclosed with her medication, and electronic resources such as the Internet and databases. Both Jill and the "others" who might be involved in her treatment are aware of and able to access this information.

Jill is also able to draw on information in the **hidden area** (lilac square) as this covers her own experiences. The information here consists of everything Jill has learned about high cholesterol, her medication and treatment and the emotional effects of these. This is stored information - in Jill's head. The information is available to the others involved only with Jill's co-operation.

The information in the **blind area** (blue square) is about high cholesterol and its treatment, from the point of view of the "others" involved with Jill. This includes information inside their heads and the physical information resources to which they have access. Therefore this is unavailable to Jill and accessible by the "others". This information becomes available and meaningful to Jill only with their help.

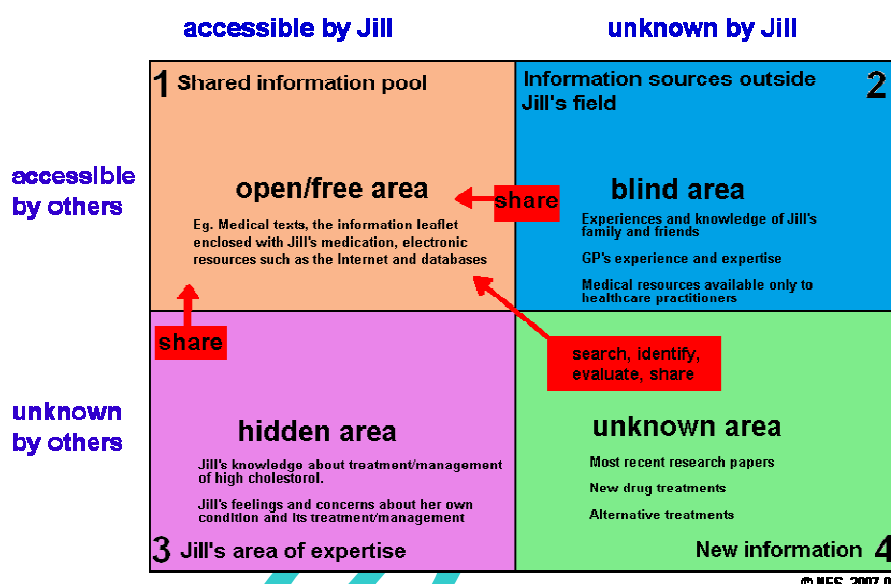
The final square, labelled **unknown area** and coloured green, represents information on the subject of which none of those involved has any previous knowledge. This might include the most recent research papers, the newest drug developments and alternative treatments.

Jill had decided that she wishes to be actively involved in her own health management. In order to be able to participate fully, she knew that she needed to learn more about the things that worry her before discussing these with her doctor. By applying the information literacy process, Jill has learned more about her own condition and its possible treatments and management regimes. Now, when she sees her GP, Jill is more confident about contributing her knowledge and understanding to their discussion and feels more involved in the decisions about her treatment.

The Johari window diagram can be applied in many different contexts, both social and work-related, and can help the reader to become aware of the current information environment from the points of view of all of those involved. This can also help in identifying possible "information sources" among those other people.

Further, expanded context-specific demonstrations of the application of the information literacy process follow.

### The availability of information from Jill's point of view [that is, the information **SOURCES** available for her to consult]



## The clinical context

NHSScotland depends on evidence-based practice. This applies information literacy to combine and use information from multiple sources. Best quality evidence from research has to be interpreted in the context of the needs, feelings and preferences of the individual patient and the experience and expertise of the professionals involved in decisions.

"Evidence-based practice (EBP) is an approach to health care wherein health professionals use the best evidence possible, i.e. the most appropriate information available, to make clinical decisions for individual patients. EBP values, enhances and builds on clinical expertise, knowledge of disease mechanisms, and pathophysiology. It involves complex and conscientious decision-making based not only on the available evidence but also on patient characteristics, situations, and preferences. It recognizes that health care is individualised and ever changing and involves uncertainties and probabilities. Ultimately EBP is the formalization of the care process that the best clinicians have practiced for generations".

**Source :** McKibbin, KA (1998), *Evidence based practice*. Bulletin of the Medical Library Association 86 (3): 396-401.

## Peter maintains his current awareness

Peter is a GP who wants to find more information about the effects of hormone replacement therapy (HRT) on patients with breast cancer [QUESTION]. He has limited time available for reading and decides to consult the Cochrane Library and the eLibrary (for guidelines and other pre-evaluated evidence-based material) [SOURCE]. He identifies several possible information resources and downloads a few pdf files and journal articles from the NHS eLibrary [FIND]. As he reads through these, Peter discards those discussing treatments not available in the UK [EVALUATE]. He discovers that much of the new material disputes previously accepted knowledge and recommended treatments [EVALUATE, COMBINE]. Peter now feels confident that he is able to give his patients the most up-to-date information available [SHARE, APPLY].

## Commentary

Peter begins at the **question stage** with : *What is the effect of hormone replacement therapy on patients with breast cancer?*



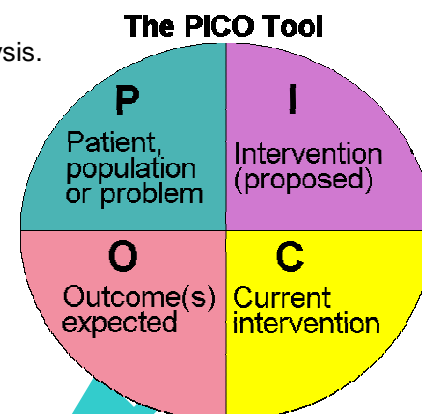
## Peter's application of the information literacy process

<b>Question</b>	What is the effect of hormone replacement therapy on patients with breast cancer?
<b>Source</b>	Cochrane Library, eLibrary for guidelines and other pre-evaluated evidence-based material
<b>Find</b>	NICE Guideline, journal articles
<b>Evaluate</b>	Retain only reliable information
<b>Combine</b>	Compare recovered information with existing knowledge
<b>Share</b>	Discuss possible developments in treatment(s) with colleagues, patients
<b>Apply</b>	Use selected/agreed treatment/management options

In forming his question, Peter might use PICO analysis.

### Formulating a question using PICO

One of the tools often used in clinical practice/information literacy is PICO analysis. This method supports the identification of the key terms needed to conduct an information search. The **P** of the acronym represents the patient, population or problem under study. Patient refers to the person presenting the problem, or more simply, to the problem itself. Population is the group to whom the patient belongs. (The word "problem" is used here to encompass the medical condition and other issues which need to be addressed. "Problem" is used because it fits the analysis acronym). The **I** refers to an intervention proposed in response to the problem. This is often a drug or surgical procedure, but it can take many forms. **C** is the comparison or current intervention/treatment. The **O** refers to the anticipated outcome(s) of the proposed treatment or management of the problem or condition.

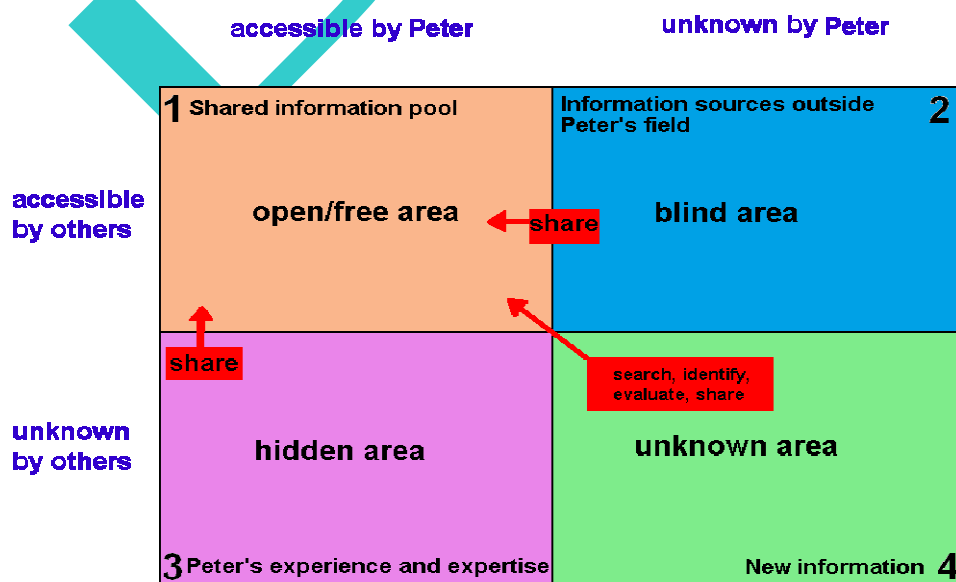


Using the PICO analysis to identify the terms Peter needs to conduct his search gives:

<b>P</b> atient, population, problem	Women with breast cancer
<b>I</b> ntervention (proposed)	Hormone replacement therapy
<b>C</b> urrent (or comparison) intervention	No treatment
<b>O</b> utcome(s) expected	Improved, better informed treatment of patients in Peter's care

To find the information he needs, Peter must be aware of his information environment, in other words, the information sources available to him. The following image is one way to illustrate this.

### The availability of information from Peter's point of view



The **open area** represents freely available, published information resources about the menopause, including emotive newspaper coverage about the effects of HRT.

The **hidden area** is Peter's information base, incorporating his experience, expertise and including his knowledge about the menopause, HRT and breast cancer.

The **blind area** contains information sources of whose

existence Peter is aware but whose contents lie outside his field of experience and expertise. This would include colleagues who specialise in the area under enquiry.

The **unknown area** represents new information resources and could include reports on recent research or developments in drug and other therapies.

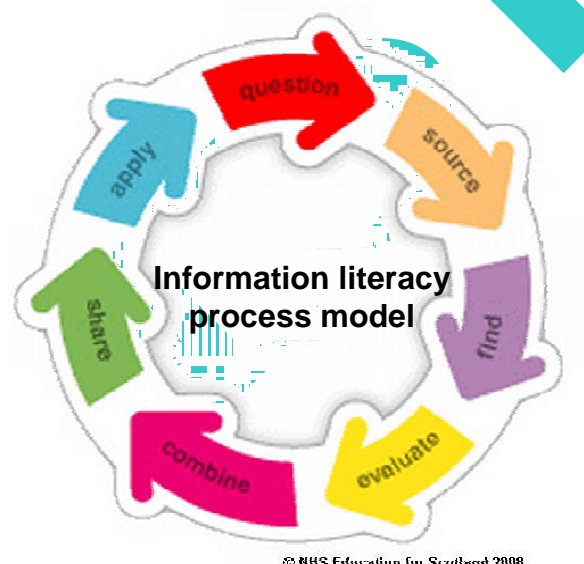
As Peter has limited time for reading and private study, he needs pre-evaluated, and therefore reliable and valid, information so he opts to retrieve articles available through the Cochrane Library and NHS eLibrary.

### Maria learns how to cope better with the menopause

Maria is one of Peter's patients and has recently received treatment for breast cancer. She is now experiencing some of the symptoms of the menopause and would like to speak with Peter about possible ways to manage the condition [QUESTION]. As the discussion proceeds, Maria reveals [SHARE] that as a result of the information contained in the newspaper articles she's read [SOURCE, FIND], she fears the possible adverse effects of a course of HRT. Peter tries to reassure her that while combined HRT has been linked with an increased risk of breast cancer, the risk increasing with extended use, current evidence indicates that oestrogen-only HRT has little or no effect on the risk of breast cancer (Australian Government, 2005) [SHARE]. Maria appreciates Peter's concern and his attempts to reassure her but remains hesitant about this treatment [EVALUATE, COMBINE]. She has read an article in a woman's magazine [SOURCE] about complementary medicines and alternative treatments [FIND] and asks for Peter's recommendations on these [QUESTION, EVALUATE]. While Peter hasn't made a detailed study of these, he is sceptical about how effective they might be. However, as Maria has internet access at home, Peter suggests that the leaflet *Menopause* by Informed Health Online (at URL <http://www.gesundheitsinformation.de/menopause.201.161.en.pdf>) and the information on the websites of NHS Choices, NHS Direct [SOURCE] and available through the e-Library might help [FIND]. He suggests that Maria makes a further appointment when they can discuss possibilities in more detail [EVALUATE, COMBINE, SHARE, APPLY].

### Commentary

Maria begins with the **question** : *What are my options for managing the menopause?*



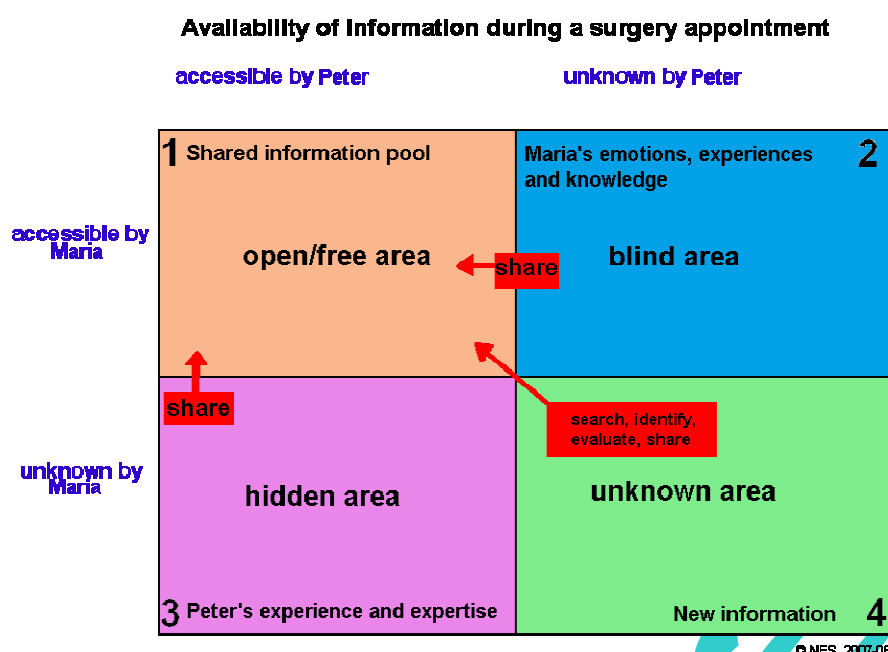
Maria's application of the information literacy process	
<b>Question</b>	What are my options for managing the menopause?  How effective are complementary medicines and alternative treatments?
<b>Source</b>	Newspapers, woman's magazine, Peter
<b>Find</b>	Newspaper and magazine articles, Peter, NHS Choices, NHS Direct
<b>Evaluate</b>	Peter's reassurance and recommendations. Possible alternative strategies
<b>Combine</b>	Previous knowledge, information from articles, Peter's opinions
<b>Share</b>	Maria's fears, Peter's knowledge, NHS website articles
<b>Apply</b>	Access and read web articles, make further appointment



She reads a variety of newspaper articles on the adverse effects of HRT and a magazine article about complementary medicines and alternative treatments. She decides that she needs to identify more reliable sources of information and makes an appointment with her GP (Peter).

Using the diagram below to illustrate the information environment (available sources) during the consultation may provide further insights into the viewpoints of both Maria and Peter.

The **open area** represents freely available information about the menopause, including the recent emotive newspaper coverage about the effects of HRT. Maria and Peter are aware of at least some of this information.



The **hidden area** incorporates Peter's expertise and experience including his knowledge about the menopause, HRT and breast cancer.

The **blind area** is Maria's information base and includes what she has learned about menopause, HRT and breast cancer. The **blind area** also contains Maria's fears, wishes, feelings and thoughts about the treatments she might be offered.

The **unknown area** of the diagram represents information which is new to both Peter and Maria and

would include information about complementary therapies.

### Reflection

Are there other sources of pre-evaluated information Peter might use?

Which sources are 'best' and why?

How many articles (or how much information) would Peter collect before seriously reconsidering his management and treatment of menopausal patients?

If, after further reading, Maria favours an alternative therapy, what advice might Peter offer and how might he persuade her to follow it?

## The education and lifelong learning context

In its publication **Skills for Scotland: A Lifelong Skills Strategy** the Scottish Government aspires to a country ...where employers improve productivity by investing in their own staff and are able to access a skilled workforce that is increasingly literate and numerate with good ICT and problem solving skills.

Information literacy supports lifelong learning as it is *not a pre-requisite to learning ...but rather about actualizing a way of learning...* (Bruce, 2007). Through the application of information literacy, the individual experiences many different types of learning and, in doing so, develops further his/her problem solving, critical thinking, communication and information skills.

This diagram illustrates a variety of types of learning which might be experienced through the process of information literacy.

**Action learning** involves learning by performing a task related to the 'thing' being learned.

**Affective learning** is concerned with the emotional reactions of the learner as something new is learned or practised.

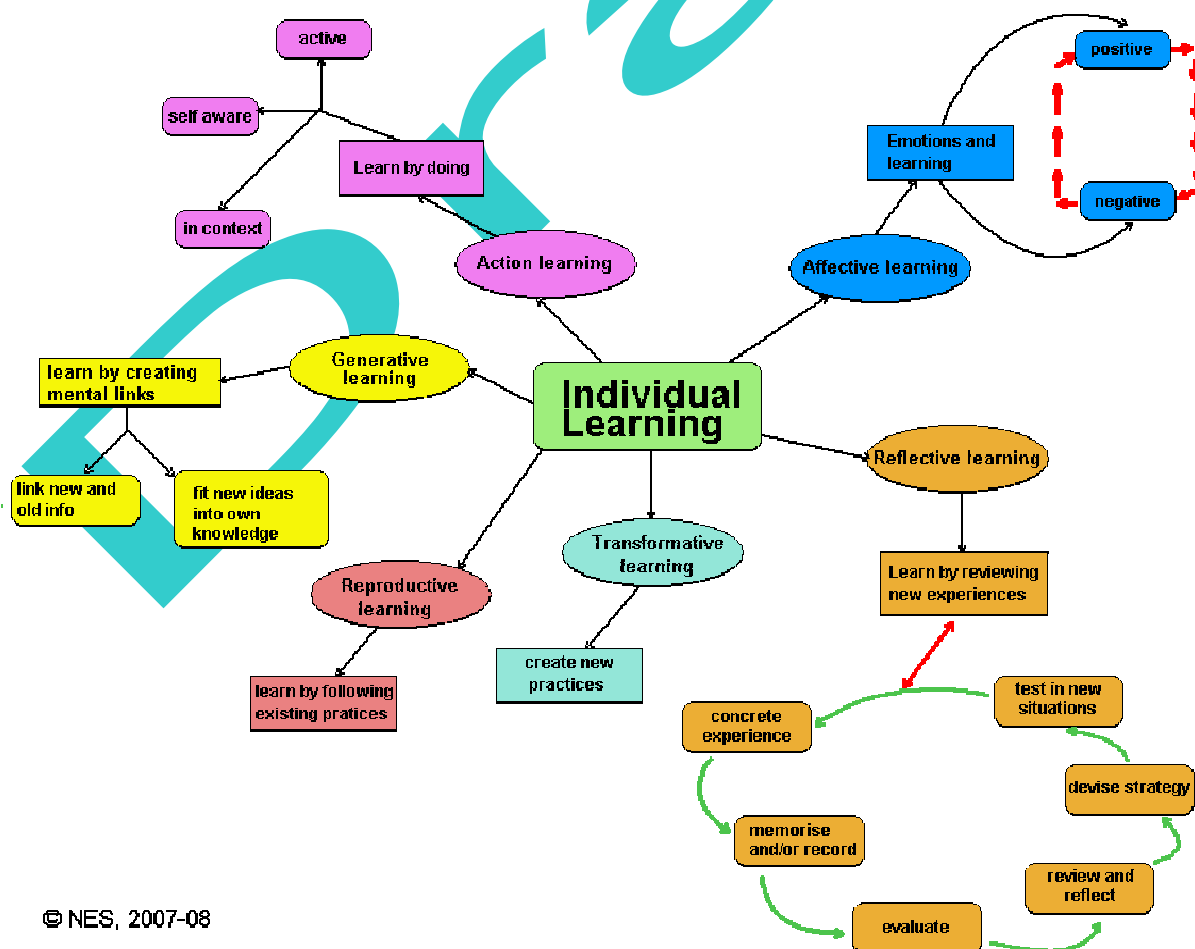
**Reflective learning** involves the learner in assessing their own performance of new activities

**Transformative learning** is related to the process of creating new practices from existing processes.

**Reproductive learning** is similar to learning by rote. The learner repeats existing practices in his/her own activities.

**Generative learning** occurs when the learner is able to link newly obtained information with his/her existing knowledge and understanding

## Examples of types of learning experienced and applied in information literacy



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## Kay identifies supportive training

Kay is a trainer and would like to refresh her tutoring skills. However, since she has a full-time job, she would prefer to update her skills by undertaking an online qualification rather than attending college [QUESTION]. Kay begins by checking the information stored in the filing cabinets [SOURCE] in the office. When she finds nothing suitable, [FIND, EVALUATE] she turns to her more experienced colleagues for help [SOURCE]. Unfortunately, they're not able to help because online training in tutoring was not available when they last undertook their studies. Kay decides that the next sources of information to try are the Internet (using the Google search engine) and the telephone book [SOURCE]. This involves an information search for 'new' information in Kay's selected sources. As she searches, Kay realises that because she would prefer an online course, her search need not be limited to Scottish or UK providers. She includes overseas schools and colleges in her search [EVALUATE]. Kay is able to identify several courses [FIND] but many of those provided by universities require attendance [EVALUATE, COMBINE]. She is fortunate in finding that the Institute of IT Training (IITT) offer online tutoring skills courses and LearnDirect Scotland have several SVQ units which can be completed online. Kay decides on the IITT course and passes the course information on to other colleagues who also have an interest in undertaking similar study [SHARE]. She has learned about a more extensive list of information sources by exploring the resources made available through the search [COMBINE]. Although she rejected the majority of these for her current purpose, she has compiled a list of schools and colleges and filed this with other contact information stored by her work-group [SHARE]. She has also bookmarked a series of establishments which offer online training in a range of subjects [SHARE]. She goes on to complete several course sessions and acquires skills which she is able to apply in her own training presentations [APPLY].

## Commentary

A successful search for information begins with forming a search question. First, think of a question about the information you need and try to identify the 'key' words within the question. If your intended information source is written or electronic, it can be helpful to make a list of words with the same meaning as the key words and to prepare a search statement. If the source is a person, it can be useful to be aware of alternative terms to the words you think are key to your question. This might help in your discussion with your 'source' as his/her background and vocabulary are not necessarily the same as your own.

What does the phrase **key words** or **key terms** mean? Key terms are the most important words in your search question.

Kay's **question** is : *Where can I do an online course in tutoring/presentation skills?*

The main key word in Kay's question is **tutoring**. But Kay is interested in online courses which teach tutoring skills, so a key phrase is **online course**.

One way to list Kay's key words and substitute words which have the same meaning (synonyms), is to draw up a table.

Kay's table might look like this :

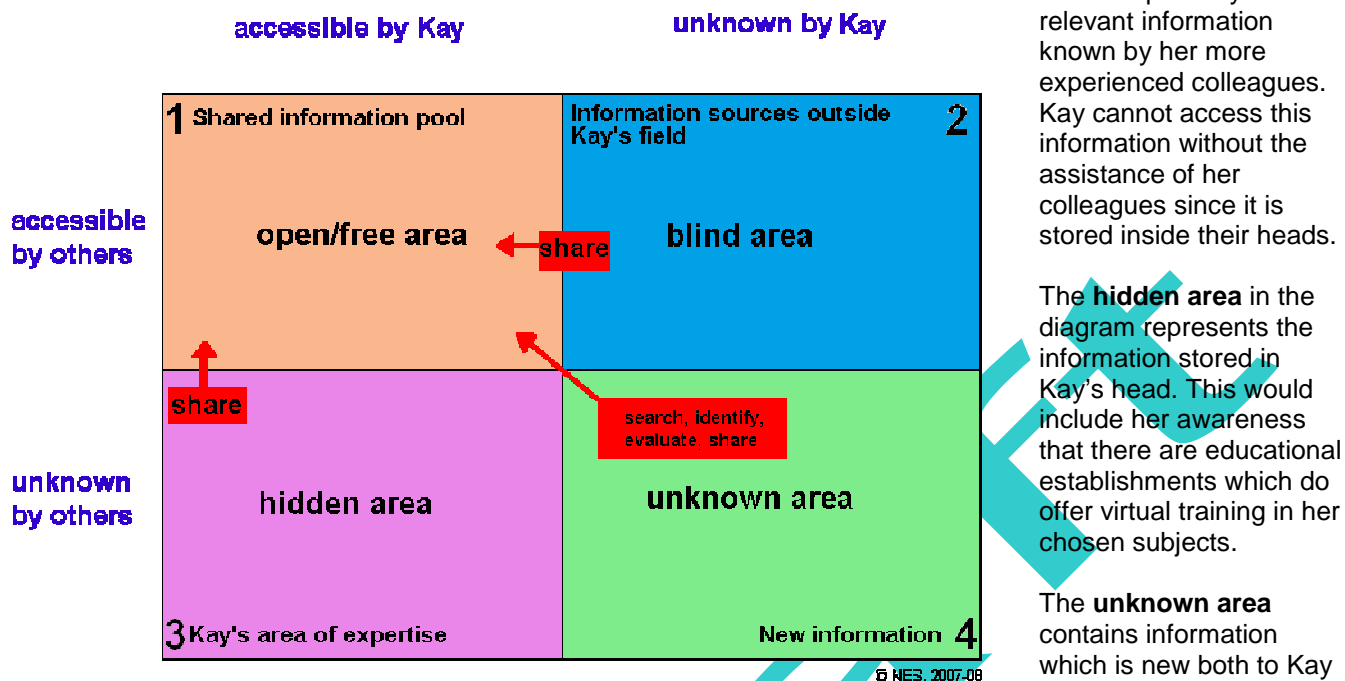
Key word	Substitute word
<b>Tutoring</b>	Training Coaching Instructing Teaching
<b>Online course</b>	Online training Distance learning Virtual training Internet course Online class

A table of words will help if Kay needs to search for information using written or online sources. If she can't find what she needs using the first words she thought of (tutoring and online course), she can use some or all of the other words in the table instead.

The next phase involves identifying possible sources of relevant information. The information sources available to Kay are illustrated in the following diagram.

The **open area** represents information available and known to Kay and all of her colleagues. This includes the files in the filing cabinets and the telephone directory.

### Availability of information from Kay's point of view



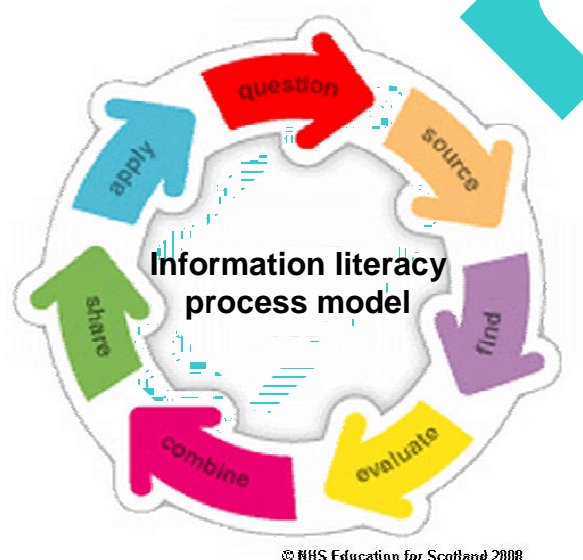
Kay's **blind area** contains possibly relevant information known by her more experienced colleagues. Kay cannot access this information without the assistance of her colleagues since it is stored inside their heads.

The **hidden area** in the diagram represents the information stored in Kay's head. This would include her awareness that there are educational establishments which do offer virtual training in her chosen subjects.

The **unknown area** contains information which is new both to Kay and her colleagues. This

includes the names and locations of the educational establishments which will meet Kay's training needs.

### Kay's progress around the information literacy cycle



### Kay's application of the information literacy process

<b>Question</b>	Where can I do an online course in tutoring/presentation skills?
<b>Source</b>	Files, colleagues, internet, telephone directory
<b>Find</b>	Series of relevant courses
<b>Evaluate</b>	Virtual courses selected
<b>Combine</b>	Selects courses provided by reputable training providers
<b>Share</b>	Bookmarks websites. Compiles a list of schools and colleges and files this with other contact information stored by her work-group
<b>Apply</b>	Undertakes several of the identified courses and uses what she has learned in her own training activities

### Reflection

What actions have helped Kay improve her level of information literacy?

Which of Kay's actions might support the members of her work-group?

Which types of learning has Kay experienced in performing these activities?

Draft

## The social inclusion and health inequalities context

Jane is a nursery school teacher based in a city area facing many social challenges. The local council has recently introduced a programme in this area, aimed at encouraging younger children to eat more fruit and vegetables with the goal of improving nutrition. The programme has been successful, with many children now choosing fruit over crisps and other fatty snacks at break times. Jane would like to introduce activities and displays to support the programme as she is aware of the importance of proper nutrition on educational performance. She wants to find out what sorts of resources might be available [QUESTION]. As her colleagues [SOURCE] are not aware of what might be possible, she decides to speak to her local health promotion/public health library [SOURCE] and to search the Internet [SOURCE] for possible items. With the help of the librarian, Jane is able to locate, among other things [EVALUATE], a re-usable black and white outline poster [FIND] of the “healthy eating plate”. The librarian points out that there may be restrictions on the re-use of the image. However she discovers that, providing the posters display the Crown Copyright statement, they can be used within the nursery. Jane decides to download the image and copyright statement for photocopying and to use it in painting and colouring activities [COMBINE] with the children. She also identifies a full-colour, full-size version of the poster and prints it for display on the notice board [SHARE]. For break times, Jane brings a small selection of unusual fruits for the children to taste [Y].

### Commentary

A successful search for information begins with forming a search question. Jane has to be able to describe to the librarian the sort of information she needs in order to get help to find it. Also, being able to identify the key terms within a question might help Jane to generate alternative words for those terms. Alternatives might be needed where colleagues' specialisms are in different disciplines as are Jane's and the librarian's. .

What does the phrase **key words** or **key terms** mean? Key terms are the most important words in your search question.

Jane's **question** is : *What sorts of items and activities might be available to help young children learn about healthy foods?*

The main key words are **healthy foods** and **children**. An additional key term is **activities**.

One way to list Jane's key words and substitute words which have the same meaning (synonyms), is to draw up a table.

Jane's table might look like this :

Key word	Substitute word
<b>Healthy foods</b>	Good diet Nourishing food Wholesome food Healthy eating Nutrition
<b>Children</b>	Youngsters Pre-schoolers Under 5s Nursery Kindergarten
<b>Activities</b>	Games Pastimes Amusements Entertainments Health Promotion Resources

A table of words may help when Jane comes to search for information, particularly if she is using written or online sources. If she can't find what she needs using the first words she thought of (healthy food and children) she can use some or all of the other words in the table instead.

### Getting to the information

The following illustration represents Jane's information environment (or, possible information sources).

Jane's **open/free** area represents information which is available to all the teachers and children in the nursery and would include filing cabinets and 'project chests'. Jane knows from checking these that there are no relevant or adaptable materials readily available in the nursery.

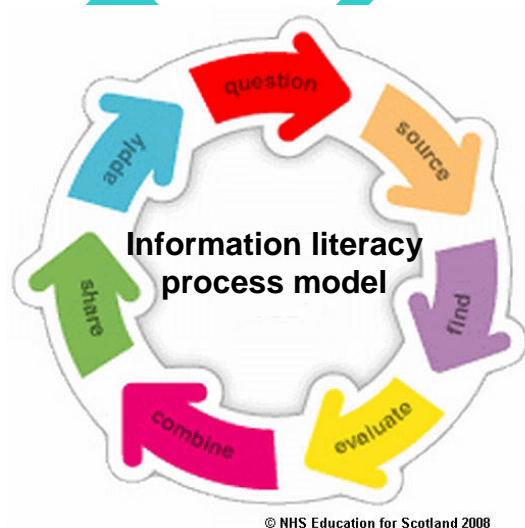
Jane's **blind area** consists of information available to Jane's colleagues and any others who might be involved in the search for suitable material. This information is not available to Jane either because the information is stored inside the heads of these people or because it is held in a store of some sort of which Jane is unaware. In either case, Jane can't access this information without help. This is the area Jane tries to access when she asks colleagues whether they are aware of any helpful resources. It is also the area accessed when Jane turns to the librarian for help.

Jane's **hidden area** represents information known only to Jane. For example, Jane knows why she wants information about healthy eating and she has a few ideas about how to present this to the children in the form of games or painting and colouring activities. Jane may or may not share this information with the others involved in helping to identify needed resources. When Jane decides to share these ideas with the librarian, the librarian is able to offer more helpful advice and support because she has a clearer idea of what is needed and why.

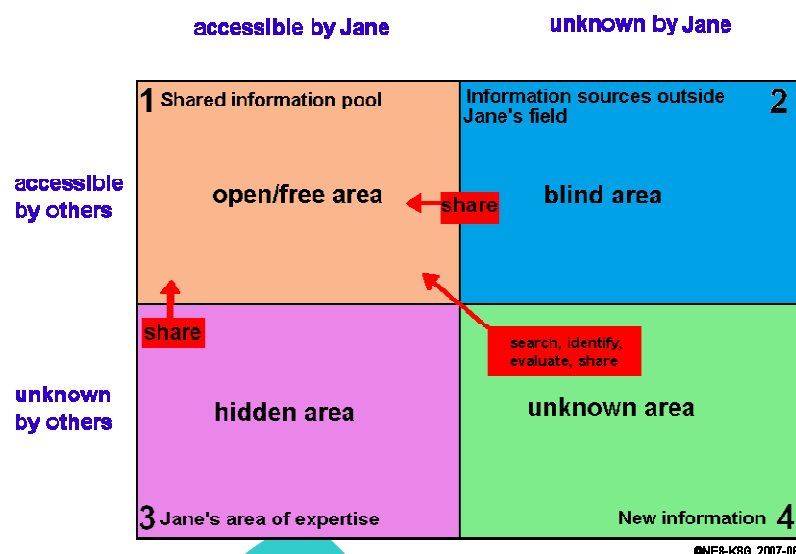
The **unknown area** contains information new to both Jane and the others who might be involved in seeking information on promoting healthy eating to young children. The librarian and Jane conduct searches of the Internet with the intention of identifying the wanted information although neither knows whether this will be successful.

In addition to identifying and using new information sources (the librarian and three Internet education directories : education-world, eduhound and edna), Jane has learned a bit more about re-using information ethically. Although she'd been aware that not all Internet information was provided free and unrestricted, she had not until now, appreciated the need to display such things as copyright notices on downloaded resources. This is something she will check in future when she retrieves any information for re-use.

#### Jane's progress through the information literacy process



**Johari window illustrating the availability of information from Jane's Viewpoint**



Jane's application of the information literacy process	
Question	What sorts of items and activities might be available to help young children learn about healthy foods?
Source	Local health promotion/public health library
Find	Poster, outline drawing
Evaluate	Checks for re-usability
Combine	Selects re-usable outline and copies Crown Copyright statement
Share	Photocopies outline drawing, adds poster to noticeboard
Apply	Encourages children to try healthy foods



### Reflection

Are there other copyright-related restrictions which might apply to re-use of retrieved materials?

Are there other legal or ethical considerations Jane should be aware of when she re-uses information?

Draft

## The service improvement context

The Plan, Do, Study, Act (PDSA) cycle (also known as the cycle for improvement and learning) is a model used in practice development for testing a change. This is done by developing a plan to test the change (Plan), carrying out the test (Do), observing and learning from the consequences (Study), and determining what modifications should be made to the test (Act).

In the following scenario, the PDSA model has been combined with the information literacy process cycle to demonstrate their relationship with one another.

### A GP practice goes “paperless”

A GP practice has decided that record-keeping within the practice could be improved and that the paperless office is an achievable goal. The benefits of being paperless are seen to be : less risk of papers being misplaced or going missing ; easier access for the GPs to the most up-to-date information for each patient and, for the patients, the security of knowing that their medical record is complete at the time of a consultation. Additional benefits are that an electronic office would be less costly to maintain than one requiring filing stacks and paper files ; it will no longer be necessary for handwriting on any document to be deciphered as all data input will be recorded electronically in the clinical system using word processing software ; information will be easier and faster to find by using electronic search tools ; all incoming mail will be scanned on arrival and added to the relevant record.

Elizabeth, the Practice Manager, undertakes a search for information on suitable electronic document management software [QUESTION]. She speaks with other Practice Managers [SOURCE] to find out what applications are currently being used and how efficient these are. Elizabeth then conducts an Internet search [SOURCE] to learn more about the recommended software packages and to identify others which might be useful [FIND]. She downloads a selection of demonstration versions of the applications for testing [EVALUATE]. After trying these, Elizabeth eventually decides that DocMan is the programme which will best meet the needs of the practice [COMBINE] and recommends this package to the next Practice meeting [SHARE].

The recommendation is accepted and the computer programme implemented on two computers within the Practice, for use with a selected portion of record information [APPLY].

### Commentary

A successful search for information begins with forming a search question.

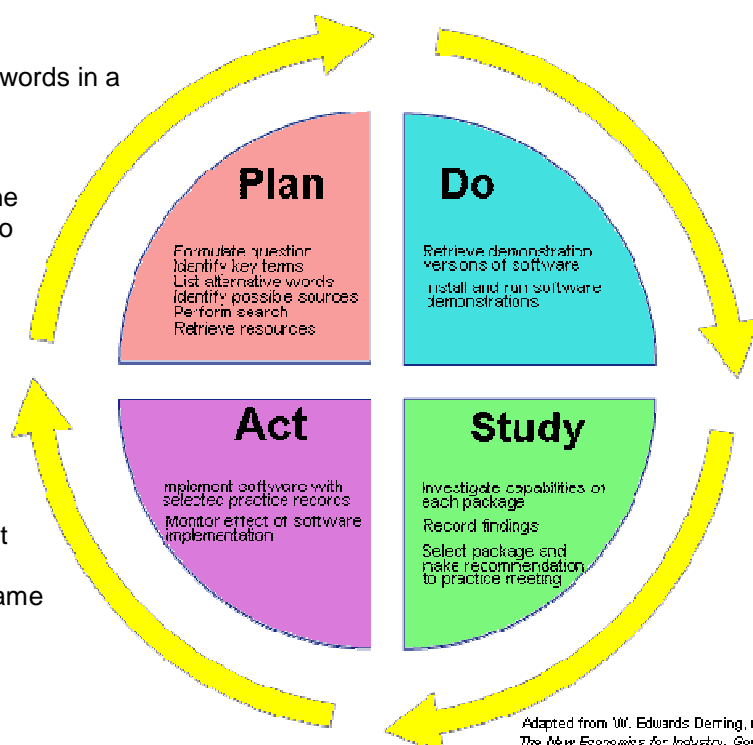
Elizabeth's first task is to think of a question about the information she needs and to identify 'key' words within the question.

**Key words** or **key terms** are the most important words in a search question.

### PLAN Activities

Using the **Plan** quadrant of the PDSA diagram, the first step in the planning process for Elizabeth is to state her **question** : *Is there a document management package which would support the work of the practice?*

She next has to identify the key words or key terms within the question. In this case, these are **document management package**. It might be helpful too, for Elizabeth to develop a list of alternative words. This is particularly useful when the targeted sources are either written or online. It can also help when sources are people since not everyone uses the same words to describe the same item.



Adapted from W. Edwards Deming, (2003)  
The New Economics for Industry, Government,  
Education - 2nd Edition

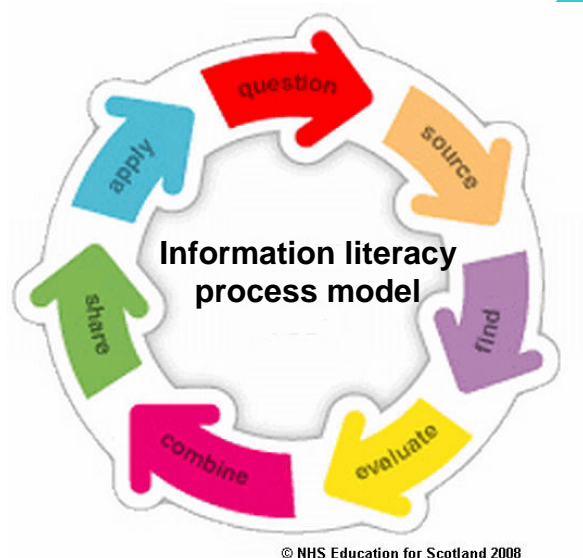
The following table lists a series of alternative terms Elizabeth might use to find the information she needs about software packages.

Key term	Substitute term
<b>Document management package</b>	Document management application Document management programme Document management program Record management package Record management application Record management programme Record management program Records management package Records management application Records management programme Records management program

Next, Elizabeth chooses the sources to consult for information. These include : other practice managers and the internet. She notes the names of all the programmes mentioned as she intends to find further information on these.

Elizabeth is now ready to conduct a search of her sources [SOURCE]. She searches the Web using her original **key term** initially and, some of the alternatives in later stages of the search. In addition to retrieving a selection of articles [FIND], Elizabeth identifies a list of websites which allow the downloading of demonstration versions of several software packages [FIND]. She eliminates less helpful articles and programmes from her listings and identifies four software applications for further exploration. [EVALUATE]

#### Elizabeth's progress through the information literacy process



Elizabeth's application of the information literacy process	
<b>Question</b>	Is there a document management package which would support the work of the practice?
<b>Source</b>	Other practice managers, internet
<b>Find</b>	Selection of software demonstrations
<b>Evaluate</b>	Checks for application in Practice
<b>Combine</b>	Compares advantages and disadvantages of each package
<b>Share</b>	Makes recommendation based on software tests
<b>Apply</b>	Recommended package implemented for testing in the Practice.

#### DO activities

Elizabeth downloads and installs the demonstration versions of the four records management applications she has identified as likely to be helpful to the Practice. [EVALUATE]

#### STUDY activities

As she explores each of the programmes, Elizabeth notes the capabilities of each against a list of Practice requirements [EVALUATE]. From this activity, she is able to identify the programme which most closely matches the stated needs and to make a recommendation based on her test findings [COMBINE, SHARE].

**ACT activities**

Reaching the **Act** stage of the PDSA process, Elizabeth's recommendation is accepted and the recommended software is installed on two Practice computers [APPLY] for use with a proportion of Practice records and will be monitored over the next four weeks to test whether the expected benefits actually occur.

**Reflection**

At the end of the initial four-week test period, what questions would you expect to have been answered?

What questions might have been raised over this period and how might the information literacy cycle help you in finding the answers?

Are there other PDSAs obvious to you in the scenario?

Using one of the PDSAs you have identified, which elements of the information literacy process are related to which of the PDSA activities?

Dr

## A hospital addresses customer service improvement

Routine monitoring of patient responses returned in *How can we improve?* forms within a hospital has revealed that a significant number of patients are unhappy with their experiences. The comments received indicate that the main difficulties seem to be related to communications with healthcare staff. Patients say that they are not accorded the empathy, respect and dignity they expect from hospital personnel at all levels.

Hospital management is aware that research has shown that positive patient perceptions are directly related to positive clinical experiences and outcomes (**Kenagy, J W, Berwick, D M, Shore, M F.** *Service quality in health care.* JAMA 1999; 281:661-5) and that the interaction between patient and physician is paramount in the delivery of quality health care (**Neuwirth, Z E.** *Reclaiming the lost meanings of medicine.* Med J Aust. 176(1): 77-79). Management is concerned to improve the situation [QUESTION] so that its services support and reflect the NHS focus on patient-centred, patient-led healthcare.

The hospital's Complaints Manager, Brian, knows that the Client-Focused Evaluations Program – UK agency [SOURCE] has conducted and published the results of several patient surveys and that the Health Foundation is a charity dedicated to improving the quality of healthcare in the UK [SOURCE]. He decides to find out what improvements are suggested [FIND] and which activities and actions might be adopted or adapted [EVALUATE] for application within the hospital [COMBINE, SHARE, APPLY]. A search of the Internet reveals that many institutions have introduced short courses of customer service training for all levels of healthcare staff [FIND] and that this has had a positive effect on patient experiences of the hospital department and staff as measured by further surveys.

### Commentary

Brian begins with the **question** : What is being done to improve patient satisfaction with hospital services?

He develops a table of possible alternative words he might use as he searches for information.

Key term	Substitute term
<b>Customer service training</b>	Client service training
	Patient service training
	Communication training
	Service improvement
<b>Communication training</b>	People-facing skills
	Soft skills

As in the previous example, the information literacy process has been applied at the **Plan** stage of the PDSA model. Brian's application of the process and its results are shown below.

In this case, rather than providing a commented demonstration, the guided reflection might help you decide what steps Brian might take to complete this PDSA cycle.



Brian's application of the information literacy process	
<b>Question</b>	What is being done to improve patient satisfaction with hospital services?
<b>Source</b>	CFEP-UK website Health Foundation website UK and international health websites
<b>Find</b>	Reports, papers and online courses on improving customer service
<b>Evaluate</b>	<p><i>Evaluation of Patient Experience survey report</i> CFEP-UK</p> <p><i>Communicating with patients : A Quick Reference Guide for Clinicians</i> Association of Reproductive Health Professionals</p> <p>CFEP-UK workshops for receptionists and for clinicians.</p> <p>Free online training course <a href="http://www.onlineconsultation.org.uk/">http://www.onlineconsultation.org.uk/</a></p> <p>American Hospital Association <i>Communicating With Patients</i> guides <a href="http://www.aha.org/aha/issues/Communicating-With-Patients/">http://www.aha.org/aha/issues/Communicating-With-Patients/</a></p>
<b>Combine</b>	Compares advantages and disadvantages of each resource to decide which will be helpful in improving the services of the hospital
<b>Share</b>	Write a report making recommendations based on research
<b>Apply</b>	Implement training/improvement programme in one department then survey patients.

### Reflection

How might Brian use the tools and resources he has identified?

What might Brian do next, in terms of the PDSA model?

Which of Brian's activities might require further application of the information literacy process?

Is it likely that the whole of the information literacy process would be applied?

If not the whole process, which phases of the information literacy process might Brian have to use and at which points?

# Life Story Extract



## Life Story Extract

The following life story extract illustrates the way in which those involved in a case conference deal with a particular patient's case. Each participant performs the actions necessary from the viewpoint of their own profession or interest and uses the information literacy cycle to help them resolve the outstanding issues.

Jamie is a 50 year old Multiple Sclerosis (MS) sufferer. He has recently spent a few months in hospital as the result of contracting both a chest and urinary tract infection. During this time, Jamie's physical condition has deteriorated considerably due to being confined to bed. Also, his wife, Jamie's primary carer, has died since his admission. He is shortly to be discharged from hospital and there is concern over where he will live since he now has no carer and is able to do less for himself.

There is to be a case conference where Jamie's options will be explored with the intention of identifying a safe and satisfactory solution to his care and living arrangements. Attending the case conference are : Paula, a social worker ; Professor MacLeod, Jamie's hospital consultant ; Mary, ward charge nurse ; Sophie, the nurse specialist from the Multiple Sclerosis Society (MSS) ; Evelyn and Jane, Jamie's daughters, Wendy, Jamie's younger sister ; and Susan, the district nurse from Jamie's home area.

Before the case conference, Janet who is a clerical officer, must deliver Jamie's medical file to Mary so that she and Professor MacLeod have the opportunity to review Jamie's notes before the meeting.

Janet  
Clerical Officer

has received a request to retrieve a patient file. She first obtains the patient's name and CHI number. [QUESTION]. She searches the file system [SOURCE] for Jamie's record and identifies it by the CHI number [FIND]. Janet extracts the file from storage and checks the details (Eg. date of birth, home address) to ensure that she has identified the correct notes [EVALUATE, COMBINE]. Satisfied that the file is Jamie's, Janet delivers it to Mary two days before the case conference. [SHARE, APPLY]

Jamie  
Patient

is grieving, and feels confused by the "fuss" his future care is causing. He wants someone to explain to him exactly what is happening [QUESTION]. He is not keen to ask for help from hospital staff. Jamie expects family members [SOURCE] to provide the information and support he needs [FIND]. He believes that his future care and living arrangements should be discussed with his family [EVALUATE, COMBINE, SHARE] and the final decision to be based on the discussions and information supplied by the family [APPLY]

Paula  
Social Worker

is concerned to find a suitable setting where Jamie will receive adequate care and support [QUESTION]. She wants to support Jamie and his family in making the best decision for Jamie whether this is to return home with care from the community care team or to move to residential care. She consults her listing of residential homes [SOURCE] and realises that she has clients and contacts in three local homes [FIND]. Paula believes that one of these might suit Jamie but is not sure whether any provides the nursing care he needs [EVALUATE, COMBINE]. She gives the names and addresses of the homes to Jamie's family [SHARE] so that they can visit each one before making a decision [APPLY].

Professor MacLeod  
Consultant

confirms that Jamie now needs full-time nursing and other support. He wants to make sure that Jamie receives the best treatment possible. He decides to find out whether there is any recent advice on managing MS [QUESTION]. He logs into the e-Library and searches the Clinical Practice Support section for recent research articles [SOURCE]. Having satisfied himself as to his current practice [FIND, EVALUATE, COMBINE], he explains

to Jamie and the family [SHARE] how Jamie's condition will be managed [APPLY].

Mary  
Ward charge nurse

is aware that Jamie's home will have to provide a variety of equipment. This will include hoists and a wet-room and will have to accommodate his wheelchair as he is no longer able to walk. Mary has responsibility for initial contact with the local care team. She must first identify who, within the local area, will be involved in Jamie's care and support [QUESTION, SOURCE, FIND]. She contacts Susan, the district nurse [EVALUATE, COMBINE] and gives her information on Jamie's needs [SHARE]. They discuss the supply of the specialist equipment and care needed by Jamie. Mary invites Susan to attend the case conference.

Sophie  
MSS Nurse specialist

believes that there are no homes or hostels in the local area dedicated to the care of MS sufferers [QUESTION]. She checks the information held by the MS Society for Scotland [SOURCE]. Sophie finds that there is a Sue Ryder home in a neighbouring authority [FIND]. She knows that this charity often cares for sufferers of MS and similar illnesses [EVALUATE, COMBINE]. She passes the details of the home to Jamie's family [SHARE].

Evelyn, Jane and Wendy  
Family

are shocked that Jamie now needs full-time nursing care and are worried about where he is to live [QUESTION]. They visit the homes suggested by Paula [SOURCE] and learn that they focus on care of the elderly [FIND]. They reject these homes. [EVALUATE] Jamie is a happy, outgoing person who needs social contact as well as nursing care [COMBINE]. Next, they visit the Sue Ryder home suggested by Sophie. The mood seems relaxed and the residents are busy with a variety of activities [EVALUATE, COMBINE]. As there are spaces available, they decide to visit again with Jamie [SHARE] before deciding with him whether this or his own home is the better option for him. [APPLY].

Susan  
District nurse

has been invited to attend the case conference. She is unsure of how much nursing care and other support Jamie will need at home [QUESTION]. She feels that she needs much more information about Jamie which she hopes to get from the case conference [SOURCE]. Susan needs the information to feel confident about offering suggestions on how to meet his needs [EVALUATE, COMBINE, SHARE].

### Reflection

Assuming the role of one of those involved in the case conference, what sorts of things might you do to ensure a satisfactory outcome?

What further information do you need?

What questions might you ask?

Where/from whom will you get this information?

Can you rely on the information you've retrieved?

Does the information resolve the "problem" you had?

Has it changed any action/decision you might take?

How will your future involvement be affected by what you've learned?

# Capabilities Tables

## Reflection

Before reading the information contained in the capabilities tables, you might like to think about how you apply the information literacy process in your own everyday activities.

Think about a time recently when you've needed information :

Did you begin with a question and were you aware of alternative **key terms** before trying to find the information?

What sources did you use and why did you choose them?

Are these sources reliable?

Did you get the information you needed?

How reliable/accurate was the information?

Did you learn anything new from the retrieved information?

Did you pass on the new information? How? Who did you share it with? Why?

How did you use the new information?

For explanations of terms used in the tables which may be unfamiliar to you, please refer to the glossary (page 69)

For demonstrations of search tools and techniques referenced in the tables, please visit our information literacy courses at <http://www.infoskills.scot.nhs.uk>.

For further information and resources related to information literacy, please visit the information literacy portal at <http://www.infoliteracy.scot.nhs.uk/home.asp>

## Information Literacy Capabilities Tables

The information contained in the tables represents illustrations of the sorts of skills, abilities and behaviours etc, learned and reinforced through information literacy. It is not intended as an exhaustive list of these but may assist the reader in assessing his/her progress.

<b>Question</b>			
An information literate person is aware of an information need, is able to articulate that need and has the ability to formulate a question addressing the need.			
<b>Example learning outcomes</b> <b>Skills and abilities, Attitudes and emotions, Observable behaviours</b>	<b>Personal enabling factors</b>	<b>Benefits to health and healthcare</b>	<b>KSF Competency</b>
<p><b>Skills and abilities</b></p> <p>Convert an information need into a question or statement.</p> <p>Determine the nature and extent of the information needed.</p> <p>For an interview or consultation :</p> <ul style="list-style-type: none"> <li>develop 'open' and 'closed' questions ;</li> <li>develop directed and non-directed questions ;</li> <li>modify language to ensure clear communication ;</li> <li>allow sufficient time for interview/consultation.</li> </ul> <p>For non-interpersonal situations :</p> <ul style="list-style-type: none"> <li>understand what a 'key' term is ;</li> <li>identify the 'key' terms in a question or statement ;</li> <li>find one or more words which mean the same as the 'key' terms ;</li> <li>draw up a table listing 'key' terms and alternative words ;</li> <li>plan search using identified key terms and synonyms.</li> </ul> <p><b>Attitudes and emotions</b></p> <p>Regards this as an additional opportunity for independent self-directed learning</p> <p>Self-confidence in asking questions.</p> <p>Confidence that the 'problem' can be resolved by forming it into an answerable question.</p> <p>Accepts responsibility for the task.</p>	<p>Peers and others (eg colleagues, managers within organisation, family, friends) willing to support the individual in asking questions and defining information needs</p> <p>Confidence with information technology</p> <p>Previous experience in formulating questions and/or support to develop this ability</p> <p>Where appropriate, a good vocabulary and/or access to a thesaurus</p> <p>In interview/consultation, the ability to empathise with 'the other' and to use appropriate language.</p> <p>Tools and techniques to support question definition eg., PICO</p> <p>Awareness of the right to ask questions</p> <p>Openness of mind about what the answer might look like</p>	<p>Articulating an information need and being able to form relevant questions improves communication.</p> <p>Improved communication between patient/carer and healthcare professional, between healthcare professionals, between teams and individuals leads to improved service delivery in every field.</p> <p>Helps maintain openness to evolving technologies and treatments by encouraging and supporting best practice.</p>	<p>IK2 : 3a, 21 IK3 : 1a, 2c, 3a HWB1 : 2b HWB2 : 3d HWB5 : 3b HWB6 : 2c, 3b, 4a, 4d HWB7 : 3b</p>

<p>Aware of and respect for the fact that asking questions is an essential part of day-to-day work, personal development and making the most of personal health and wellbeing.</p> <p>Respects the right of all partners in healthcare – staff, patients and carers – to ask questions and to receive answers.</p> <p><b>Observable behaviours</b></p> <p>Defines and articulates the need for information.</p> <p>Seeks support and/or advice from peer groups (eg colleagues, family and friends), supervisor etc.</p> <p>Discusses information need to help focus on question formulation.</p> <p>Redefines or alters the developed questions to achieve a more accurate focus.</p> <p>Accurately identifies key terms.</p> <p>Generates listing of alternative terms</p> <p>Explores alternative information sources to increase familiarity with the topic.</p>			
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## Source

An information literate person is aware of the ways information is organised and distributed and is able to identify and access a variety of types and formats of potential sources of information

<b>Example learning outcomes</b> <b>Skills and abilities, Attitudes and emotions, Observable behaviours</b>	<b>Personal enabling factors</b>	<b>Benefits to health and healthcare</b>	<b>KSF Competency</b>
<p><b>Skills and abilities</b> Identify the sources most likely to be useful when related to the search question.</p> <p>Appreciate why some information sources may be more helpful than others in the context of a particular information need. For example, a quick work-related question may be most efficiently answered by a work-colleague or where supporting evidence for a recommendation or decision is needed, it may be more appropriate to identify written reports and other documents.</p> <p><b>Attitudes and emotions</b> Acknowledges that people are a rich source of information that often cannot be found in other, more formal resources.</p> <p>Aware that people may be able to provide information about their feelings, personal experience, views/perceptions as well as facts.</p> <p>Aware that information intermediaries such as librarians and information specialists may be needed.</p> <p>Aware that more than one source may be useful in a search.</p> <p>Understands the extent of the information resources available to support a search.</p> <p>Aware of the structure and organisation of the selected information sources.</p> <p>Appreciates the strengths, weaknesses and unique characteristics of a variety of information resources.</p> <p>Confidence in exploring and identifying possible information sources.</p> <p><b>Observable behaviours</b> Consults peer-groups (eg colleagues, family, friends) and/or supervisor for information and advice on appropriate information sources</p> <p>Identifies resource(s) most likely to be helpful when related to a specific search question and context</p> <p>Carries out preliminary exploration of several information sources to pinpoint the most appropriate for the question in hand.</p>	<p>Previous experience in identifying relevant search sources</p> <p>Ready access to valid and reliable information sources in a variety of formats.</p> <p>Where appropriate, ready access to information related tools and technology, including staff.</p> <p>A realistic understanding of own condition/situation.</p> <p>Accessible and accredited Plain English and other sources of patient information leaflets</p> <p>Flexibility of approach – impossible to be aware of ALL possible sources.</p> <p>Have an idea of the extent of information needed including knowing what is (or should be) available.</p>	<p>Identifying the correct source (including people) for the answers to questions reduces search time and increases the probability of identifying needed information.</p>	<p>IK2 : 2b, 3b IK3 : 1b, 2c, 3b HWB1 : 2b HWB2 : 3d HWB5 : 3b HWB6 : 2c, 3b HWB6 : 4a, 4d HWB7 : 3b</p>



## Find

An information literate person seeks information from a variety of sources. When the source is not a person, appropriate, filters, limits and other refining tools and techniques are used to extract needed information

<b>Example learning outcomes</b> <b>Skills and abilities, Attitudes and emotions, Observable behaviours</b>	<b>Personal enabling factors</b>	<b>Benefits to health and healthcare</b>	<b>KSF Competency</b>
<p><b>Skills and abilities</b>            Select and apply appropriate methods and/or tools for finding information, including :</p> <ul style="list-style-type: none"> <li>active listening, responding and consultation/interview skills required for extracting personal information ;</li> <li>techniques for extracting statistical information ;</li> <li>research methodologies including questionnaire, interview, laboratory investigation.</li> </ul> <p>For online searching :</p> <ul style="list-style-type: none"> <li>define keywords, synonym definition etc ;</li> <li>select suitable vocabulary and choose terms ;</li> <li>understand structure of sources and translate this into appropriate formulation of search statement using appropriate syntax and operators ;</li> <li>apply limits or filters as required.</li> </ul> <p>Construct and implement search strategy.</p> <p>Understand and apply the different approaches required to extract information from structured and unstructured information sources</p> <p><b>Attitudes and emotions</b>            Persistence in searching for required information and knowing when to stop the search.</p> <p>Confidence that search has been as comprehensive as required by the information need.</p> <p>Appreciation that different levels of sensitivity or comprehensiveness of information retrieval will be appropriate for different information needs.</p> <p><b>Observable behaviours</b>            Applying filtering and other techniques and tools.</p> <p>Demonstrates an understanding of the organisation or structure of information sources by applying refining techniques to focus results.</p> <p>Identifies and applies appropriate retrieval techniques to the sources relevant to the question.</p> <p>Gathers an appropriate amount of focussed information from relevant sources.</p>	<p>Ability to identify and retrieve information from appropriate sources.</p> <p>Ability to identify and apply source-related filters and limits.</p> <p>Where required, understanding of Boolean logic (applications of AND, OR and NOT operators).</p> <p>Where required, ability to apply Boolean techniques to search.</p> <p>Previous search experience.</p> <p>Ability to analyse results from initial efforts at retrieval and determine whether an additional source needs to be searched</p> <p>Defining realistic timelines for search activity.</p> <p>Where appropriate, access to properly organised information resources (indexes in books, file lists, catalogued library resources, meta-data headed internet pages/sites)</p> <p>Where appropriate ready access to information tools and technologies.</p> <p>Removal of unnecessary firewall restrictions to enable access to required information and websites.</p>	<p>Identification of developments in treatments and/or care management.</p> <p>Improved population health through the engagement and empowerment of individuals to access and identify relevant materials.</p> <p>Supports the development of accessible health promotion resources through the identification of areas of information need where resources may be sparse.</p>	<p>IK2 : 2b, 3c            IK3 : 1d, 2c, 3c            HWB1 : 2b            HWB2 : 3d            HWB5 : 3b            HWB6 : 2c, 3b, 4a, 4d            HWB7 : 3b</p>

**Evaluate**

An information literate person assesses the value and reliability of retrieved information

<b>Example learning outcomes</b> <b>Skills and abilities, Attitudes and emotions, Observable behaviours</b>	<b>Personal enabling factors</b>	<b>Benefits to health and healthcare</b>	<b>KSF Competency</b>
<p><b>Skills and abilities</b>            Understand the qualities of 'good' information generally, including : reliability, validity, accuracy, authority, timeliness, potential sources of bias.</p> <p>Assess retrieved information for these qualities.</p> <p>Assess the quantity and quality of retrieved information and determine whether the original information need has been met.</p> <p>Accept or reject retrieved items on the basis of a quality check.</p> <p>Understand why information should be evaluated before it is re-used.</p> <p><b>Attitudes and emotions</b>            Satisfaction with progress in identifying appropriate information/ dissatisfied with poor quality or inadequate information.</p> <p>Confidence in ability to define quality criteria appropriate for different questions and, to apply these criteria effectively.</p> <p>Confidence to consider repeating earlier steps in cycle with new or refined questions, retrieval tools, methods, and sources if retrieved information is unsatisfactory</p> <p>Appreciation that information retrieval is an ongoing and organic process rather than a single discrete exercise.</p> <p>Appreciation and value the fact that interpretation of quality differs depending on the purpose for which information is required, the sources used (eg people as opposed to published information), the audience involved, and the context in which it is to be used.</p> <p>Acknowledgement of own values and beliefs and awareness of how this affects interpretation and use of information.</p> <p>Awareness of own personal sources of bias in evaluating information.</p> <p>Recognition that information is often affected by and impacts on values and beliefs.</p>	<p>Access to well-organised, effectively structured information resources.</p> <p>Access to bank of information resources pre-evaluated against defined criteria.</p> <p>Access to records of previously retrieved information relating to the current question.</p>	<p>Quality assurance of treatments or information selected.</p>	<p>IK2 : 2c, 3d, 3e            IK3 : 1e, 3c            HWB1 : 2b            HWB2 : 3e            HWB5 : 3b            HWB6 : 2c, 3b, 4e            HWB7 : 3b</p>

<b>Observable behaviours</b> Compares retrieved information with information need to assess extent to which this has been met.  Determines the quality, credibility and accuracy of retrieved information  Applies critical appraisal techniques to retrieved information.  Selects relevant, evaluated information from a range of sources			
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**Combine**

An information literate person adds valid retrieved information to the existing internal (own learning and experience) or external (eg. file system, database or other shared information pool) knowledge base

<b>Example learning outcomes</b> <b>Skills and abilities, Attitudes and emotions, Observable behaviours</b>	<b>Personal enabling factors</b>	<b>Benefits to health and healthcare</b>	<b>KSF Competency</b>
<p><b>Skills and abilities</b>  Collate, organise and present retrieved information in a way that addresses the original information need.</p> <p>Cite information sources appropriately, in required bibliographic format.</p> <p>Manage own systems for organising and retrieving information resources – eg reference management systems.</p> <p>Compare and analyse information retrieved from different sources ; integrate new information with existing published or personal knowledge base.</p> <p>Identify relationships, common themes and contradictions across sources. Synthesise these different elements of information to create new knowledge, understanding and new questions.</p> <p>Appreciate that retrieved information requires thought and blending with the existing knowledge base before you can claim it as your own.</p> <p>Broad understanding of copyright and plagiarism.</p> <p>Understand the need to acknowledge other authors through citations of their work.</p> <p><b>Attitudes and emotions</b>  Understands that the knowledge base in any topic area is constantly growing and changing and that interpretations change over time.</p> <p>Appreciates value of combining published information with personal knowledge and experience in shared decision-making.</p> <p>Aware of ethical issues involved in re-using information.</p> <p>Comprehend that copy-and-paste and highlighting retrieved information demonstrates skill only in finding information rather than information literacy.</p> <p><b>Observable behaviours</b>  Stores retrieved information in an organised way for access and re-used in the future.</p>	<p>Knowledge of Intellectual Property, Copyright, Data Protection and Freedom of Information legislation.</p> <p>Understanding of plagiarism</p> <p>Knowledge of standards for citing references</p> <p>Application of ethical standards when re-using information.</p>	<p>Proven methods and techniques are enhanced or further developed.</p>	<p>IK2 : 2d, 3f, 3g  HWB2 : 3e  HWB5 : 3d  HWB6 : 4f  HWB7 : 3d</p>

Interprets information and prepares a written overview when required.			
Summarises key ideas and understandings in own words and diagrams			

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## Share

An information literate person recognises the importance and benefits of information-sharing and routinely communicates newly identified information to others

<b>Example learning outcomes</b> <b>Skills and abilities, Attitudes and emotions, Observable behaviours</b>	<b>Personal enabling factors</b>	<b>Benefits to health and healthcare</b>	<b>KSF Competency</b>
<p><b>Skills and abilities</b>            Select and apply communication methods, tools and formats to support the purpose of the communication and the needs of the intended audience.</p> <p>Use a range of appropriate applications which support sharing of information and knowledge, eg SharePoint, Wikis, Blogs, Shared Space, social networking tools, discussion forums.</p> <p>Apply active listening and responding skills to share information effectively with other people</p> <p>Use communities and networks of practice to share personal and published information.</p> <p>Validate understanding and interpretation of information through discussion with others.</p> <p>Participate in face-to-face and online discussion to share information, views and experience.</p> <p>Seek out expert opinion through face-to-face meeting, online discussion and other means.</p> <p><b>Attitudes and emotions</b>            Aware that sharing personal knowledge and experience and newly retrieved information improves performance of work-group and the wider organisation.</p> <p>Appreciates that sharing information encourages similar sharing behaviour in others.</p> <p>Appreciates the benefit to the organisation and to individuals of sharing new information.</p> <p>Appreciates that retrieved information may be applicable in other contexts or work areas.</p> <p>Acknowledges that networking (electronic and person to person) supports information sharing</p> <p>Values role of information sharing in making clinical and managerial decisions and in shared patient-professional decisions.</p>	<p>Access to paper-based information-sharing tools such as files.</p> <p>Ready access to information technology and electronic networks.</p> <p>Training in information-sharing applications.</p> <p>Working as a team member and being involved in planning and decision-making.</p> <p>Verbal and written communication skills.</p>	<p>The sharing of best practice saves time in those areas which are not equipped to develop new methods or techniques.</p> <p>Maximising gain to all patients and staff from the application of limited resources.</p> <p>Supporting the mutual NHS by sharing decision-making between patients and healthcare professionals.</p> <p>Encouraging and enabling self-management by patients.</p>	<p>IK2 : 2e, 3h            HWB2 : 3e            HWB5 : 3d            HWB6 : 4g            HWB7 : 3d</p>

<p>Realises that different communication methods, formats and styles are appropriate for different purpose and audiences.</p> <p>Understands why and how information sharing improves work performance.</p> <p>Confidence in the value of sharing one's own information</p> <p>Appreciates the value of a participatory approach to decision-making</p> <p><b>Observable behaviours</b></p> <p>Presents information in a way that demonstrates knowledge gained.</p> <p>Shares summarised information with networks and communities.</p> <p>Tailors information to meet the needs of different audiences using appropriate media</p>			
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**Apply**

An information literate person applies information effectively in day to day work, personal development and improving personal health and well-being

<b>Example learning outcomes</b> <b>Skills and abilities, Attitudes and emotions, Observable behaviours</b>	<b>Personal enabling factors</b>	<b>Benefits to health and healthcare</b>	<b>KSF Competency</b>
<p><b>Skills and abilities</b>            Use information for decision-making and problem-solving.</p> <p>Apply information effectively to specific purposes in day to day work, personal development and improving personal health and wellbeing.</p> <p>Identify and apply systems for monitoring application of information to practice and impact on defined clinical or managerial outcomes.</p> <p>Identify and address barriers and facilitators to applying information to practice at organisational and individual level.</p> <p>Apply transformational change principles to define and implement plans for translation of information into practice.</p> <p>Apply motivational, cognitive and other techniques to influence behaviour of self and others in applying information to practice.</p> <p>Use some of the tools available for keeping up-to-date.</p> <p><b>Attitudes and emotions</b>            Focuses on application of information throughout the process of retrieval, sharing and evaluating.</p> <p>Appreciates that information resources can be used to practical benefit in health and healthcare.</p> <p>Reflects on application of retrieved information to practice and on new questions that arise as information impacts upon practice.</p> <p><b>Observable behaviours</b>            Makes decisions based on retrieved evaluated information.</p> <p>Continuously reflects on extent to which actions are aligned with available information and formulates new questions on this basis            Applies critical thinking in work activities.</p> <p>Applies reflective practice to current 'round' of information literacy cycle :</p>	<p>Reasoning skills</p> <p>Personal reflection skills</p> <p>Negotiating and influencing skills</p> <p>Techniques of "Managing for improvement" – eg Lean Methodologies, Rapid Improvement Cycle.</p> <p>Knowledge of motivational and cognitive-behavioural techniques.</p> <p>Consistent focus on the practical purpose underlying the original question and implementation of the information literacy cycle</p> <p>Commitment to and support for continuing professional/personal development</p> <p>Commitment to and support for lifelong learning and self-improvement</p>	<p>The most appropriate, current methods or treatments available are utilised.</p> <p>Contributes towards improvements in patient safety through the application of research findings, recommendations and guidelines.</p> <p>Supports the delivery of the right care to the right patient at the right time, making the best use of available resources.</p>	<p>IK3 : 1f            HWB1 : 2d            HWB2 : 3f            HWB5 : 3d            HWB7 : 3d</p>



identifies areas of success as well as areas for improvement ;  evaluates how well each stage of the information process was carried out ;  evaluates how well the information process as a whole was managed ;  positively and constructively assesses the work of self and others in relation to information use.			
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# Information literacy and information ethics



## Information literacy and information ethics

In order to use information in the ways described by the information literacy model presented in this document, users should be aware of and comply with the requirements of information-related legislation ie., Data Protection, Copyright, Freedom of Information (Scotland) Act, The Environmental Information (Scotland) Regulations.

<b>Data Protection</b>	The <b>Data Protection Act</b> relates to personal, identifiable information such as patient or personnel records and is intended to protect the subject of the information and to limit unauthorised access to this information. The full text of the Act is available at URL <a href="http://www.opsi.gov.uk/acts/acts1998/ukpga_19980029_en_1">http://www.opsi.gov.uk/acts/acts1998/ukpga_19980029_en_1</a>
<b>Copyright</b>	<b>Copyright</b> legislation is intended to protect the rights of both creators and users of literary, dramatic, musical or artistic works. While the economic and moral rights of creators are preserved because they earn their living by writing and publishing, the fair dealing provisions of the legislation grant certain rights to the users of these works. Detailed information on Copyright in the UK is available from the UK Copyright Service at URL <a href="http://copyrightservice.co.uk/copyright/p01_uk_copyright_law">http://copyrightservice.co.uk/copyright/p01_uk_copyright_law</a>
<b>Freedom of information</b>	The <b>Freedom of Information (Scotland) Act</b> gives the right to anyone - from anywhere in the world - to see any kind of recorded information from a Scottish public authority, however old the information may be. The NHS is included in the Act as a public authority. Full text of the Act is available at URL <a href="http://www.opsi.gov.uk/legislation/scotland/acts2002/asp_20020013_en_1">http://www.opsi.gov.uk/legislation/scotland/acts2002/asp_20020013_en_1</a>
<b>The Environmental Information (Scotland) Regulations</b>	The <b>Regulations</b> apply to Scottish public authorities – again including the NHS – and require them to make environmental information available proactively, give advice and assistance to any person making a request for environmental information and make environmental information available to any person who requests it as quickly as possible. “Environmental information” includes : information on the state of the elements of the environment ; releases of substances into the environment which might affect the state of the environment ; the state of human health and safety, conditions of human life, the food chain, cultural sites and built structures, which are, or are likely to be affected by the state of the elements of the environment and the interaction between them. (The Scottish Government, 2005). Full text of the Regulations is available at URL <a href="http://www.hmsso.gov.uk/legislation/scotland/ssi2004/20040520.htm">http://www.hmsso.gov.uk/legislation/scotland/ssi2004/20040520.htm</a>

In addition, an ethical information user :

is aware of, and endeavours to comply with, legal requirements relating to the creation, disposal, access, copying and use of information regardless of format ;

recognises and respects the intellectual property of others and, where such property is re-used, ensures its public acknowledgement ;

protects the privacy and confidentiality rights of employers, staff, patients, clients, partners and other users, with respect to information sought or received or materials consulted ;

protects personal information gained under privilege and contained in records in their custody ;

does not use without permission, any confidential information acquired during the course of their work for personal advantage or for the advantage of a co-worker or a third person ;

observes any restrictions on access to information in their care or the care of NHS Scotland, imposed by legislation, administrative or executive decision ;

ensures, without discrimination or preferential treatment, access by anyone entitled to consult the information in their care ;

maintains and enhances professional knowledge and expertise and encourages the professional development of colleagues ;

respects, and seeks when necessary, the professional opinions of colleagues in their areas of competence ;

avoids situations in which personal interests might be, or be seen to be, in conflict with the interests of colleagues, patients of the NHS, or the organisation itself ;

distinguishes in actions and statements between personal viewpoints and those of NHS Scotland ;

does not disclose nor enable others to disclose, personal information which would identify individuals as subjects of case files without their consent.

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# **Information Literacy and occupational standards and competencies**

## Information Literacy and occupational standards and competencies

The following tables briefly illustrate the links between the named standards and the information literacy cycle.

### **Information literacy and Modernising Medical Careers**

[http://www.mmc.scot.nhs.uk/documents/medical\\_students/Final\\_Foundation\\_Education\\_programme.pdf](http://www.mmc.scot.nhs.uk/documents/medical_students/Final_Foundation_Education_programme.pdf)

Evidence-based decision making and patient safety	
Information literacy links	Relevant MMC core competencies
<p>Information literacy supports evidence based practice by providing and enhancing the skills and abilities required to locate, assess, learn from, share and apply research findings.</p> <p>Information literacy facilitates the interpretation of evidence in the context of patient need and professional experience.</p> <p>The section <b>Information Literacy in Action</b> demonstrates the application of information literacy in a clinical context [page ?]</p>	3. History taking (principles of diagnosis and clinical reasoning)
	4. History taking (therapeutics and safe prescribing)
	5. History taking (principles of medical data and information management)
	12. Infection control
	27. Acute care (identification and response to acutely abnormal physiology)
	28. Acute care (delivery of a fluid challenge)
	29. Acute care (reassessment of ill patients after initiation of treatment)
	31. Acute care (secondary survey to establish differential diagnosis)
	34. Acute care (common analgesic drugs)
	35. Acute care (managing patients following self harm)
	36. Acute care (acute confusional state of psychosis)
	37. Acute care (safe continuing care of patients)

Patient-professional relationships	
Information literacy links	Relevant MMC core competencies
<p>Information literacy improves communication between patient and professional and supports shared decision-making and patient self-management.</p> <p>The section <b>Information Literacy in Action</b> demonstrates the application of information literacy in a clinical context [page ?]</p>	1. History taking (ensuring patients concerns, expectations and understanding)
	2. History taking (conduct of examination)
	7. Maintaining good quality care, promoting patient safety (patient as the central focus of care)
	11. Maintaining good quality care, promoting patient safety (needs of patients who have been subject to medical harm/errors)
	20. Relationships with patients (appropriate communication skills)
	26. Acute care (assessment of the acutely ill/collapsed patient)
	38. Acute care (interventions according to patients wishes, disease severity)
	40. Acute care [do not attempt resuscitation (DNAR) orders/directives]

Lifelong learning	
Information literacy links	Relevant MMC core competencies
<p>Through the application of information literacy, the individual learns how to learn and experiences many different types of learning. In doing so, s/he further develops her/his problem solving, critical thinking, communication and information skills.</p> <p>The section <b>Information Literacy in Action</b> demonstrates the application of information literacy in an educational context [page ?]</p>	13. Health promotion and public health
	14. Medical ethics (principles of medical ethics)
	15. Medical ethics (appropriate procedures for valid consent)
	16. Medical ethics (legal framework for medical practice)

	17. Learning (learning opportunities)
	18. Learning (organisation rules, guidelines, evidence base of clinical practice)
	19. Learning (audit)
	22. Working with colleagues (patients at the interface of different specialties, primary care, imaging and laboratory specialties)
	23. Teaching and training (principles of educational method)
	30. Acute care (appropriate requests for senior/more experienced help)

Service improvement	
Information literacy links	Relevant MMC core competencies
<p>Information literacy enables service improvement by encouraging the proper organisation, use, sharing and application of information assets.</p> <p>Information literacy supports service improvement through asking questions about service quality and identifying, analysing and sharing information as a basis for implementing change.</p> <p>The section <b>Information Literacy in Action</b> demonstrates the application of information literacy in a service improvement context [page ?]</p>	6. Appropriate time management and decision making
	8. Maintaining good quality care, promoting patient safety (patient safety as a priority in clinical practice)
	9. Maintaining good quality care, promoting patient safety (good team working for patient safety)
	10. Maintaining good quality care, promoting patient safety (principles of quality and safety improvement)
	21. Working with colleagues (effective teamwork skills)
	24. Professional behaviour and probity (professionalism)
	25. Professional behaviour and probity (maintenance of own personal health)
	41. Acute care (management of common investigations)



## Information literacy and Nursing and Midwifery Council Standards of proficiency for entry to the register

<http://www.nmc-uk.org/aFrameDisplay.aspx?DocumentID=328>

Based on the best available evidence, apply knowledge and an appropriate repertoire of skills indicative of safe nursing practice	
Information literacy links	NMC outcomes
Information literacy enables the identification, retrieval, assessment and application of supporting research evidence for nursing practice. It also enables the information literate nurse to identify and use tools and sources which will help maintain professional current awareness.	Access and discuss research and other evidence in nursing and related disciplines
	Identify examples of the use of evidence in planned nursing interventions
	Ensure that current research findings and other evidence are incorporated in practice
	Identify relevant changes in practice or new information and disseminate it to colleagues
	Contribute to the application of a range of interventions which support and optimise the health and well-being of patients and clients
	Identify and respond to patients and clients' continuing learning and care needs
	Engage with, and evaluate, the evidence base that underpins safe nursing practice.

Formulate and document a plan of nursing care, where possible in partnership with patients, clients their carers and family and friends within a framework of informed consent	
Information literacy links	NMC outcomes
Information literacy enables the nurse to combine information from multiple sources – human and published material - to create a management plan which reflects best evidence and patient needs.  Information literacy enables the nurse to compare the patient's condition and needs and, the proposed management plan with current best practice in the specific area of the condition.	Identify care needs based on the assessment of a patient or client
	Participate in the negotiation and agreement of the care plan with the patient or client and with their carer, family or friends, as appropriate.
	Inform patients and clients about intended nursing actions, respecting their right to participate in decisions about their care.

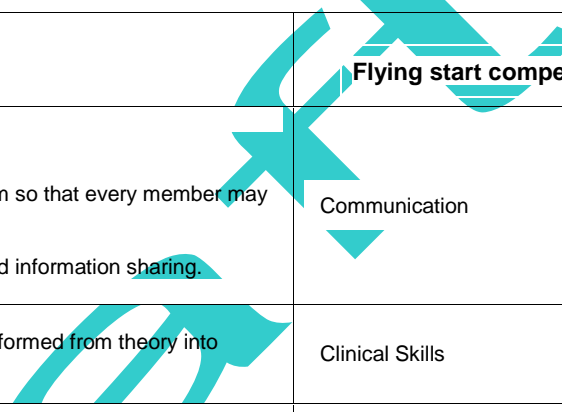
	Establish priorities for care based on individual or group needs
	Develop and document a care plan to achieve optimal health, habilitation, and rehabilitation based on assessment and current nursing knowledge
	Identify expected outcomes, including a time frame for achievement and/or review in consultation with patients, clients, their carers and family and friends and with members of the health and social care team.

Evaluate and document the outcomes of nursing and other interventions	
Information literacy links	NMC outcomes
<p>Information literacy supports the use of information in auditing and monitoring the application of evidence-based interventions and in capturing and presenting the information retrieved for use by others.</p> <p>Information literacy incorporates reflective learning, critical thinking and analytical abilities.</p> <p>All of these need to be applied by the nurse in achieving the needed outcomes.</p>	Awareness of the need to assess regularly a patient's or client's response to nursing interventions
	Provide evaluative commentary and information on nursing care based on personal observations and actions
	Documentation of the outcomes of nursing interventions
	Collaborate with patients and clients and, when appropriate, additional carers to review and monitor the progress of individuals or groups towards planned outcomes
	Analyse and revise expected outcomes, nursing interventions and priorities in accordance with changes in the individual's condition, needs or circumstances.

## Information literacy and Flying Start

<http://www.flyingstart.scot.nhs.uk/Home.htm>

This is just one example of mapping to a set of competences associated with a particular educational programme



Information literacy links	Flying start competencies
<p>This is the <b>share</b> stage of the information literacy cycle.</p> <p>The individual retrieving the information distributes it amongst his/her team so that every member may make use of it.</p> <p>Information literacy also facilitates patient-professional communication and information <b>sharing</b>.</p>	Communication
<p>This is the <b>apply</b> stage of the cycle where what has been learned is transformed from theory into practical application.</p>	Clinical Skills
<p>This is the <b>share</b> and <b>apply</b> stages of the cycle where team members share what they know with one another so that practice is common among the team.</p>	Teamwork
<p>This is the <b>apply</b> phase of the cycle where best practice has been identified and shared with the team and is now applied to everyday practice.</p>	Safe practice
<p>The whole of the information literacy cycle is applied in order to identify, assess and use best practice evidence.</p>	Research for practice
<p>This is the <b>apply</b> phase of the cycle where best practice has been identified and shared with the team and is now applied to everyday practice.</p> <p>The ethical application of information literacy aims to enable equity of access to, and sharing of, information.</p>	Equality and diversity
<p>This is the <b>apply</b> phase of the cycle where best practice has been identified and shared with the team and is now applied to everyday practice.</p>	Policy
<p>This is one of the processes and one of the results of becoming information literate</p>	Reflective Practice
<p>Becoming information literate supports professional development by enabling the individual to maintain his/her current awareness through the use of such tools as alerting services.</p>	Professional development

## Information literacy and European Parliament key competences for lifelong learning

Recommendation of the European Parliament and of the Council, of 18 December 2006, on key competences for lifelong learning [Official Journal L 394 of 30.12.2006].

### Key competences for lifelong learning

Key competences for lifelong learning are a combination of knowledge, skills and attitudes appropriate to the context. They are particularly necessary for personal fulfilment and development, social inclusion, active citizenship and employment.

Key competences are essential in a knowledge society and guarantee more flexibility in the labour force, allowing it to adapt more quickly to constant changes in an increasingly interconnected world.

They are also a major factor in innovation, productivity and competitiveness, and they contribute to the motivation and satisfaction of workers and the quality of work.

Information literacy links	Lifelong learning competences
This is the information literacy cycle stage of sharing. The individual shares what s/he knows with others.	<b>Communication in the mother tongue</b> which is the ability to express and interpret concepts, thoughts, feelings, facts and opinions in both oral and written form (listening, speaking, reading and writing), and to interact linguistically in an appropriate and creative way in a full range of societal and cultural contexts.
Information literacy underpins and is supported by investigation and strengthens problem solving, critical thinking, informed reasoning and personal reflection abilities.	<b>Mathematical competence and basic competences in science and technology.</b> Mathematical competence is the ability to develop and apply mathematical thinking in order to solve a range of problems in everyday situations, with the emphasis being placed on process, activity and knowledge. Basic competences in science and technology refer to the mastery, use and application of knowledge and methodologies which explain the natural world. These involve an understanding of the changes caused by human activity and the responsibility of each individual as a citizen.
This is one of the skills underpinning information literacy and is generally a pre-requisite to becoming information literate.	<b>Digital competence</b> involves the confident and critical use of information society technology (IST) and thus basic skills in information and communication technology (ICT).
This is one of the key outcomes of becoming information literate – gaining the confidence, skills and abilities to be able to undertake self-directed learning.	<b>Learning to learn</b> is related to learning, the ability to pursue and organise one's own learning, either individually or in groups, in accordance with one's own needs, and awareness of methods and opportunities.
Information literacy supports the individual in learning about the society in which s/he lives by enabling the retrieval of related government and other information.	<b>Social and civic competences.</b> Social competence refers to personal, interpersonal and intercultural competence and all forms of behaviour that equip individuals to participate in an effective and constructive way in social and working life. It is linked to personal and social well-being. An understanding of codes of conduct and customs in the different environments in which individuals operate is essential. Civic competence and particularly knowledge of social and political concepts and structures (democracy, justice, equality, citizenship and civil rights) equips individuals to engage in active and democratic participation.
Information literacy supports innovation and creativity by encouraging the individual to challenge current practice and accepted opinion.	<b>Sense of initiative and entrepreneurship</b> is the ability to turn ideas into action. It involves creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. The individual is aware of the context of their work and is able to seize

	opportunities which arise. It is the foundation for acquiring more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promote good governance;
Information literacy encourages investigation and leads to the individual being exposed to information in a wide variety of formats.	<b>Cultural awareness and expression</b> which involves appreciation of the importance of the creative expression of ideas, experiences and emotions in a range of media (music, performing arts, literature, and the visual arts).
These key competences are all interdependent, and the emphasis in each case is on critical thinking, creativity, initiative, problem solving, risk assessment, decision taking, and constructive management of feelings.	

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## Information literacy and Health Informatics

[http://www.skillsforhealth.org.uk/tools/view\\_framework.php?id=120](http://www.skillsforhealth.org.uk/tools/view_framework.php?id=120)

Information literacy focus	Health Informatics competence
<p>Every HI competency requires the application of the entire information literacy cycle as they each require an awareness of current practice in the field as well as existing policy and legislation.</p> <p>Individual competencies have a particular emphasis on individual stages of the information literacy cycle and these are shown below.</p>	
This competency requires the application of every stage of the information literacy cycle. It requires that information managers are able to identify, evaluate and develop preventative and corrective responses to existing information risks.	<b>HI1 Manage risks to information</b>
Every stage of the information literacy process is applied in complying with this competency. HI2 requires the identification of organisational needs for new information and of sources of that information. The new information is retrieved and stored for easy access and re-use by others. The main focus here is on the <b>share</b> and <b>apply</b> elements of the information literacy cycle.	<b>HI2 Develop models for processing new data and information</b>
The first three stages of the information literacy cycle are most supportive for this competency. HI3 requires the formulation of a <b>question</b> relating to the type of information required, the identification of the <b>source(s)</b> of that information and the retrieval of the information ( <b>find</b> ).	<b>HI3 Identify and specify data and information requirements</b>
The <b>find</b> , <b>evaluate</b> and <b>combine</b> stages of the information literacy cycle are most relevant to this competency. HI4 requires the collection, validation and collation of information.	<b>HI4 Collect and validate data and information</b>
This competency requires the <b>evaluation</b> of information followed by its <b>combination</b> and organisation, before it is <b>shared</b> in an appropriate way with the intended audience.	<b>HI5 Analyse data and information and present outputs of analysis</b>
This competency is concerned with internal environmental scanning and requires the application mainly of the <b>combine</b> , <b>evaluate</b> , <b>share</b> , and <b>apply</b> steps of the information literacy cycle to enable recommendations for improving information management.	<b>HI6 Monitor, evaluate and improve the management of data and information</b>
This competency is concerned with supporting auditors and colleagues in the conduct of an information audit. The <b>source</b> , <b>find</b> , <b>share</b> , <b>evaluate</b> , <b>combine</b> , <b>apply</b> stages of the information literacy cycle are most relevant to these activities.	<b>HI7 Comply with an external audit of data and information</b>
This competency requires searching for evidence ( <b>question</b> , <b>source</b> , <b>find</b> ) to support code assignment and accurately	<b>HI8 Produce coded clinical data</b>

extract correct ( <b>evaluate</b> , <b>combine</b> ) clinical data from health records. The information is to be supplied to a healthcare professional ( <b>share</b> ) and the appropriate codes assigned to the identified clinical data ( <b>apply</b> )	
This competency requires pre-audit interviews ( <b>source</b> , <b>find</b> ), and analysis of the associated questionnaires ( <b>evaluate</b> ). This is followed by the audit to identify the coding and supporting processes for the coding function ( <b>combine</b> ), analysis of the audit findings ( <b>evaluate</b> ). The final activity is to report the findings, conclusions and recommendations ( <b>share</b> ) of the audit.	<b>HI9 Prepare, conduct and report the results of a clinical coding audit</b>
This competency requires the application of the entire information literacy cycle. It involves capturing information ( <b>question</b> , <b>source</b> , <b>find</b> , <b>evaluate</b> ), organising and publishing information ( <b>combine</b> , <b>share</b> ) intended to improve service delivery ( <b>apply</b> )	<b>HI10 Capture, organise and disseminate information and knowledge</b>
This competency is concerned with the critical appraisal of health related information and requires the application of the <b>evaluation</b> stage of the information literacy cycle.	<b>HI11 Appraise information and knowledge resources</b>
This competency focuses on the <b>share</b> stage of the information literacy cycle, requiring the promotion and facilitation of use of information across boundaries of discipline, geography and sector.	<b>HI12 Promote and facilitate the use of information and knowledge</b>
This competency requires the application of the <b>question</b> , <b>source</b> , <b>find</b> , and <b>evaluate</b> stages of the information literacy cycle.	<b>HI13 Identify the needs of clinicians, patients and the public for communication, information and knowledge systems</b>
This competency focuses on the <b>share</b> stage of the information literacy cycle.	<b>HI14 Develop a specification for communication, information and knowledge systems to meet the needs of clinicians, patients and the public</b>
This competency focuses on the <b>share</b> stage of the information literacy cycle.	<b>HI15 Facilitate, and clinically validate, the development of communication, information and knowledge systems to meet the needs of an agreed specification</b>
This competency requires the application of the <b>evaluation</b> , <b>share</b> and <b>apply</b> stages of the information literacy cycle. It involves clinical validation ( <b>evaluation</b> ) of the implementation ( <b>apply</b> ) and improvement of communication, information and knowledge systems ( <b>share</b> ).	<b>HI16 Facilitate, and clinically validate, the implementation, evaluation and improvement of communication, information and knowledge systems to meet the needs of clinicians, patients and the public</b>
This competency requires the application of the entire information literacy cycle, being one methodology for conducting information search, retrieval, sharing and application.	<b>HI18 Search for clinical information and evidence according to an accepted methodology</b>

This competency is concerned with the critical appraisal of clinical information and evidence and requires the application of the <b>evaluation</b> stage of the information literacy cycle.	<b>HI19 Critically appraise clinical information and evidence</b>
This competency requires the application of the whole of the information literacy cycle to identify new, relevant information ( <b>question</b> , <b>source</b> , <b>find</b> , <b>evaluate</b> ), to add that information to what is already known ( <b>combine</b> ), to produce the guideline ( <b>share</b> ) and to alter practice in line with the guideline ( <b>apply</b> ).	<b>HI20 Develop evidence-based clinical guidelines</b>
This competency is concerned with <b>sourcing</b> , <b>finding</b> and <b>sharing</b> information, with attention to policy and legal requirements for its ethical use and re-use ( <b>combine</b> , <b>apply</b> ).	<b>HI88 Enable individuals to access and use information</b>



# Glossary

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**A****Absorptive capacity**

Individual and/or organisational openness to change and innovation and the capability or preparedness to integrate it

**AHP**

Allied Health Professional

**Alerting service**

A tool included in some web pages used to inform web site users about changes in their favourite information collections or, about newly added documents on a subject they are interested in.

**Athens**

Athens is an Access Management System which controls access to all resources held on subscription by NHS Scotland. Users are issued with one username and password, which gives access to all of these resources.

**B****Benchmarking**

The practice of identifying qualitative and quantitative metrics against which the success of an organisation can be measured, often in comparison to competitors and industry standards. Identifying best practices or lessons learned are common by-products of benchmarking.

**Best practice**

Methods of performing a process or sub-process that have been identified inside or outside of the organisation and which are validated, codified, diffused, and shared with others to encourage reciprocity and knowledge sharing

**Bibliographic Database**

A database containing records that give descriptions of works so that they can be identified and located.

**Bibliography**

A list of sources used or referenced in writing a report, creating a webpage etc.

**Blog**

An online journal created by a particular person. The owner posts messages to a dedicated website and allows others to add their own comments. Topics often include the owner's daily life or views on politics or a particular subject important to them.

**Bookmark**

A method of storing links to individual web page locations on your computer. Bookmark is the term used by Netscape; Favourites is the Internet Explorer term.

**Boolean Operators**

A means of combining searches to broaden or narrow search results. Named after George Boole, who developed the logic, Boolean connectors are used in formulating search strategies. The AND operator narrows a search, the operator OR broadens a search, and the NOT operator narrows a search.

**Boundary objects**

Objects shared by more than one party, but which are not perceived in the same way by all parties. Because they are shared, they can form the basis for negotiation, community, dialog, hence changes in perception, etc. For example, data on fish in a specific watershed might be used by public fisheries to monitor the health of the population, or by activists to promote a political agenda.

**Browser**

Software used to view and interact with resources available on the World Wide Web. The most common browsers are Netscape and Internet Explorer.

**Business process re-engineering (BPR)**

A methodology that aims to reorganise work in order to increase productivity and/or decrease costs. Also known as BPR, it is often a companion or by-product of knowledge management initiatives.

**C****Citation**

Quoting the name of the author, date of publication, title, publisher and place of publication of an information item. This forms part of the 'evidence' supporting a 'new' information article.

**Citation sharing tools/Social citations**

Much like social bookmarking, this software, aimed towards academics, allows the user to post a citation for an article found on the internet. These citations can be organised into predefined or new categories defined by the user. This enables academics researching or interested in similar areas to connect and share resources.

**Cochrane Database of Systematic Reviews**

The reviews are presented in two sections :

**Complete reviews** - over 2000 full-text articles reviewing the effects of specific health care interventions. The reviews are highly structured and systematic, with evidence included or excluded on the basis of explicit quality criteria, to minimise bias. Data are often combined statistically (in what is called a meta-analysis) to increase the power of the findings of numerous studies, each too small to produce reliable results individually.

**Protocols** - information about reviews in preparation, including the background, rationale and methods.

**Cochrane Library**

A collection of databases, published on CD-ROM and the Internet and updated quarterly, containing the Cochrane Database of Systematic Reviews (Cochrane Reviews), the Cochrane Central Register of Controlled Trials (Central), the Database of Abstracts of Reviews of Effects (DARE), the Cochrane Methodology Register, the Health Technology Assessment Database (HTA), NHS Economic Evaluation Database, and information about The Cochrane Collaboration.

**Cohort study**

Involves identification of two groups (cohorts) of patients, one of which receives the treatment of interest, and one which did not, and following these cohorts forward to the outcome.

**Collaboration**

A key principle of KM, given that knowledge sharing--among colleagues and customers within and outside of the organization--is an effective means of transferring "know-how" or tacit knowledge between individuals and therefore critical to competitive advantage.

**Collaborative filtering**

A voluntary practice and method, most common on the Internet, of pooling and ranking informed opinions on a topic. A relatively well-known example is PHOAKS (People Helping One Another Know Stuff) where anyone can post opinions of web resources in Usenet Netnews which PHOAKS reads, classifies, abstracts and tallies automatically.

**Community**

A 'virtual' group of people who share interest in a subject or area of practice and who communicate with one another through an electronic shared space.

**Community of practice (COPs)**

A self-organised, deliberate collaboration of people who share common practices, interests or aims and want to advance their knowledge. When the community proves useful to its members over time, they may formalise their status by adopting a group name and a regular system of information exchange.

**Competitive advantage**

The unique blend of activities, assets, relationships, history, and market conditions that an organization exploits in order to differentiate itself from its competitors, and thus create value.

**Competitive intelligence (CI)**

A process of monitoring the competitive environment to enable senior managers in companies of all sizes to make informed decisions about everything from marketing, R&D, and investing tactics to long-term business strategies.

**Continuing professional development**

The ways in which working people continue to learn and expand their skills so as to stay up to date with new developments and improve their efficiency.

**Copyright**

The exclusive legal rights granted by a government to an author, editor, compiler, composer, playwright, publisher, or distributor to publish, produce, sell, or distribute copies of literary, musical, dramatic, artistic, or other work, within certain limitations (fair use and first sale). Copyright law also governs the right to prepare derivative works, reproduce work or portions of it, and display or perform a work in public.

**Core competencies**

The key functions which an organisation performs best and uses to create sustainable value and wealth.

**Corporate culture**

The values of an organisation, frequently expressed as behaviours which are encouraged and rewarded.

**Corporate instinct**

An organisation's innate intelligence, combined with analytical reasoning which is based on the collective explicit and tacit knowledge and its core competencies.

**Corporate memory**

The practices of an organisation, embodied in its members, which influence its current behaviour. Technologies which enhance corporate memory include (but are not limited to) data-warehouses, document management systems, and expert systems. A complementary concept is "learning to forget", where entities try to retire traditional, but no longer optimal, competitive strategies.

**Cross search tool**

A computer programme which searches multiple information resources simultaneously and returns results from all of the searched resources.

**Current awareness**

The process of keeping up to date with developments in a particular professional or interest area.

**D****Database of Abstracts of Reviews of Effects**

DARE includes structured abstracts of nearly 3000 systematic reviews from around the world, which have been evaluated by reviewers at the Centre for Reviews and Dissemination in the UK. Only reviews which meet minimum quality criteria are included in DARE. Many of these reviews cover topics that have yet to be addressed in Cochrane reviews.

**Data mining**

A type of computer programme which sorts, ranks, and performs calculations on a specified data set to reveal patterns which may not have been evident from listings or summaries

**Data warehouse**

A separate, centralised and integrated information repository organised to facilitate data retrieval and reporting.

**Decision support systems**

Business applications which contain summaries of large amounts of data, filtered and synthesised to support strategic decision-making.

**Delivering for Health**

Delivering for Health – the vision for health in Scotland. Delivering for Health promises a comprehensive health information system built around an Electronic Health Record.

**Deskilling**

A situation where organisations lose critical competencies, corporate memory, or knowledge as a result of attrition, downsizing, automation, lack of learning, or bad management.

**DNS**

Directors of Nursing Service within the NHS Boards

**Document management systems (DMS)**

A series of applications which enable the management of compound documents, including storage/archiving, cataloguing/indexing, search and retrieval, analysis, workflow, routing, aggregation, diffusion, and distribution.

**Dynamic capabilities**

A theory of creating competitive advantage, especially in times of rapid technological change, through identification of new opportunities followed by efficient coordination of internal technical, organisational, and managerial processes for rapid and innovative product delivery.

**E****eHealth**

Used to describe the application of information and communications technology (ICT) built around an Electronic Health Record, to underpin the delivery of integrated care services

**EHR**

Electronic Health Record - Patient centric electronic repository of patient information

**e-Government Unit (eGU)**

The eGU is a unit of the Cabinet Office and is responsible for formulating information technology (IT) strategy and policy, developing common IT components for use across government, promoting best practice across government and delivering citizen-centred online services

**e-journal**

A journal that is made available electronically, in part or in full, on the World Wide Web.

**Early adopter**

A small group of clients/users who are the first to perceive value in new products, services, or ideas, begin to use them, and become adept with them before the majority of eventual clients/users does.

**Enabling technologies**

Software, hardware, or operative method which permits the interaction of separate components.

**Expert systems**

Applications of artificial intelligence techniques to perform decision-making tasks based on a programmed set of rules and logic within specific subject areas.

**Explicit knowledge**

Knowledge and information which is external to the individual and which can be shared easily with others. Sharing may take the form of written manuals or procedures. Films and works of art are also forms of explicit knowledge.

**Export**

The act of downloading information from a database, usually by sending references to an e-mail address or to disk.

## F

### **Folksonomy**

A folksonomy is a user-generated taxonomy used to categorise and retrieve web content such as webpages, photographs and web links, using open-ended labels called tags.

### **Full-text database**

A searchable database that provides the complete text of works online.

## G

### **Gatekeeper**

An individual, unit, or object that acts as accepted, authoritative information channels employed in the information seeking process

### **Gateway**

A device that interconnects networks and web sites and directs users of one site to other relevant sites.

### **GCS**

Generic Clinical System – a tool kit for the development of specialist clinical applications.

## H

### **Health Informatics**

The knowledge, skills and tools that enable information to be collected, managed, used and shared to support the delivery of healthcare and to promote health and wellbeing

### **Homepage**

The main web page for an organisation, person, or interest group. It is usually the first or welcoming page of a Web site.

### **Hyperlink**

A highlighted word or image within a web page which, when clicked, takes you to another place within that document or to another site altogether.

## I

### **ICT**

Information and Communications Technology

### **Implicit knowledge**

Also known as **Tacit knowledge**. Please see definition

### **Information architecture**

An aspect of information systems development commonly referred to within the context of website design, which focuses on organising information and developing a navigational structure.

### **Information audit**

A study of the efficiency of flows of information, i.e., blockages, duplicative data collection, failure to coordinate and/or combine, etc.

### **Information Governance**

Information Governance is a means of handling information in confidential and secure manner to appropriate ethical, legal and quality standards

**Innovation**

A primary focus of Knowledge Management given that the ability to create new and often unusual solutions/products, is viewed as one of the sole sustaining competitive advantages of the modern organisation

**Instant Messaging**

Instant messaging requires a software package which allows individuals to communicate with one another over an electronic network in relative privacy. Contact or buddy lists are compiled by adding email addresses messenger identities to the programme. When a contact is online, his/her name is shown as available for chat. Clicking an available contact name activates a chat window which has 'panes' to allow you to write messages and read replies

**Intellectual property**

Knowledge, almost exclusively explicit, which is recognised and protected under the laws of copyright, patents, trademarks, and trade secrets.

**Internet**

A network of computer networks which operates world-wide using a common set of communication protocols.

**Internet forum**

An electronic bulletin board which provides a webspace where users post "topics" for others to review and add comments in a linear fashion, one after the other.

**Intranet****J****Journal**

A term used to describe publications in which articles are published regularly either weekly, monthly, quarterly, or annually, e.g. Lancet, BMJ, BDJ.

**K****Knowledge broker**

A person who facilitates connections between buyers and sellers. Brokers are guides, and as such contribute to other peoples' success.

**Knowledge buyers**

A person or organisation requesting "commodities" such as insights, judgments, and understanding.

**Knowledge creation**

The process of interactions between explicit and tacit knowledge where ideas form in the minds of individuals ; interaction with others is usually a critical step in developing the ideas.

**Knowledge management**

Knowledge management is concerned with organising, controlling and applying the information accumulated by an organisation, group or individual.

**Knowledge map**

A guide to or inventory of an organisation's internal and external information and knowledge sources. The sources of information include files, web pages (in intranets and extranets), document management systems, recordings of best practices, databases, data warehouses and data marts. Sources of knowledge include subject experts, business rules, workflow charts, procedure manuals, "cookbooks", and diagrams.

**Knowledge market**

A concept developed by Laurence Prusak which sees knowledge in firms behaving like a traditional, tangible commodity which can be exchanged, bought, bartered, found, and generated. The main price mechanism of

the knowledge market is reciprocity, the expectation that one will receive valuable knowledge in return for giving it. Additionally, the knowledge may have either present or future value for parties to the transaction

### **Knowledge Networks**

Extended communities which operate across organisational boundaries to support effective sharing and management of knowledge within a defined domain. May function as umbrella networks which encompass multiple communities of practice.

### **Knowledge repositories**

Collections of knowledge "nuggets", the contents of which are characterised by having the authority of a best practice and having been organised according to a scheme to assist visualisation, manipulation, and navigation.

### **Knowledge transfer**

The action and flow by which largely tacit knowledge is transmitted among people.

### **Knowledge worker**

A term used to describe a participant in an economy where information and its manipulation are the commodity and the activity

### **KSF knowledge and skills framework**

Framework of skills and abilities, intended to support the personal development and career progression of staff within the NHS

## **M**

### **Medical Informatics**

Medical Informatics is the study of how information is used and disseminated in health care settings. Medical informatics includes the study of health information systems, computer networks in clinical settings and clinical decision systems

### **MEDLINE**

MEDLINE® is the United States' National Library of Medicine's (NLM®) premier bibliographic database and provides information from : Medicine, Nursing, Dentistry, Veterinary medicine, Allied health and Pre-clinical sciences.

MEDLINE is also the primary source of global information from international literature on biomedicine, including Biology, Environmental science, Marine biology, Plant and animal science, Biophysics and Chemistry as they relate to biomedicine and health care.

The MEDLINE database is the electronic counterpart of Index Medicus®, Index to Dental Literature, and the International Nursing Index

### **MeSH headings**

Terms used by the United States National Library of Medicine to index articles in Index Medicus and MEDLINE. The MeSH system has a tree structure in which broad subject terms branch into a series of progressively narrower subject terms.

### **Meta-analysis**

A way of grouping information or data from a number of different studies to determine an average or common effect. It is aimed at improving the precision of the average data by looking at a greater number of people. It may not be possible for a meta-analysis to be included in a review because data from different studies cannot always be combined

### **Metadata**

Information about information, for example the index of a book. It provides identifying and other details about a resource.



**MKN**

Managed Knowledge Network – An umbrella network encompassing multiple communities of practice who are engaged in managing knowledge effectively across boundaries for disciplines, organisation and sectors to support patient care in a defined disease.

**Moderation**

Checking the quality and accuracy of content to be added to a website community.

**N****NES**

NHS Education for Scotland

**NHS Scotland e-Library** (<http://www.elib.scot.nhs.uk>)

A national electronic knowledge service which is central to realising the vision of *Exploiting the Power of Knowledge in NHS Scotland*. It provides access for NHS Scotland and partners to :

- Knowledge resources – the published literature of healthcare – journals, books, guidelines, evaluated website, patient information.
- Tools and services to involve healthcare staff in accessing knowledge and sharing knowledge within communities – e.g. updating services, personalisation, knowledge exchanges.

**NMAHP**

Nurses, Midwives and Allied Health Professionals

**O****OLAP**

Online Analytical Processing : an application which supports the analysis of multidimensional (or multi category) data. OLAP is intended to help the user synthesise enterprise information through personalised viewing and the analysis of historical and projected data.

**P****Piloting**

Establishes whether a system or a process is effective in a “real world” environment and whether a solution can withstand the rigours of operating in real life situations. Also helps gauge the behaviour and likely acceptance of target customers and users.

**Plagiarism**

The act of misrepresenting as one's own, the ideas, interpretations, words or creations of another. These include published and unpublished documents, designs, music, sounds, images, photographs, computer codes and ideas gained through working in a group. These ideas, interpretations, words or works may be found in print and/or electronic media.

**Podcast**

A podcast is a digital media file, or series of files, distributed over the Internet using syndication feeds. They are intended for playback on portable media players and personal computers

**Portal**

A web page or web site which acts as an entrance to other sites and resources.

**PRINCE2 (Projects in Controlled Environments 2)**

Project management method covering the organisation, management and control of projects. PRINCE2 is the UK Government standard for public sector IT project management. It sets out good practice in risk management and in managing challenges and opportunities in an environment of rapid change.

## Q

### QIS

NHS Quality Improvement Scotland

## R

### Randomised controlled trial

In a randomised trial participants are assigned by chance to receive either an experimental or control treatment. The idea behind the randomised trial is to study the effect of a treatment on groups of people who are the same at the outset, and treated in the same way except for the intervention being studied. Any difference seen between the groups at the end of the trial can be attributed to the treatments given rather than to bias or chance.

### Refereed

An article or other item is reviewed by appointed person or group especially for a settlement, decision, or an opinion as to its quality.

### Reliability

The extent to which information is dependable or trustworthy

### RSS (Really Simple Syndication)

Information gathered electronically from a variety of sources and published to one web display area. The information is regularly and frequently updated and enables those who have registered with the service to receive automatic notification of developments of interest.

## S

### SCI

Scottish Care Information – A major NHSScotland eHealth initiative supporting improvement of Scottish Patients care.

### SCI Gateway

The national communications gateway supporting electronic referral, booking and discharge and secure transmission of clinical information

### Search engine

A computer programme which conducts searches on an electronic source such as the Internet, a specific web site, library catalogue or database for records matching a search request.

### Search Strategy

The plan used for finding information, or more specifically, the search statement devised to find information.

### Second life

An Internet-based virtual world which allows users to select/create online representations of themselves. These representations (known as “residents”) interact with other virtual “people” in that virtual world.

### SEHD

Scottish Executive Health Department

### Shared Space

An electronic workspace provided by NHS Scotland e-Library service where groups and communities share information.

### Situated learning

An alternative term for apprenticeship which emphasises the contextual, real-life learning and mentoring aspects of knowledge acquisition. This requires absorbing tacit and explicit knowledge.

## Skills Framework for the Information Age (SFIA)

Provides a common reference model for the identification of the skills needed to develop effective information systems making use of information communications technologies. The SFIA Foundation is jointly owned by e-skills UK, the British Computer Society, the Institution of Electrical Engineers and the Institute for the Management of Information Systems.

## Social bookmarking and tagging

An electronic space where users post lists of bookmarks—or favourite websites—for others to search and view. Sharing bookmarks and tags can lead to the creation of virtual groups and networks.

## Social library

A website which enables visitors to catalogue their collectibles, such as books, records and DVDs. Users can share their collections. Recommendations on particular collections are automatically generated, based on ratings using statistical computation and network theory. Some sites offer a buddy system, as well as virtual checking out of items for borrowing among friends. **Folksonomy** is implemented on most sites.

## Social networking service

An online service such as Facebook or MySpace which enables the building of networks for communities of people who share interests and activities.

## Specialist e-library

An electronic resource that provides access to published literature, journals, books, guidelines, websites, on a specialist topic.

## Subject matter expert

An individual with expertise in a certain subject area. Within the context of KM, this person may be seen as an authority and act as the gatekeeper of knowledge for their particular subject area.

## Synonym

A word or phrase that is similar in meaning to another word or phrase.

## Synthesis

Blending newly learned information with an existing knowledge-base. Or, more simply, adding new information to what is already known.

## Systematic review

A review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies.

## T

### Tacit knowledge

Knowledge or understanding which is stored in an individual's head or embedded within the culture of an organisation. It is not written down and therefore is difficult to share without direct contact and coaching by the individual who holds the knowledge. This is also known as implicit knowledge.

### Tag

A key word or term associated with a particular piece of information or website. The word itself is hyperlinked to the resource(s) it describes *and* a list of people who used that tag.

### Tag cloud

A visible representation of the sets of tags used on a website. The font size of the tag relates to the number of resources “attached” to that word.

### Text chat

Multi-user online chat software (for example Internet Relay Chat (IRC)) which enables real time communication among a group of users. Enables users to join chat rooms and communicate with many people at once, publicly. Users may join pre-existing chat rooms or create a chat room about any topic. Once

in a chat room, you may type messages that everyone else in the room can read, as well as respond to messages from others.

**Thesaurus**

A list of words in which each is associated with other words which are similar in meaning to it (synonyms). This can help find articles on a particular topic that may be described in different ways by different authors.

**Truncation**

A method of shortening a search term to enable retrieval of items using variants of the same term, eg. using a search term "psych" with an appropriate truncation symbol (such as \*, ?, or \$) will retrieve material containing the words "psychiatry, psychology, psychiatrist, psychiatrists, psychologist, psychologists, psychiatric".

**U****URL**

Uniform Resource Locator is the address of a resource (webpage, article, etc) available on the Internet.

**V****Validity**

The extent to which information is based on fact or truth

**W****Web 2.0**

Second generation websites which provide interactive facilities for users.

**Wiki**

A piece of software which enables users to create, edit and link webpages. A wiki website is usually created collaboratively and allows members of the creating community to edit its content.

**Wildcard**

Many databases allow a symbol known as a wildcard to be placed within a word to find variants of that word, e.g. wom?n = woman, women.

**World Wide Web**

A network of servers linked together by a common communications system, allowing access to millions of hypertext resources. It is also known as WWW, W3, and the Web.



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# Information Literacy

**This page is intended as a 'quick reference' and is not part of the main body of the document. It is intended to appear either on the inside front cover or inside (outside?) back cover of the document**

## What is information literacy?

The Steering Group supporting this framework has developed the following working definition of the term :

*An information literate person can recognise an information need and is able to apply the set of transferable skills, attitudes and behaviours needed to find, retrieve, assess, manage and apply information in any situation, throughout life.*

*Information literacy supports individual and organisational learning, creativity and innovation and contributes to improved healthcare delivery through a continuously evolving, reliable information base.*

This is what is intended by the term as it is used throughout this document.

## The Model of the Information Literacy Process

The model used is intended to illustrate, very simply, the seven basic stages of the information literacy process.



These are :

<b>Question</b>	acknowledge and articulate an information need and formulate a related question.
<b>Source</b>	identify potential sources which may provide the needed information
<b>Find</b>	apply the question to the selected source(s) to find the needed information
<b>Evaluate</b>	assess the value and reliability of retrieved information
<b>Combine</b>	add valid retrieved information to the existing knowledge base
<b>Share</b>	communicate the information to others
<b>Apply</b>	use information in everyday work activities

Becoming information literate and enhancing your existing skills and abilities is a continuous process. It requires the continuous application and enhancement of previous learning to further develop your level of skill and knowledge.

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