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Information literacy in Europe: a literature review

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Abstract

Examines the developments in information literacy in Europe and provides an overview of the concepts used and discussed by European authors. Some examples of information literacy initiatives in schools and the higher education sector, as well as of institutions and organizations, projects and conferences concerned with information literacy, are given. Some research initiatives are also introduced. The overview is based on literature reviews and personal observations and involvement and presents a selective review.

Introduction

Bruce, a well-known Australian information literacy researcher, notes:

> The idea of information literacy, emerging with the advent of information technologies in the early 1970s, has grown, taken shape and strengthened to become recognized as the critical literacy for the twenty-first century. Sometimes interpreted as one of a number of literacies, information literacy is also described as the overarching literacy essential for twenty-first century living. Today, information literacy is inextricably associated with information practices and critical thinking in the information and communication technology environment' (Bruce, 2002).

Indeed, since 1974 information literacy has been an area of increasing interest to librarians and information professionals and there is a huge amount of literature on the topic. However, the majority of publications have come from the industrialised, English-speaking countries, especially from the United States and Australia.

The information literacy movement in the United States (Behrens, 1994; Doyle, 1994; Breivik, 1998; Spitzer, *et al.*, 1998; Seaman, 2001; McCartin & Feid, 2001) and Australia (Bruce & Candy, 2000; Bruce, 2001; CAUL, 2001) is quite extensively analysed and discussed and there have been significant initiatives in these countries. In the United States the National Forum on Information Literacy was established in 1989, the Institute for Information Literacy in 1998, while two sets of information literacy standards were developed for the school sector and the higher education sector. The United States Department of Education included information literacy in its national education technology plan as one of five goals in December 2000. The importance of students being able to access and evaluate information is also highlighted in several other strategic documents (Spitzer, et al., 1998; Riley, *et al.*, 2000; Muir & Oppenheim, 2001; Koch, 2001).

Examples of how information literacy initiatives and standards have been applied in the United States can be found at various levels. At the state level, for example, Colorado, Wisconsin, and Oregon have adopted standards and several initiatives have been developed by state-wide systems of higher education, including SUNY Information Literacy Initiative, the California State University System Information Competence Project, Wisconsin and the University of Massachusetts. Individual colleges and universities have also implemented standards. Some of these are Earlham College, Kings College, University of Louisville, University of Washington, University of Iowa, and Florida International University (Snavely, 2002; Wilson, 2001).

The concept of information literacy has also permeated strategic thinking in Australia (Muir & Oppenheim, 2001) and has been highlighted in several influential reports produced by the higher education sector and by the

government. The Council of Australian University Librarians (CAUL) has developed information literacy standards adapted from the Association of College and Research Libraries (ACRL) ones (CAUL, 2001) and information literacy strategies have been integrated into many university institutional plans. For example, the Central Queensland University (CQU) distance education information literacy programme has been a focus for numerous grants and recognised as a flagship programme internationally, as well as within Australia (Bruce & Candy, 2000), the University of Ballarat's policy documentation identifies information literacy as a key graduate outcome and as an integral part of an undergraduate curriculum model (Radomski, 2000) and the University of Wollongong has reported progress on integration of information literacy into the curriculum (Wright & McGurk, 2000).

From 1992, successful national conferences on information literacy have been conducted every two years by the University of South Australia and the Australian Library and Information Association (ALIA). In 2001 a joint Australian and New Zealand Institute for Information Literacy (ANZIIL) was established (CAUL, 2001) and the ALIA released a *Statement on Information Literacy for all Australians* endorsing the importance of information literacy from a personal, political, economic and global perspective (Bundy, 2002). It should also be mentioned that valuable research related to information literacy is being done in Australia.

There are also references to information literacy developments in Canada, China, Japan, Mexico, Namibia, New Zealand, Singapore and South Africa (Whitehead. & Quinlan, 2002; Spitzer, *et al.*, 1998; Muir & Oppenheim, 2001; Rader, 2002a; Inoue, *et al.*, 1997; Morgan, 2000; Moore, 2000; LIANZA, 2001; Hepworth, 2000a; Karelse, 2000). References to information literacy initiatives in Europe are, however, quite rare and fragmented. The majority of publications have come from the United Kingdom. Part of the problem of understanding European information literacy activities stems from the language barrier. Many information literacy initiatives have been, for example, documented only in local languages - in Danish, Dutch, Finnish, French, German, Norwegian, Spanish, Swedish and other languages - but not in English. The examples of the most cited and well-known initiatives are the European Commission funded projects EDUCATE and DEDICATE coordinated by Nancy Fjällbrant, from the Chalmers University of Technology in Sweden and a research project for a doctoral thesis on information seeking and use in a learning context by Louise Limberg, from the Swedish School of Library and Information Studies in Borås.

In 2000 Charles Sturt University published *Information literacy around the world: advances in programs and research*, edited by Bruce and Candy, which includes the examples mentioned above. In addition, Mutch of Nottingham Trent University, considers the nature of information literacy in the workplace (Bruce & Candy, 2000).

However, during recent years there has been considerable interest in information literacy in Europe. This can be illustrated by the number of projects, conferences, workshops, working groups, adaptation of information literacy competency standards, teaching initiatives in many institutions, development of Web sites and Web-based tutorials, and in the area of research.

This paper will give an overview of some of the developments in information literacy in Europe and is divided into four parts. The first is an overview of the concepts used and discussed by European authors. The second gives some examples of information literacy initiatives in schools and higher education sector. The third examines institutions and organizations, projects and conferences concerned with information literacy. The fourth part of the paper introduces some research initiatives. The overview is based on literature reviews and personal observations and involvement. Searches were carried out by the author in February 2003 on *Library and Information Science Abstracts* (LISA), from 1970 to 2003 using terms 'information literacy', 'information skills' and 'information competence' and the names of the respective countries, covering a geographical entity called Europe. Publications in the English and Finnish languages were analysed by the author, while some references to information literacy activities described in Danish, Dutch, French, Italian, Norwegian and Slovenian languages have been made on the basis of abstracts in English in LISA. The article thus presents a selective overview.

The concept of information literacy used and discussed by European authors

Throughout the ages, the crosscurrents of history, culture, economics and politics have defined Europe differently and several geographical, political, economic and social definitions exist that are still open to interpretation (Wilson & van der Dussen, 1995; Lovatt, 1999). However, the first usage seems to be simple and that is geography: the idea of a stretch of land that extends from the Atlantic through to the Ural Mountains and constitutes a geographical

entity called Europe. In Greek mythology, Europa was a beautiful woman, the daughter of a Phoenician king, and it is believed that this continent has been named after her. The second use of the term Europe generally refers to a whole set of values: the system of values or beliefs that are seen to characterize what Europe is all about, politically, socially, culturally. It focuses on concepts like Christendom, liberal democracy, and the idea that everybody should have a say in the decision-making of government (Kelly, 2003). In this article the geographical definition of Europe is followed.

The information-literacy movement in European countries, similar to other countries, has evolved from precursors such as library instruction, bibliographic instruction and user/reader education (Fjällbrant & Malley, 1984; Rogers, 1994; Fjällbrant, 2000a; Homann, 2001; Sinikara & Järveläinen, 2003). Although the majority of information literacy initiatives and programmes in Europe have been initiated in recent years, academic librarians in Europe have been involved in user education for many years. During the 1970s and 1980s, many academic libraries in the United Kingdom, Germany and Scandinavia started fairly ambitious programmes of user education, bibliographic instruction, or reader education and they have provided user education in the form of one or more of the following: short orientation courses in the use of the library, its information resources and catalogues for new students, and courses in information literacy for undergraduate and/or for postgraduate students (Fjällbrant, 2000a; Homann, 2001).

Increasing attention to information literacy in recent years is partly the result of information overload, especially related to the growth of digital information, which has even caused a new ailment called as 'information fatigue syndrome' (IFS) (Wilson, 2001) and partly because of the new focus on student learning in a lifelong learning context. It has also created a need for a reconceptualisation of the roles and responsibilities of library and information professionals in a new learning environment. Although there has always been a need to find, evaluate, and effectively use information, the abilities needed to do so have just grown larger, more complex, and more important in the information and communication technology (ICT) environment. There is also a shift towards broader contexts, to connect information literacy with an active, effective and responsible citizenship supporting personal empowerment and an enriched life through lifelong learning (Hepworth, 2000a; 2000b; Correia, 2002) and as an important factor in the corporate sector (Mutch, 2000).

In this context, several reports have emphasized the importance of finding, evaluating, and using information although the term information literacy is not used (ERT, 1995; 1997; OECD, 1996; 2001a; 2001b; 2001c). For example, the Organisation for Economic Co-operation and Development (OECD), representing twenty-two European and seven other countries, has highlighted the role of information-related competencies in several reports. The report *The Knowledge-based Economy*, discussing the increasing demand for more highly skilled workers, includes the following observation:

> The knowledge-based economy is characterised by the need for continuous learning of both codified information and the competencies to use this information. As access to information becomes easier and less expensive, the skills and competencies relating to the selection and efficient use of information become more crucial... Capabilities for selecting relevant and discarding irrelevant information, recognising patterns in information, interpreting and decoding information as well as learning new and forgetting old skills are in increasing demand. (OECD, 1996: 13).

Another report, *Learning to Bridge the Digital Divide*, put it this way: '...the skills of finding and interpreting information are seen to be more important than the skills of retention and recording...' (OECD, 2000: 15) and,

> ...the ability to seek and exchange information using data bases and networks is not simply dependent on access to technology, but requires possession of the necessary technical skills. In addition, it calls for basic competence in being able to choose, classify and critically evaluate the information that becomes accessible. (OECD, 2000: 102)

The report also expressed concern that many students lack experience in information handling and in effective independent learning (OECD, 2000: 72) and encourages schools to develop the learning environment in ways that give students a more active role, that 'support the ability to find information and transform it into knowledge' and provide skills 'how to find interesting, relevant and reliable information, and how to work with it' (OECD, 2000: 104).

The OECD's *Educational Policy Analysis 2001* states: *'The knowledge economy is based on the production and use*

of information and knowledge... The ability to produce and use information effectively is thus a vital source of skills for many individuals.' (OECD, 2001a: 100). And again, the report *Learning to Change: ICT in Schools* notes: *'In a world with easy access to huge stores of information, the skills of accessing, handling and using data and materials become more important than the ability to recall in detail ever greater amounts across many fields of knowledge.'* (OECD, 2001b: 19). However, information-handling skills are seen in this report as a part of digital literacy.

The European Commission's draft *A Memorandum on Lifelong Learning* notes:

> Europe has moved towards a knowledge-based society and economy. More than ever before, access to up-to-date information and knowledge, together with the motivation and skills to use these resources intelligently on behalf of oneself and the community as a whole, are becoming the key to strengthening Europe's competitiveness and improving the employability and adaptability of the workforce' (EC, 2000: 5)

and highlights *'...learning how to learn, to adapt to change and to make sense of vast information flows are now generic skills that everyone should acquire.'* (EC, 2000: 11).

The members of the European University Association (EUA), the representative organisation of both European universities and national rectors' conferences (its membership includes around 650 members from 45 countries) (Tabatoni, *et al.*, 2000), reacting to the above mentioned draft note: *'Other generic skills put forward by EUA members as important for learners today include: the ability to learn, e.g., by managing the increasing amount of information available at an increasing pace and transforming it into knowledge; problem solving; networking.'* (O'Mahony, 2001). The report *EU Policies and Strategic Change for eLearning in Universities* also refers to the importance of using digital information: *'...they [students] should be enabled to learn using digital information sources.'* (COIMBRA Group of Universities, 2002: 21).

Several European scholars have discussed the concepts of information literacy and information skills. For example, the relationship between user education and information skills is discussed by Fjällbrant and Malley. They wrote:

> Those involved in this development [user education for schoolchildren] (not all of the work is new) describe the work as 'information skills' (again not new). And although adding new terminology (or reinterpreting old terminology) to a subject already burdened with varying and often confusing descriptors must be viewed circumspectly, the use of the term information skills does usefully illuminate the nature of the new emphasis. It is an 'umbrella' term incorporating study skills, learning skills and communication skills, as well as library skills.... Of course there is nothing entirely new in all this - various librarians have argued along some of these lines before. What is new is that the personnel involved in this work have emerged the different backgrounds of teaching, educational research and libraries, bringing with them expertise and specialist knowledge from these different areas. (Fjällbrant & Malley, 1984: 123).

According to Rogers (Rogers, 1994), many authors argued about the term 'information skills' in the United Kingdom in the 1980s. Heather (1984) could find *'no general agreement on the boundaries of information skills'* in her research review. Brake, *et al.* (1985) found the term too vague and confusing. Meek in *Developing resource-based learning: one school's approach* in 1985 seemed to accept the term but questioned whether there was agreement about what the skills actually were. She proposed that 'information skills' should mean skilled behaviour in respect of understanding as a result of successful interaction with a source of information and if this is so, two things result: skills cannot be taught apart from the context of their operation; we learn to study by studying, and because they are, in the end, indissolubly linked to personal knowledge, there is no set of skills to be 'acquired' as if one stretched out a hand and took them from the environment. Instead, they are developed as part of personal development (Roger, 1994: 2-3). Hopkins (1987) found that there is an unresolved dichotomy and confusion between the notion of information skills as (a) the retrieval and location of information, and (b) the analysis and synthesis of information, and the distinction between the two aspects is not clearly articulated in the literature. However, by the end of the 1980s, two kinds of information skills were identified: the instrumental, which most involved library use, and the cognitive, which researchers considered more important .

According to Rogers (1994: 3-4), in 1989 Heeks identified two distinct views: one sought a greater precision in terminology, the other warned against it. For example, in 1985 Meek argued that loosely defined terms such as information technology, study skills, information retrieval, and library skills should be stringently examined for the

assumptions they make about teaching, learning, and literacy. In 1988, Best and others, concluded that the precise meaning of a relationship between study skills, library skills and information skills was an issue in its own right. Agreeing definitions would not only aid the implementation of specific curriculum innovations, but also help schools to clarify their broad educational position. In contrast, Lincoln noted in 1987 that the more skills are broken down into categories, the more fragmented is one's thinking, and the more difficult it is to achieve co-ordination across the school. Again, according to Rogers, in 1991, Howard highlighted the continuing confusion and lack of clarity about the term 'information skills' in the UK.

During recent years discussions about the terms information literacy and information skills, and the nature of the concepts have intensified again in the UK. There are different approaches in using terms 'information literacy' and 'information skills' and many definitions have been suggested by several organisations, institutions and authors.

For example, the broadly-based definition of information skills in higher education of the Standing Conference of National and University Libraries (SCONUL) Information Skills Task Force (now the SCONUL Advisory Committee on Information Literacy (Alvestrand, 2003)) reflects the twin dimensions of the 'competent information user' at the base level and the 'information-literate person'. For the latter level of information skills, the term 'information literacy' is used. Therefore, both information skills and information technology (IT) skills are seen as essential parts of the wider concept of information literacy. For the development of the information-literate person SCONUL proposes seven sets of skills. The outline model of information skills generated in the briefing paper has become known as the *Seven Pillars Model*. The pillars show an iterative process whereby information user progress through competency to expertise by practising the skills (Bainton, 2001). According to a presentation by Town at the first international conference on Information Technology and Information Literacy in Glasgow, in 2002, the SCONUL approach to information literacy can be described as follows:

> ...information literacy is knowledge rather than simply skill, achieved by education rather than training, created through partnership between professionals and is a lifelong endeavour that is contextual in field and service access. (Town, 2002a)

The Chartered Institute of Library and Information Professionals (CILIP) Policy Advisory Groups (PAGs) describe information literacy this way:

> We have adopted the commonly accepted distinction between information literacy and skills. Information literacy is about providing all members of society with the information competences necessary to function effectively within society - it might be termed functional information literacy. The debate over information skills relates to the higher level competences of information specialists' (PAG, 2001: 15; Muir & Oppenheim, 2001).

They define 'information literacy *'as a set of basic competencies that should be used by everyone.'*

Researchers of the UK's Joint Information Systems Committee (JISC) funded 'The Big Blue' project, led by the Manchester Metropolitan University and the University of Leeds, find that in many instances both terms are used to describe what is essentially the same concept: 'information literacy' and 'information skills' can be described as synonyms (The Big Blue, 2002). Stubbings & Brine (2003) also note that at Loughborough University the phrases information literacy and information skills are both used to convey the same meaning. The *Glossary of Information Terms* at the British Open University (OU) Library site seems to support the same approach giving the following definition of information literacy: 'a skill that involves being able to use information successfully, including finding information, searching using various tools (e.g., internet, databases) and being able to critically evaluate the results (OU, 2003).

Mutch (1996) is concerned that the term 'information literacy' carries overtones of a very tightly defined skill or competence rather than the broader and more complex set of attitudes, approaches and skills which is hinted at above and that there might be a danger that literacy is related very tightly to text and hence back to a view of information as a thing. He suggests that information literacy needs a definition of information which recognises that it is not structured data, nor restricted to the printed word and to formal sources, and needs to include insights from varied disciplines. He rather sees the value of the concept of information literacy as a strategic concept (Mutch, 1996; 1997; Bawden, 2001).

Webber & Johnston define information literacy as an efficient and ethical information behaviour:

> ...information literacy is the adoption of appropriate information behaviour to obtain, through whatever channel or medium, information well fitted to information needs, together with critical awareness of the importance of wise and ethical use of information in society. (Webber & Johnston, 2002)

Hepworth (Hepworth, 2000b, 2000c) highlights two main approaches to information literacy that are evident: the most common tries to identify discrete skills and attitudes that can be learnt and measured and highlights works of Doyle (1992), the Information Literacy Competency Standards for Higher Education (ACRL, 2000) and the SCONUL approach (SCONUL, 1999). The other emphasis the information literate mindset associated with how an individual experiences and makes sense of his/her world, the work of Bruce illustrates this approach . This analysis seems to reflect to some extent the approaches identified by Bruce (1997) and is described as the behavioural, constructivist and relational approaches to information literacy.

Boekhorst (2003), from the Netherlands, finds that all definitions and descriptions of information literacy presented over the years can be summarized in three concepts:

- The ICT concept: Information literacy refers to the competence to use ICT to retrieve and disseminate information.
- The information (re)sources concept: information literacy refers to the competence to find and use information independently or with the aid of intermediaries.
- The information process concept: information literacy refers to the process of recognizing information need, retrieving, evaluating, using and disseminating of information to acquire or extend knowledge. This concept includes both the ICT and the information (re)sources concept and persons are considered as information systems that retrieve, evaluate, process and disseminate information to make decisions to survive, for self-actualisation and development.

He also sees the process of becoming information literate as a lifelong endeavour that should be started at primary school and be a part of formal training in all phases and all subject areas during the whole education process and suggests the consideration of information literacy/illiteracy in information-rich versus information-poor context (Boekhorst, 2003).

The Norwegian scholars, Audunson & Nordlie (2003) also highlight three main categories of information literacy: they describe *technical* capabilities or what one might call computer literacy; *intellectual* capabilities related to traditional literacy; and *communicative* competency that presupposes technical as well as intellectual capabilities, and at the same time transcends them. For each dimension they also distinguish several levels of competence, from basic competence to super-user competence to in-depth competence and consider information literacy as the sum of different 'literacies'.

Hepworth concludes: 'Gradually we are seeing increasingly detailed descriptions and greater consensus about what is meant by information literacy; however different communities tend to describe the phenomenon in slightly different ways with varying degrees of comprehensiveness' (Hepworth, 2000b: 23).

Bawden, who attempts to relate information literacy to the full context of all the other relevant literacies, argues that the term 'information literacy' has been widely and confusingly used in the literature. A number of other related terms have also been used for the same, or similar, concepts including computer literacy (or information technology literacy, electronic literacy or electronic information literacy); library literacy; media literacy (or 'mediacy'); network literacy (or Internet literacy or hyper-literacy); digital literacy (digital information literacy); informacy (Bawden, 2001). Bawden and Robinson also find it helpful to distinguish between 'skills-based literacies', such as computer or library literacy, which essentially indicate a competence in handling information in a particular setting or context or format, and more general capabilities. These wider conceptions of information literacy stress capabilities beyond a simple competence in retrieving or communicating information. They highlight that to deal with the complexities of the current information environment, a complex and broad form of literacy is required. It must subsume all the skill-based literacies, but cannot be restricted to them, nor can it be restricted to any particular technology or set of technologies, and understanding, meaning and context must be central to it (Bawden, 2001; Bawden & Robinson, 2001).

Muir & Oppenheim, following the world-wide developments on national information policy, also have to conclude that information literacy 'has no agreed definition' and 'a number of people have offered their views on what they think information literacy is' (Muir & Oppenheim, 2001: 172). In the UK context, a need for an agreed definition of

the term 'information literacy', and the need to distinguish it from 'information skills', is highlighted as well (PAG, 2002: 45).

Several other terms and combinations of terms have been also used by different authors: 'infoliteracy', 'informacy', 'information empowerment' 'information competence', 'information competency', 'information competencies', 'information literacy skills', 'information literacy and skills', 'skills of information literacy', 'information literacy competence', 'information literacy competencies', 'information competence skills', 'information handling skills', 'information problem solving', 'information problem solving skills', 'information fluency', 'information mediacy' and even 'information mastery' was proposed by Bill Nisen, Director of the e-Institute of the Strathclyde/Glasgow University, during the first conference on Information Technology and Information Literacy in Glasgow in 2002. Finnish researcher Reijo Savolainen suggests the umbrella term 'information-related competences' that covers information literacy, media competence and library skills and adds: 'Because new labels describing specific kinds of literacies are continually introduced, reflecting the developments of ICTs, the attempts to develop an exact classification of information-related literacies seem to be futile' (Savolainen, 2002). However, despite of the continuous concern about the term since 1990s, information literacy is still the most commonly used phrase to describe the concept (Bawden, 2001).

In several countries the terms used for information literacy clearly refer to competencies. For example, in Denmark the term *informationskompetence*, in Finland *informaatiokompetenssi* (also *informaatiolukutaito*), in Germany *informationskompetenz*, in Norway *informasjonskompetanse* and in Sweden *informationskompetens* have been used for information literacy.

Therefore, the definition and understanding of the concept seems to be related to the way in which the concepts of competence and skills are defined and perceived. The concept of competence also has different meanings and it is not always clear whether competence refers to identifiable skills, or is it related to patterns of behaviour. *The New Oxford Dictionary of English* defines: 'competence (also competency) - the ability to do something successfully or efficiently; the scope of a person's or group's knowledge or ability; a skill or ability'. The term skill is defined as a person's 'ability to do something well' and also as 'an expertise' (NODE, 2001). It seems that there is no difference between competence and skill and the terms are described as synonyms. Savolainen (2002: 212) points out that there are several other concepts closely related to them and belonging to the same family of concepts: 'ability', 'capacity', 'expertise' and 'know-how' and it can be difficult to find out whether these form a conceptual hierarchy or whether they reside at the same level of generality.

Finnish researchers Anttiroiko, *et al.* (2001) refer to competing research approaches to the phenomena of competence. Rationalistic theories approach competence as a set of relatively stable attributes possessed by actors or the set of requirements characteristic of specific work. In contrast, the interpretative approaches emphasize the importance of the ways in which actors experience the settings of action and construct meanings concerning action. The categorization of information literacy approaches by Hepworth (2000b; 2000c), cited earlier, also seems to fit into this framework. However, Finnish researchers conclude that competence has two dimensions - knowledge and skills.

> Knowledge may be seen as our understanding of how our everyday world is constituted and how it works. Skills involve the ability to pragmatically apply, consciously or even unconsciously, our knowledge in practical settings. In this setting, 'skills' can be conceived as the technical aspects of competence, emphasizing the aspect of 'how to do'. (Anttiroiko, *et al.*, 2001: 31).

Several European scholars, mainly outside the library and information science (LIS) discipline, however, approach competence as a quite complicated phenomenon and also distinguish between competence and competency (Keen, 1992; Cheetham & Chivers, 1996, 1998, 2000; Kirschner, *et al.*, 1997; Koper, 2000).

Keen (1992), for example, notes that competencies refer to the ability to operate in ill-defined and ever-changing environments, to deal with non-routine and abstract work processes, to handle decisions and responsibilities, to work in groups, to understand dynamic systems, and to operate within expanding geographical and time horizons. In other words, competencies are a combination of complex cognitive skills (that encompass problem solving, qualitative reasoning, and higher-order skills such as self-regulation and learning-to-learn), highly integrated knowledge structures (e.g., mental models), interpersonal skills and social abilities, and attitudes and values. In addition, competencies assume the ability to flexibly coordinate these different aspects of competent behaviour. (Kirschner, 1999).

In a learning environment, according to the researchers of the Dutch Open University, competencies can be construed as the abilities that enable learners to recognize and define new problems in their domain of study and future work as well as to solve these problems. A competency is the ability, within a certain (professional or academic) domain, to make use of already learnt as well as new knowledge and skills across traditional subject areas to adequately solve real-life, poorly-defined problems. These competencies are made up of component knowledge, skills and attitudes (Kirschner, et al., 1997). Rob Koper (2000:10) puts it this way:

> I consider a competency to be the ability to act consciously and responsibly in a specific context. By 'consciously' I mean man's ability to freely choose how to act, and to do so with a certain passion and attitude. The choice is dependent on an assessment of the situation and on specific underlying motives such as interests, values or the need to solve a problem. With 'responsibly' I am referring to people's ability to justify their choices and actions, and explain them to others, without putting it down to circumstances beyond their control or automatic behaviour, but rather to their own, carefully considered values and choices. In using these terms I wish to clarify that I view a competency as the combination of cognitive, conative and affective aspects that collectively determine behaviour in a given situation. Which competencies are involved always depends on the domain and the contexts within that domain. And he concludes that there is, as yet, no conceptual framework that is widely accepted in this area (Koper, 2000: 38).

Cheetham & Chivers (1996; 2000) from the UK have also reviewed a number of alternative approaches to competence which had been applied to professional occupations. These are:

- The reflective practitioner approach, which focuses on tacit-knowledge and its application and advocates reflection as a key tool of both professional development and practice.
- The technical-rational approach, which focuses on teaching underpinning professional knowledge and theory as a basis for application.
- Functional competence, typically embedded within occupational standards, which focuses on tasks to be performed and functional skills, rather than personal attributes or behaviour.
- Personal competence, which focuses on the personal attributes required for effective performance.
- Meta-competence, which stresses the importance of competencies that enable individuals to monitor and develop other competencies, or that span other competencies, enhancing or mediating them.

Many publications, however, do not adequately define the exact nature of the concept to which they are referring. Different terms are also used interchangeably and it is not always clear what different authors mean by the terms 'competence' and 'skill'. For example, if the terms competence and skill are defined as synonyms, as well as information literacy and information skills, and information literacy is defined as 'a set of competencies' then it is not always easy to understand the meaning of phrases such as 'information competence skills' 'information literacy skills', 'skills of information literacy', 'information literacy and skills' or 'information literacy competence/competencies' used by the same authors. Savolainen (2002) points out that concepts such as 'competence' and 'skill' are taken as given and most researchers seem to assume that the meanings of these concepts are self-explanatory or sufficiently well-known from everyday contexts. In the UK context the report *Work Skills in Britain 1986-2001* also notes:

> Despite the enormous interest in how skills in Britain have changed over time, how they are distributed, and how these trends and patterns compare with competing nations, there is surprisingly little agreement on what 'skills' actually refer to. In practice, different authors often refer to different aspects of skill and they are influenced by the theoretical standpoint (economic, sociological or psychological point of view) from which their interest in the phenomenon stems. (Felstead *et al.*, 2002).

Part of the problem, pointed out by Cheuk (2000), a researcher from Singapore, not from Europe, is also that the term 'information literacy' is made up of two problematic words - 'information' and 'literacy' which also has no agreed meaning. 'Information' has been defined in several distinct ways and recent definitions of literacy have extended the traditional view of the term to include comprehending the meaning of the words that we read or write. For example, the International Adult Literacy Survey (IALS) defines literacy in terms of proficiency levels of the use of information to function in society and in the economy. Literacy is defined as a particular capacity and mode of behaviour, the ability to understand and employ printed information in daily activities, at home, at work and in the community - to achieve one's goals, and to develop one's knowledge and potential (OECD/Statistics Canada, 2000:12). In IALS literacy is measured operationally in terms of the three domains: prose literacy, document

literacy and quantitative literacy. Five levels of literacy are defined:

- Level 1 indicates persons with very poor skills, where the individual may, for example, be unable to determine the correct amount of medicine to give a child from information printed on the package.
- Level 2 respondents can deal only with material that is simple, clearly laid out, and in which the tasks involved are not too complex. It denotes a weak level of skills, but more hidden than Level 1. It identifies people who can read, but test poorly. They may have developed coping skills to manage everyday literacy demands, but their low level of proficiency makes it difficult for them to face novel demands, such as learning new job skills.
- Level 3 is considered a suitable minimum for coping with the demands of everyday life and work in a complex, advanced society. It denotes roughly the skill level required for successful secondary school completion and college entry. Like higher levels, it requires the ability to integrate several sources of information and solve more complex problems.
- Level 4 and 5 describe respondents who demonstrate command of higher-order information processing skills (OECD/Statistics Canada, 2000: xi).

Dramatically, however, according to the report, in all the countries and regions surveyed, at least one of every four adults fails to reach minimum literacy levels for coping with everyday life and work in advanced societies (OECD/Statistics Canada, 2000).

Several observers have expressed concern that putting two fuzzy terms together does not make the overall concept clearer. Others assert that it does not matter what you call or define it, as long as it gets done. However, a leading Australian information literacy promoter, Alan Bundy, notes:

> The more that librarians and their associations can agree on the terminology, definition, standards for, assessment of, and importance of information literacy at a local, national and global level, the greater will be the prospect of their success in elevating the issue over the next 25 years to one of universal concern and better educational and library resourcing. (Bundy, 2002).

Unfortunately, it has to be said that in Europe 'information literacy' consciousness as well as the term has spread mainly among librarians and information professionals and neither is explicitly and extensively recognized in other circles. For example, Town notes: *'At the UK national level the need for information skills in the information society and the concept of information literacy are not explicitly recognized'* (Town, 2002b: 91). Homann (2003) writes that in Germany *Informationskompetenz* (a translation of 'information literacy') is *'predominantly used by librarians and information scientists and the term medienkompetenz or media competency is mainly used by experts in pedagogy and information technology'*. The meanings are similar but not identical. Danish information literacy initiators, Skov & Skærbak (2003) also report that discourse analysis reveals that *informationskompetence* (the Danish analogue for information literacy) is 'a 'floating signifier', a term open to interpretation, and one that means different things to different people', even among librarians. The term is used mainly in the library sector in Denmark and *'has not yet made its way into the vocabulary of the official publications outlining strategies for acquiring the competencies needed in the knowledge society'*.

In the Norwegian educational sector, although governmental units responsible for ICT policies as well as the LIS sector have been preoccupied with topics and problems falling under the term 'information literacy', there is no one, single term integrating these topics and problems under one umbrella (Audunson & Nordlie, 2003). In Spain, the related terms, concepts and services for information competence are present in research and practice during the 1990s, but the Spanish term and concept for information literacy *alfabetización informacional* only begins to appear in the LIS literature around 2000 (Gómez Hernández & Pasadas Ureña, 2003). Twelve European open and distance learning leaders were interviewed by the author during the annual conference of the European Association of Distance Teaching Universities (EADTU) in Glamorgan, Wales, in 2002, yet only a few of those interviewed had any understanding of what information literacy might be.

However, among many definitions perhaps the most widely accepted and cited in Europe is that provided by the American Library Association (ALA) Presidential Committee on Information Literacy: *'To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information'* (ALA, 1989: 1). Although alternative definitions of information literacy have been offered by several institutions, organizations and individuals, there are strong similarities between the various statements and they are likely to stem from the definition offered by ALA.

The author, focussing in her research on the higher education sector and, more specifically, on online learning, prefers to use the term 'information-related competencies', as it combines several blocks of competencies related to information handling and use; for example, identifying, locating, gathering, selecting, storing, recording, retrieving and processing information from a variety of sources and media; developing successful information seeking and retrieval strategies; mastering complex and multiple information systems; organizing, analysing, interpreting, evaluating, synthesizing, and using information; and, presenting and communicating information clearly, logically, concisely and accurately. These information-related competencies can be seen as made up of increasingly sophisticated knowledge, skills and attitudes. The author also believes that the constructivist approach to learning has close connections with the process of information-seeking and use. From the 1970s on, research on human cognition as information-processing has revealed the 'constructive' nature of human learning. Learning consists of complex information processing, problem-solving, decision-making in uncertainty and the urge to transfer knowledge and skills into new, unknown settings. Learning is, in this view, defined as an active, constructive, goal-oriented and situated process that requires intensive mental activity and construction of meaning on the part of the learner (Dillemans *et al.*, 1999). Therefore, to learn constructively involves active seeking, processing and using of information, critical analysis and metacognition. In this context, information-related competencies may be viewed as context- and content-dependent competencies which are integral elements in a constructive learning environment and are closely related with the characteristics of constructive learners (prior knowledge, metacognition, motivation, and the complex variable 'learning style'). However, the term 'information literacy' might be a useful research construct or umbrella term covering information-related competencies and also as a strategic concept or goal - a political, economic and educational one.

In what follows the terms 'information literacy' and 'information skills' are used as referred to by authors and institutions cited in this literature review.

Information literacy in the school and higher education sectors

Information literacy in schools

In several countries in Europe information literacy development has been derived from user education and library instruction in the school context. Herring (1996) notes that in the mid-1980s, there was a flurry of research projects and books on information skills in schools. For example, **in Britain**, during the 1980s the British Library Research and Development Department gave priority to *'research examining the nature of information skills and illuminating the problems of teaching and learning those skills'* (Kuhlthau, 1990: 23). A range of reports on information skills arose out of this work (for example, Marland, 1981; Hounsell & Martin, 1983; Hopkins, 1987). The most significant outcome was Marland's (1981) taxonomy of information skills. According to Corrall & Brewerton (1999), despite its age, this pamphlet remains a standard text for those new to information skills, and is applicable to a variety of settings. It has been the key reference point for many researchers, teachers and librarians interested in information literacy aspects of the curriculum. Rogers (1994) also notes that much of the additional research carried out since its publication confirms that those 1981 recommendations remained relevant for a long time.

The Marland model of information skills derived from his ground-breaking work in secondary schools in the 1980s. In 1980 a working group was set up jointly by the British Library Research and Development Department and the now-defunct Schools Council to produce practical guidance to teachers on developing information skills. The working party's reports *Information skills in the secondary curriculum*, was sent to every secondary school in England and Wales (Rogers, 1994). The report stated:

> Individuals today have an increasing need to be able to find things out. Never before has our lives depended so much on our ability to handle information successfully. We need to be able to search out what we require, to assess critically the ideas and facts offered to us, and to make use of our findings. 'Learning to learn' which begins at school, continues in our adult lives in our work, in our leisure activities, and in any further education. And yet schools, which are concerned with learning above all else, find great difficulty in teaching pupils how to learn. Although some pupils are able to use the full range of learning resources which the school can offer, most are not, and it is a central responsibility of the school to help its pupils to cope with learning. (Marland, 1981).

The Marland model tried to identify a number of questions which pupils could ask themselves when undertaking assignments in school and outlined a school information skills curriculum in terms of nine questions: 1. What do I

need to do? 2. Where could I go? 3. How do I get to the information? 4. Which resources shall I use? 5. How shall I use the resources? 6. What should I make a record of? 7. Have I got the information I need? 8. How should I present it? 9. What have I achieved?

These questions accompanied with statements for teachers and school librarians which identified skills in relation to each question (Marland, 1981: 24-25).

According to Roger, by the end of the 1980s, it seemed that professionals concerned with information skills were moving towards a greater understanding of schools' needs. He defined several key developments revealed by the research in that period in the UK including:

- Differences between teachers and librarians were more widely acknowledged and work was being done to bridge the gap;
- The whole-school policies advocated in the 1981 Schools Council Report, *Information skills in the secondary curriculum*, were easy to frame but hard to put into effect, causing a reaction against policy formulation as a way forward;
- Promoting information skills was the librarian's most important task. As the focus of research moved from information skills to learning, so librarians switched from library lessons to curriculum development;
- Information Technology was a spur to library use and a way of extending the school's own resources;
- It was hard to determine which changes in schools had come about through information skills and library initiatives, and which through other educational developments. The research experience between 1983 and 1988 encouraged a holistic approach to developing information skills (Rogers, 1994: ix-x).

Although the UK had a relatively solid strategy in the 1980s, developments in the 1990s remained quite modest. However, the increase in project-based work in the National Curriculum led to more pupil-centred, resource-based learning in schools and changed approaches to learning and teaching (The Big Blue, 2002). Some structures were developed for the delivery of information skills and ICTs in the primary and secondary curriculum. For example, Herring (1996) proposed a 'PLUS' model that categorized information skills into four interrelated steps: Purpose, Location, Use and Self-Evaluation. Results of a study of the evaluation of the use of the PLUS model at Ripon Grammar School in England showed that pupils benefited from using a structured approach to project work and saw the model as a useful tool particularly in helping them to plan, organize, and reflect on their own work (Herring, *et al.*, 2002). Developments in the 1990s in the context of information skills in schools in the light of technological developments in the UK have been examined in more detail by Herring (1996).

In the mid 1980s information literacy was also an articulated goal in Dutch schools. In the early 1980s several publications, compiled as a result of research ordered by the Dutch government, highlighted the need for training information users in basic education in connection with ICT awareness (Boekhorst, 2003). A special Advisory Committee for Education and Information Technology (ACEIT) was created in 1981 and during 1984 the ACEIT proposed a hybrid new subject 'Information literacy and computer literacy' (ICL), defining it as *'...the knowledge and skills concerning the use of computers for getting information to solve a given problem or to know more about a certain subject, as well as for the control of processes.'* (Van Weering & Plomp, 1991: 17). In 1991, 20 of 29 primary and secondary schools that participated in a survey on ICL, indicated that some form of 'information literacy' was taught (Boekhorst, 2003). Information and computer literacy started to be the focus of a range of curriculum innovations (Hartsuijker, 1986; Bundy, 2002) and the acquisition of information skills has been recognised as a part of the secondary school curriculum **in the Netherlands** since 1993. In 1993 the *Stichting voor de Leerplanontwikkeling* (Foundation for Curriculum Development) published its recommended information skills for secondary school pupils. The recommendations included learning to define search questions and how to select and organise retrieved information. Librarians and teachers were seen as guides for students undertaking research (Beishuizen, 1996). However, the focus has been much more on computer literacy than on information literacy in schools and a relatively small number of hours has been devoted to information literacy. Boekhorst also refers to the fact that the Dutch name for the subject *Informatiekunde* which means 'knowledge of information' has been translated by the Dutch ministry in their English version publication as 'IT studies', which is a good illustration of its approach of the subject (Boekhorst, 2003).

In Scandinavian countries, delivering training in aspects of information literacy has been more central in higher education institutions than in schools. However, during the 1950s the Swedish *Bibliotekstjänst* (The Swedish Central Organization for Library Services Ltd.) began to produce a series of materials designed to teach basic library techniques primarily to school classes. For example, *Hitta i böckerna* (How to find out from books) in 1973

and *Hitta i biblioteket* (How to find out in the library) in 1976 were particularly popular. The aim of the series was, however, to enable the pupils to learn how to find the literature that they require themselves. Similar types of materials were produced by the Danish Library Bureau. It should be said that children were taught 'library use' quite often as a separate small package bearing little relationship to their other school work. Earliest examples in Scandinavia of integration of the use of the library with other studies came from Norway. A textbook *Skolbibliotek i bruk* (Use of the school library) was published in 1978 by *'Statens Bibliotekstilsyn'* (the Norwegian Directorate for Public and School Libraries) with explanations and examples of using school libraries in a regular teaching programme (Fjällbrant & Malley, 1984: 202-203).

Examples of teaching information literacy in **Swedish** schools in the late 1980s demonstrate progress. For example, Kuhne presents the results of a three year study (1988-1991) of the extent to which the teaching of library and information skills was integrated into the curriculum of elementary schools in the city of Kalmar. The study, *Barkestorp project*, examined the way that teachers and librarians planned together; the way children acquired knowledge as a result of libraries being introduced into the curriculum; the impact of the library on the cognitive process; and the role of the school librarian. Teachers and librarians found that teaching in a problem-oriented and resource-based way was difficult, but that students so taught became more creative, positive, and independent in learning (Kuhne, 1995). The Mönsterås High School is another example where students are encouraged to search, use and evaluate information in the problem-based learning process with high levels of ICT support within the national curriculum. The teacher no longer teaches the students directly, but creates an environment for successful learning, and acts as a source of inspiration and support. Key elements in the method include defining a problem, searching for information and evaluating it, reporting the result, and conclusions. Students choose their projects and engage in their own research, which extends to independent work outside the school. All teachers and students have been given their own portable Macintosh computer and all classrooms, group-rooms, the teachers' room and even certain activity rooms are connected. The project approach has encouraged cross-curricular work, for example history and language teachers working together. Parental enthusiasm is so strong that private schools are beginning to adopt the same approach (OECD, 2001b: 26-27)

Successful examples of teaching information literacy in schools can be found in several other countries. For example, the Bollate Provincial School Centre in **Italy** described a multi-year curriculum for teaching its students information skills and reported that the course objective was set so that when pupils reached the fifth form they had acquired skills in studying, library use, media literacy, and the use of non-library information sources (Boccardi & Zappa, 1995).

In Spain, Francisco Javier Bernal has been a leader in developing information literacy in schools. In 1985 he proposed a 'pedagogy of information' within the first National Program for Scientific and Technological Information and Documentation and in 1992 a transversal topic *educación documental* in the curriculum for compulsory education. As a result several special optional courses on information literacy were developed and several pilot projects in schools included user education. In some regions coordination centres support school libraries in distributing materials and sharing experiences to foster information literacy. For example, the *Dirección Provincial in Málaga* provides specific materials to support information literacy in their Web-site for students. A good example is the *Fray Luis de León High School* in Salamanca, where teachers across different disciplines use the library to support the learning processes of the students. There are also several ICT literacy projects under development for primary and secondary schools students where school library, digital library and learning resource portals are interlinked. However, a common problem for most ICT literacy programmes lies in the widespread assumption that mastering ICT tools is the same as mastering information access and use (Gómez Hernández & Pasadas Ureña, 2003).

In Slovenia, Steinbuch (1999) described an experimental library and information skills programme integrated into the teaching process at the gymnasium (grammar school) in Maribor. Tests showed that such a programme has a major effect on the independence of students and their problem solving, but growth in knowledge of participants in the experiment was not significantly greater than that of a control group. Another author describing research including 109 primary schools throughout Slovenia, however, notes that schools do not have the basic information technology needed to provide the latest services and a systematic solution is needed for the libraries to be integrated into the education process as well as to implement information literacy programmes in the new nine-year primary school (Zumer, 2000).

Information literacy in higher education

Academic libraries have played an important role in information literacy developments in Europe. Information literacy initiatives in higher education have taken a variety of forms: stand-alone courses or classes, Web-based tutorials, course-related instruction, or course-integrated instruction. Most authors seem to agree that information literacy should be integrated into subject areas (Kemp, 1999; Joint & Kemp, 2000; Rafste, 2002; Town, 2002b). Webber & Johnston (2000) differ from many other authors by advocating that information literacy can be treated as a discipline of study in its own right, rather than favouring the curriculum integration model. There is also a shift towards increasing emphasis on faculty-librarian partnership and implementation of modern ICTs in delivering information literacy courses. There is a considerable experimentation with using ICTs in European higher education institutions in general, sometimes to improve the on-campus learning experience, at other times to deliver distance learning. The general picture is that in most cases institutions are now transferring from a period of rich and mostly bottom-up experimentation to a phase in which institution-wide use of ICT is being encouraged (Collis & Van der Wende, 2002). While the new ICTs are having a variety of direct effects on teaching and learning in universities, there are also a number of other important factors having major influences on higher education. The processes in implementing the Bologna Declaration are having an impact on the development of curriculum structures and quality control attitudes and procedures. The rise in lifelong learning and widening of access to higher education bring in new learners with different previous educational experiences.

The educational policy of the European Union (EU) has three main objectives, which concern:

- increasing the quality and effectiveness of education and training;
- facilitating access of all to education and training;
- opening education and training to the wider world (COIMBRA Group of Universities, 2002: 5).

In this context, there is also evidence of efforts to develop new teaching and learning methods that emphasise and support students to learn constructively, and to construct their knowledge using information wisely. Several information literacy experiments and examples of good practice should be highlighted in European countries.

In the UK context, the conference on Information Technology and Information Literacy in Glasgow, March 20-22, 2002 demonstrated several examples of good practice. For example, the British Open University, Edge Hill College of Higher Education, Cardiff University, Cranfield University, University College Northampton and the University of Sheffield have developed interesting information literacy programmes. Many programmes are based on the SCONUL model. (SCONUL, 1999).

Examples of good practice identified by 'The Big Blue' project included, for example, Southport College, where an internally accredited information skills module is compulsory for all first year students, South Bank University which demonstrates practical applications of learning outcomes and the impact they have on information skills training, and the University of Aberdeen where pre- and post- self-assessment has been carried out to encourage students to track their progress and see the value of attending information skills training. South Bank University Library has also developed a benchmarking scheme for undergraduate students. Numerous other initiatives are also taking place and there are traditional and online courses and tutorials on information literacy at many universities: the Robert Gordon University, the University of Bristol, the London School of Economics, the University of Nottingham, the University of Bradford, Aston University, Coventry University, etc. (The Big Blue, 2002).

A trend that has also gained popularity in the UK is an interactive Web-based information literacy tutorial, which is designed to introduce students to information literacy concepts and information resources. However, the University of Leeds briefly experimented with computer-assisted library instruction as early as the end of the 1970s (Fjällbrant & Malley, 1984).

At the British Open University (OU) considerable work has been done to explore the use of technology for delivering information literacy in distance learning programmes and several models have been tested. For example, Safari is the OU Library's information skills tutorial, an interactive, Web-based teaching package for students, tutors, and staff, launched in January 2001. Safari can be used by in a variety of ways - as a training package, working through each of the seven sections in order, or by dipping in to specific topics of interest. Mosaic is another twelve-week online course, offered by the Library in conjunction with the Faculty of Education and Language Studies, which attracts 10 credit points. A team of study advisors provide support via the phone, email and learning management system (FirstClass). Students have the opportunity to work through a teaching package to develop information skills, which will be assessed via coursework or the production of a literature review. The SCONUL Task Force on Information Skills (now SCONUL Advisory Committee on Information Literacy (Alvestrand, 2003))

has acted as critical reader for the course. Introducing Teaching and Learning Online (ITLO) from the OU's Institute of Educational Technology is a programme designed to support OU staff in the development of online teaching and learning. The Website consists of a series of online interactive activities aimed at helping course teams to make decisions about aspects of online teaching. The information literacy section, to which the unit contributes, provides background information about information literacy, and deals with key questions about information literacy to help teams decide what aspects should be included in their course. The OU approach may be described as integration with the UK key skills initiatives and it is designed as a complement for study programmes or as a stand-alone course (Dillon, et al., 2002; OU, 2003).

Hepworth (2000b) also confirms that Web-based guides such as guides to literature searching are increasingly common. Stubbings & Brine (2003) analysed forty-seven electronic information literacy packages in the UK and divided these into three types: virtual tours (four); OPAC tutorials (nine) and information skills tutorials (twenty-eight). There were two packages being used by more than one institution and seven tutorials required passwords and as such could not be accessed. Of the 21 information literacy tutorials reviewed, four were subject specific with the remaining being generic in nature. The content as well as instructional design principles varied to a great extent and didn't refer always to sound pedagogy. Sometimes tutorials were also too text-based, lacking sufficient interactivity to create adequate active learning experiences. However, Rutter & Matthews (2002), reporting their experiences in developing 'InfoSkills', Bournemouth University's Web-based library tutorial, refer to the sound pedagogic and generic basis of InfoSkills that has enabled it to be seen by others outside the university as something that could be adapted for their own usage. They also highlight the self-learning principle of the tutorial allowing continuing reinforcement when required for specific user groups, such as international or late registration students.

Specific cases receiving attention within the higher education sector also include: a subject specific guide that has been produced by Leicester University Library to develop information retrieval skills for medicine, the activities of the London Business School where librarians are providing support for the broad range of information literacy learning and the University of Sunderland which has secured European funding to help develop a 'virtual librarian' that will facilitate the learning of information skills. Leicester University has also provided excellent material for distance learners to help with using information resources. *Liberation* at Northampton University provides training on searching the Web and searching in general but allows the user to enter search topics that are relevant to them and then provides appropriate feedback (Hepworth, 2000b: 26-27). In the UK information literacy courses tend to be optional, although an example of a formal credit-based course can be found at Strathclyde University. However, Hepworth (2000c: 30) notes that, to catch up with the institutionalised initiatives that have taken place elsewhere in the world, significant additional funding that is specifically aimed at fostering the development of information literate students in the higher education sector is required.

Several **Scottish** universities have also developed extensive information literacy programmes (Rader, 2002a). In 1993 the project 'Teaching with Independent Learning Technologies' (TILT) started at Glasgow University. The main aim was to demonstrate how IT could be successfully incorporated into university teaching within a single institution. Four years later, TILT demonstrated its value in many areas, particularly in library and study skills. More than 130 institutions both in the UK and elsewhere started to use the five hypertext information skills modules as a resource in their undergraduate teaching, and detailed evaluations of their effectiveness have been carried out (Creanor, *et al.*, 1996). The GAELS project at the Universities of Strathclyde and Glasgow aimed at improving access to, and use of resources, particularly for post-graduate architecture and engineering students. Part of the project developed an online information skills course based around a core module which covered searching techniques, whilst other modules covered topics such as the use of databases and the Internet for information retrieval. The GAELS Project also produced many other packages for information skills training in subjects other than the original Engineering courseware. The course could be used both as a stand-alone resource for individual students or as part of workshops led by librarians. The learning materials require that learners undertake practical exercises using a number of external online resources. However, the course does not teach basic library skills, and students need to have some experience in using academic libraries (Kemp, 1999; Joint & Kemp, 2000). It should also be noted that the Scottish Executive's *Digital Scotland* consultation paper states that Web navigation and information extraction skills are vital for young people (Johnston, 2000).

Rader (2002a) also refers to some information literacy activities at several academic institutions in **Ireland**. However, in-depth interviews with lecturers from social science faculties in five Irish universities indicated that information literacy holds a relatively insignificant place in academia.

In the Nordic countries **Sweden** seems to be at the forefront of information literacy developments. During the past

two decades, Chalmers University of Technology has developed comprehensive information literacy programmes. For example, Fjällbrant and her colleagues were targeting information literacy goals as they are understood today already in 1980s. Their subjects, designed to introduce postgraduate students and researchers to electronic and other information networks, continue to be regarded as a model (Fjällbrant, 1988; Bruce & Candy, 2000; Bundy, 2002). They have utilized IT to provide more efficient instruction to beginning students, thus freeing librarians to develop advanced electronic information skills instruction for upper-level and graduate students (Fjällbrant, 2000a). Many other university libraries deliver information literacy courses. For example, at the Linköping University librarians and faculty have been experimenting for more than ten years with teaching students appropriate information skills (Rader, 2002a), at the Karolinska Institute information literacy is linked with problem-based learning and at Malmö University staff are working on integrating information literacy into the curriculum (Hepworth, 2000c: 26).

Tovoté notes that the changes in learning and teaching during the 1990s have led to increased demands for broader and more varied sources of information at all levels of education in Sweden. Students are doing independent information searches in connection with their class assignments and the range of study aids has become more varied as well as the use of libraries for the purpose of teaching. The old system of handing out lists of required reading for each course is being replaced by a method where the students take responsibility for their own learning. She also describes a special project at Malmö University attracting students from non-academic backgrounds and finding out if there was a need for a special pedagogical approach to their courses in information searching. This project was a great success, partly because of relationship marketing. There is now a programme aimed at the information literate student and conducted on different levels, from a pre-degree level to a doctoral level. The Higher Education Administration, who recently gave Malmö University the right to award Bachelor Degrees, mentions especially the ambitious IT support and the courses in searching, evaluating and handling information integrated into the subject areas, as an important quality factor when awarding this right. Tovoté also refers to a new distance education course called Communication for Development within the area of Arts and Communication where students can deepen the insight into their interaction between social development and information, communication and media, through both theoretical studies and through a specific project assignment in a developing country where the library has an important role (Tovoté, 2001: 5-7).

Teaching information literacy is a rapidly growing activity also in **Danish** libraries. The Danish Electronic Research Library (DEF) initiative has influenced greatly information literacy developments in higher education. For example, together with the Faculty of Modern Languages, the Library at the Århus School of Business (LASB) is a partner in an innovative IT-project financed by the Danish Ministry of Education: *IT-reorganization project - Faculty of the Future!* (2001-2004). In this project LASB is acting as a learning and teaching support unit for IT-based presentation and dissemination of information as well as being the content provider concerning electronic course packages. Since 1998 LASB has cooperated closely with the faculty at the Århus School of Business on the integration of electronic library facilities into an e-Learning environment. As a result several flexible Web-based course packages have been developed in which the LASB has provided electronic library resources, cleared copyright materials, taught information skills and created IT solutions and platforms for the electronic course packages. Another project, METRO, a virtual learning resource centre using a metro map as a metaphor to guide students to valuable information and learning resources, was developed at the Århus School of Business as a joint venture between the Library and Faculty (Harbo, 2002; METRO, 2003).

Several other examples of good practice should be noted. For example, at the Aalborg University Library a project titled MILE (Model for Information Literacy Education) was initiated, aiming to create and test a model for user instruction in information literacy, based on innovative pedagogy and ICT. The product consists of a combination of multimedia or Web-based just-in-time tutorials, as well as live instruction integrated in the teaching/learning process (MILE, 2003). At the Royal Veterinary and Agricultural University, Denmark's Pharmaceutical University, the University of Southern Denmark, and the Technical University of Denmark, courses in information searching are part and parcel of credit-earning, compulsory subject courses. Examples of successful information literacy initiatives also include: the SWIM (Streaming Web-based Information Modules) project developed by the Aalborg University Library which use streaming-server technology where the tutorial enables the student to make a number of choices about search strategy and problem solving; the integration of information literacy into the curriculum at the Holstebro School of Occupational Therapy and Physical Therapy (Skov & Skærbak, 2003; SWIM, 2003); Roskilde University Library's Godin project on problem-based teaching of information searching (Trumpy, 2000); and several Web-based tutorials such as *Introduktion til informationssøgning* (Danmarks Tekniske Videncenter, 2003;and *InfoTutor* InfoTutor, 2003).

In Norway information literacy developments can be linked with medical and business schools with the increasing

emphasis being on problem-based learning. For example, the University of Trondheim and the University of Oslo are good examples (Taylor & Krog, 2000; Haraldstad, 2002; Rasch & Trondsen, 2000). Bjorndal, *et al.*, (1999) also refer to a cooperation project between the University Library of Oslo University medical faculty, and the State Institute for Public Health, which involves the training of medical students in the use of electronic tools and critical evaluation of information. Hepworth (2000c: 26) notes that where problem-based learning takes place there is evidence to suggest that this encourages information literacy, or rather that information literacy is the key to problem-based learning.

Audunson & Nordlie confirm that the institutions of higher education and their libraries have been in the forefront of information literacy development in Norway. There has been also a parallel trend towards a change from the traditional University or College library to a 'learning centre' or 'learning resource centre' and the transition from 'user education' to 'information competence development'. They wrote:

> Information literacy - defined as information competence or knowledge - now seems to be a firmly established concept and educational goal in the whole range of Norwegian educational institutions. The term appears as a more or less compulsory element in any description of a program of study and the need for students to learn a set of competencies related to knowledge acquisition, over and above the technical skills, now extends far beyond the ranks of school and university librarians. (Audunson & Nordlie, 2003)

There are also several projects that connect research and practice. For example, at the University of Bergen a DIA-project examines information literacy in a broader context. The focus of this co-operation project, between the teacher training programmes for the sciences at the universities of Oslo and Bergen, was in teaching students to think more broadly about information gathering and processing, about search strategies and about evaluation of Internet resources. The project aims to develop didactic models in applied education for the science teacher students as well as in information literacy by practising strategies of information-gathering about scientific controversies on the Internet (Tonning, 2002).

Homann has given an extensive overview about the development of user education and information literacy in academic libraries in **Germany**. He highlights the orientation towards new pedagogic concepts and influence of the Anglo-American models of information literacy at the end of 1990s. Both the University of Heidelberg and the University of Hamburg have been experimenting with information literacy courses and online tutorials for several years. A modular teaching approach was developed at the University Library of Heidelberg and a 'Dynamic Model of Information Literacy' (*Dynamisches Modell der Informationskompetenz/DYMIK*) based on the Anglo-American models of information literacy was adapted to their library requirements. The library is considering integration in the new e-learning activities of the University and extension of information literacy courses. The project-oriented approach, including the use of individual thematic problems as starting points and integrating information literacy and learning was developed in the last few years at the Department of Library and Information at the Hamburg University of Applied Sciences. The teacher took a role of assisting on demand and an online tutorial *'Der schlaue Det'* was developed to offer the users additional support for self-testing and communication with the librarian (Homann, 2001; 2003). Modularised courses and activating teaching methods are now used in many university libraries in Germany. However, according to Homann (2001) most librarians are not qualified to take on teaching tasks. Therefore, courses on planning and realizing user education have been offered and regional meetings organized to share experiences. He also notes: 'Although there are a lot of activities, these are not the result of a systematic development but primarily the result of a lot of individual initiatives and it is not enough for a sustainable development'.

Several information literacy initiatives in higher education can be followed on the basis of literature **in the Netherlands**. To support the current trends towards self-learning the University of Twente has developed the *Methodisch en Efficient Wetenschappelijke Informatie Zoeken* (MEEWIZ) (Methodical and Efficient Searching for Scientific Information) system. Through a series of six modules students are taught how to plan search strategies and to manage information. Users are directed to the different sources of information including patents, official documents and statistics. Use of interactive systems ensures that students' progress is monitored and guidance offered where appropriate. Reactions to the system are reported as being positive (Braaksma, 2000). The development of *DelftSpecial* (Student Personal Educational Coach for Information Alerting and Learning) started in 2001 in the University Library at Delft in collaboration with Utrecht University. DelftSpecial is a ICT-supported instruction programme in which students can learn how to use information both independently as well as embedded in an educational context. It enables students to learn how to formulate the query, to find information, to evaluate it

and to determine the value of the information they find in connection with the relevant research domain. At the same time the programme offers several tools for storing and sharing information as well as for collaboration (Boekhorst, 2003). Hepworth (2000b: 31) also refers to the University of Maastricht 'study landscapes' created to facilitate problem-based learning and the incorporation of information literacy. These study landscapes included providing a place where students feel at home, where they can find the necessary learning resources, where they can study independently or in groups and where the learning resources in the study area are assembled with the specific group in mind. These resources were in addition to and separate from those found in the core collection. Information literacy activities of the library of Rotterdam's Erasmus University have also received attention and are referred to in the literature (Drenthe & van Elk, 2002).

The Faculty of Humanities at the University of Amsterdam also started in 1997 a compulsory module 'Information Literacy' for first year students. The module consisted of: computer skills, library skills, writing and oral presentations. These were undertaken on the basis of a central research problem derived from the student's subject and students had to formulate an answer, which led to a verbal presentation and a written report on the search procedure. Teaching was done in faculty-library partnership. In 2002 the module was renamed 'Academic Skills' and the module was split in two parts: Research and Argumentation (Boekhorst, 2003).

In Spain several universities offer optional credit courses within the curriculum for most degrees, free configuration credit courses for specialized documentation skills, and specific tutor support for final year students preparing their final dissertation. Examples of free-choice credit courses include those offered by the universities of Barcelona, Granada and the Polytechnic of Catalonia. Web pages of many academic libraries include tutorials and user guides to support information literacy, for example, at the *Universidad Carlos III in Madrid, Polytechnic University of Catalonia* and the *Open University of Catalonia*. More and more higher education institutions include specific user education and information skills courses within the curriculum for specific disciplines and degrees. A good example is the course 'Information Skills and Strategies' at the Universidad de Murcia (Gómez Hernández & Pasadas Ureña, 2003).

According to Feo (1998) many information literacy initiatives took place from the early 1980s in several universities **in France**, encouraged by the ministry responsible for scientific and technical information. For example, in 1986 at the *University of Paris 8 (Universite Vincennes-Saint-Denis Paris 8)* an information methodology course was established which is now required in several university departments and over 1000 students take this course every year. Coulon (1999) also evaluates positively the impact of the teaching of information literacy courses at the same university. The *Service commun de la documentation* (SCD), the joint information service, at the University of Paris 4 (*Université Paris Sorbonne- Paris IV*) participates in the teaching of information skills for third year undergraduates and postgraduates. The role of the SCD can take different forms and the duration and content of courses vary from one faculty to another. However, two conditions are systematically met: the integration of the information component in disciplinary or methodological university teaching, and its adaptation to the specifics of each discipline. The objective is to educate students in the research and exploitation of information, so that they can profit from such courses in the preparation of their Master's thesis or higher diplomas (Fayet, 1999). However, Alava (1999) notes that despite research into the problem of student failure in French universities and official policies to foster information literacy, there has been little positive action to ensure academic success and social integration into the university.

Nieuwenhuysen (2000) also reports information literacy initiatives **in Belgian** universities. He describes courses that are offered at the Vrije Universiteit Brussel (VUB) and at the Universitaire Instelling Antwerpen (UIA) which is part of the University of Antwerp (UA). The levels of the courses described are at the university third study year and Masters level. The need for a collaborative approach in offering online information literacy courses is emphasised.

Sada refers also information literacy activities of the library of the Catholic University, Milan **in Italy**. She notes, however, that *'Italian university students do not really know what a library is, or what it can do for them.'* (Sada, 1999: 23). It is also interesting to note that she uses the term 'meta-competencies' described earlier, referring to information-related competencies.

It should be also noted that in the former Eastern bloc countries, there are several programmes to teach students aspects of information literacy. Borovansky from the Arizona State University worked at the **Czech** Technical University in Prague in 2000 and assisted in the education of engineers in using information resources. He reports serious efforts led by the few dedicated professional librarians to further improve the education of engineers and to

increase their information literacy. At the Institute of Chemical Technology in Prague on the first level, most faculties (colleges) offer introductory courses for students. On the second, advanced level, the library offers specialised information courses. At the Technical University Brno the university administration has approved the introduction of a mandatory four hour information literacy course for all first year students. Two hours are devoted to introductory computing, while the other two hours are spent dealing with the use of computers in library/information applications. The staff of the Computing Centre teach the first part, librarians of the Central Library the second part. The proportion of the theoretical part to the practical one is two to one (Borovansky, 2000). Pejova from Slovenia in her paper for the UNESCO Expert Meeting also refers to well-organized information literacy education **in Estonia**: *'One example of advanced and well-pursued information literacy programs is Estonia, where there is strong information and library professional education.'* (Pejova, 2002: 5).

Standards

It should also be noted that the Information Literacy Competency Standards for Higher Education approved by the ACRL are being translated and used in several countries: in Finland, Germany and Spain (Sinikara & Järveläinen, 2003; Homann, 2003; Gómez Hernández & Pasadas Ureña, 2003). However, the Finnish authors note that although the ACRL standards are the basis for the developmental work done in Finland they have also been criticized as not being well suited to the Finnish university education system. Because of this there has also been interest in the UK SCONUL model, which some think illustrates more clearly the process of developing information skills (Sinikara & Järveläinen, 2003). Homann (2003) also notes that comprehensive concepts of information literacy according to the ACRL standards have been deemed too ambitious and not realizable in German libraries. This was the dominant tendency in discussions on the ACRL standards in a workshop at the German library congress 2001 in Augsburg and in different workgroups after their translation by Homann. It seems that information literacy competency standards tend to be broad statements of an ideal, rather than concrete formulations for practical need. Therefore, there is a considerable interest in the UK SCONUL model in several countries.

Organizations and institutions concerned with information literacy in Europe

European Union

In the context of a knowledge-based society several studies have emphasized the role of knowledge and the importance of using information. It seems that educational, business and political leaders alike have acknowledged that success in the new century will depend on being skilled at finding and using information. However, Muir & Oppenheim state: *'while the EC is very active in Information Society initiatives, most of its efforts seem to be focused on getting the technological infrastructure in place and supporting the development of ICT skills, rather than information literacy'* (Muir & Oppenheim, 2001: 175). Ryynänen (2002) gives a rather more positive view, noting that the European Union (EU) has taken various initiatives in the information literacy area, though the lack of coherent and long-term policy is clear. For example, libraries have been included in the EU's Framework Programmes for Research and Development since the 1990s. This has led to an unprecedented degree of networking among European libraries. In 1998 the European Parliament approved its first report on the role of libraries in modern societies. This report has received considerable attention and led to action particularly in the member states. Its role inside the EU, especially in the European Commission, has been smaller, due to the political changes in the Commission soon after the adoption of this document. Ryynänen who was the rapporteur of this text, notes that it emphasises among other things information literacy, putting it into the context of traditional literacy (Ryynänen, 2002).

The spring meeting of the European Council of Information Associations held on 25-26th March 2001 in Madrid with representatives from Finland, Sweden, Germany, Spain, Portugal, the United Kingdom, France, Italy and Belgium also highlighted information literacy as a must in the information society, and it could also be seen as the first step to promote the profession. As it was acknowledged that there was no EU project on the subject, Carla Basili from Italy expressed willingness to coordinate a work group that would define the term and monitor initiatives taken in different countries (ECIA, 2001). She has initiated a project 'EnIL: European thematic network on information literacy' (Basili, 2003), the idea being to form a European network of information literacy experts, and a state of the art book is meant to form the basis of a discussion in the network (A. Skov, personal communication, 10 December 2002).

However, several projects in information literacy have been initiated at European level and funded by the EC. Among the best known are the *End User Courses in Information Access through Communication Technology (EDUCATE)* and *Distance Education Information Courses with Access Through Networks (DEDICATE)* projects. *EDUCATE* (1994-1997) was developed under the EU Telematics for Libraries Third Framework project and was concerned with subject-related aspects of information literacy for scientists and engineers, and aimed to develop an online course in the selection and use of information tools which could be used in a number of settings, for self-directed learning or as part of a formal course in information literacy. *EDUCATE* led to two 'Into Info' subject modules: physics and electrical & electronic engineering, which were tested for the training of undergraduate students and researchers at ten universities. The programmes were produced in seven subject areas: architecture, chemistry, energy, electrical and electronic engineering, environmental information sources, medicine and physics and the production of modules in other subjects followed: the history of science and technology, and civil engineering. The programmes, which were produced in English, French and Spanish, can be used by librarians and information specialists in courses on information literacy. The project involved several European universities from Ireland, Sweden, France, Spain and the UK. A practical example of the use of the 'Into Info' programmes in distance learning was *Infovision* - a project funded by the *Swedish Distance Education Commission*. *Infovision* provided a distance learning course on the use of information sources in energy and/or physics which involved the Physics Department at Gothenburg University, Chalmers University of Technology, the University of Karlstad and the Gotland College of Higher Education (Fjällbrant, 2000a: 32).

The *DEDICATE* project investigated the feasibility of delivering programmes about aspects of information literacy via distance learning. The main aim of this project was to develop cost-effective distance learning courses in information literacy for librarians and academic staff. These courses were piloted at five sites in Central and Eastern Europe. *DEDICATE* was based on the *EDUCATE* project and the UK Electronic Libraries Programme-funded NetLinkS project. These Web-based information literacy packages for engineering and the sciences are in use across Europe and Australia. According to Fjällbrant the practical learning outcomes from the DEDICATE courses were impressive. The DEDICATE project has had an immediate and important effect on university courses in the five Central and Eastern European countries where DEDICATE test-sites were established: in Estonia, Hungary, Latvia, Lithuania and Poland (Fjällbrant, 2000a; 2000b; Bruce & Candy, 2000). Through this well-known project information literacy ideas have spread in many European countries.

Another EU funded project, VERITY (*Virtual and Electronic Resources for Information Skills Training for Young People*), brought together a European consortium under the leadership of Information Services at the University of Sunderland, UK and was aimed at assisting young people in the 13-19 age range to develop their information seeking skills in the Internet. The project was completed in December 2000 (Papazoglou, 2000, Big Blue, 2002). CHILIAS (*Children's Library - Informational - Animation - Skills*), developed by a European consortium of innovative public libraries in Germany, the UK, Finland, Greece, Spain and Portugal under the leadership of Stuttgart City Library, Germany, created a virtual library for children aged between 9 and 12. It enables children to access information in the six languages of the partner countries, to communicate with the participating libraries and with other children, and to take part in exercises that will help them to develop their information skills (Bussmann & Stafford, 2000). A collaborative project LOCOMOTIVE (*Local Community - Openness, Transparency, Information - a European Perspective*) between Norway, Sweden and Hungary, directed its interest towards public libraries in local communities. It aimed at identifying and analysing, on a cross-European basis information related barriers to participation in European metropolitan cities and also emphasised information literacy in this context. The Faculty of Journalism, Library and Information Science of Oslo University College was initiator of the project (Audunson, et al, 2001).

The *DELCIS: Distance Education for Librarians: Creating an Information-Competent Society'* project (2000-2002) was financed by the EC Leonardo da Vinci Programme. The main objective of the project was to create a distance education programme in ICT competencies for library and information professionals in Lithuania and Latvia. The project initiative was based on the idea that public libraries are in a good position to promote of information literacy at a local level because of the existing network, professionalism in organizing and providing information and their reputation as community centres for information, education and culture, addressing the broadest variety of user groups. To be able to act as providers of information literacy for the community, librarians first have to acquire competencies themselves and to have an opportunity to upgrade their skills constantly. Courses were adapted from the Danish analogue provided by Århus County Library. The project had an extensive partnership of 10 institutions: 4 universities, 3 public libraries, 2 private enterprises and 1 university-enterprise training partnership. The network of partners covered a wide geographic area - Baltic countries, Scandinavia, Central Europe, Western Europe and the

Mediterranean region (Virkus, 2002).

Institutions and organizations at regional and national level

Several institutions and organizations are concerned with information literacy in Europe. For example, the importance of library and information literacy services for open and distance learning at **European level** led the European Association of Distance Teaching Universities (EADTU) to establish in June 1998 the Library and Learning Support Working Group (LLSWG). The LLSWG connects library and information professionals and educators from the EADTU member institutions (256 dual-mode universities and six open universities in Europe) and is committed to the development of library and learning support and information literacy services as an essential element in innovative and cost-effective approaches to learning. It aims to address strategic issues as well as to seek to identify, disseminate and encourage good practice in supporting both on-campus and distance learners (EADTU, 2002). LLSWG now regularly offers sessions on information literacy at EADTU annual conferences as well as other international conferences. The strategic aim of the LLSWG has been to share information literacy ideas more widely in educational circles than among librarians.

At regional level, a brainstorming group with participants from all the **Nordic countries** was invited by NORDINFO (The Nordic Council of Scientific Information) to discuss ideas for Nordic initiatives within the area of information literacy. The group named themselves the NORDINFOLit Group, under the auspices of NORDINFO. The first meeting of NORDINFOLit highlighted as one of the most important goals that initiatives on the development of students' and pupils' competencies should be promoted in a partnership between teachers and librarians. The group has also planned the development of a Nordic edition of American and Australian standards (Bjerg, 2001). Several projects have been discussed to seek funds from NORDINFO. Plans are also in process to establish a Nordic Institute for Information Literacy. Four kinds of activities have been started by NORDINFOLit: there are already summer schools on information literacy for Nordic librarians, seminars about standards and 'best practice' and a Nordic information literacy portal has been initiated as well. Maria Schröder, representative of the NORDINFOLit, notes that it is quite difficult to find national or Nordic development programmes including information literacy in Nordic countries, but new teaching strategies include ways of learning that support the development of information literacy. She also stresses the need to exchange experience, professional knowledge and skills, common standards, and cooperation in developing infrastructure and content. NORDINFO has also prepared a three-year strategy for the institution where one of the focal points is information literacy. This means that grants and financial support are being given to a variety of activities in this area within the Nordic countries during the three years 2000-2003 (Schröder, 2002).

In several countries, professional institutions and organizations have included information literacy in their agendas. For example, **in Denmark** a number of special interest groups focus on information literacy. The Danish Union of Librarians has two interest groups committed to information literacy: 'Libraries and education' involves members from the upper secondary school libraries, the libraries of vocational educational institutions and the centres for higher education for adult learners. The second group focuses on the teaching role of the librarian in particular, attracting members with teaching responsibilities from all library sectors. A third group, aimed towards academic and university libraries, is the 'Special interest group on user education' under the Danish Research Library Association. The main activities of these three interest groups are to arrange conferences and seminars, and to share experiences via professional journals. These groups maintain home pages with news, electronic conferences, and a collection of links to information, documents and activities on information literacy (Skov & Skærbak, 2003).

In the UK the Chartered Institute of Library and Information Professionals (CILIP) has also included information literacy in its agenda. A brainstorming session was arranged in 2001 to define what the constituents of information literacy are. A number of possible facets were defined. These can be summarised as:

- Personal/Motivational: what makes a person want to learn? How can we help them recognise the need and value of information to their lives?
- Practical skills: the competences required to perform individual functions in the information process (e.g. understanding Dewey; using a computer; looking up an item in a reference book; using key words as search method etc);
- Critical skills: those overarching skills needed to put together an effective information search strategy or to evaluate the results of such a search;
- Environmental factors: external factors that may inhibit or enhance information literacy (e.g., availability of library resources, charging) (PAG, 2001).

In looking at the key issues that needed to be tackled, the Brainstorming Group identified learning, motivation, partnerships and networks. The Report of the Policy Advisory Group on a National Information Policy of CILIP was published and also presented conclusions about the state of information literacy in the UK. According to this report, there is no clear and agreed definition of what is meant by 'information literacy' or 'information skills' at the moment. The criteria for information literacy vary and a goal for people to become information literate to increase their effectiveness is often masked by information technology literacy targets. There is little evidence of government initiatives and too heavy an emphasis on technology infrastructure and basic information technology skills. The report highlights a need for an agreed definition of the term, and to distinguish it from 'information skills'. It is also stated that the UK should develop a major information literacy programme, using colleges, public libraries and other appropriate centres of excellence to promote a critical, informed use of the information resources that are now so readily available (PAG, 2001).

In the higher education sector, the UK Standing Conference of National and University Libraries (SCONUL) has been leading the campaign for information literacy since 1999 (Johnson, 2000).

In the Netherlands LWSVO (National Workgroup of School Librarians in Secondary Education) assists school librarians in implementation of new developments in the school and school library. They advocate a strong coordination between the school library and the teachers in the school for a better integration of information literacy in the curriculum. LOOWI is a national platform for those involved in user education in higher education and it has been also involved in arranging an Information Literacy conference day on May 2003 (Boekhorst, 2003). Also *Stichting Lezen* (Reading Foundation) has supported information literacy initiatives. In October 1996 the *Stichting Lezen* implemented its programme *School Libraries 2000* to improve the quality of school library services. Fifteen pilot projects, which were intended to provide a model for a national programme, started (De Jong, 1997).

In Spain a working group on information literacy issues was recently set up in Cataluña under the name ALFINCAT. It includes a wide membership from other regions to exchange ideas, approaches and good practice, and the advancement and promotion of the information literacy agenda (Gómez Hernández & Pasadas Ureña, 2003).

From November 1997 to May 1998, a working group was set up **in France** by the ministry responsible for education, research and technology to consider training for the use of information. The objective was to propose an operational framework for training development and consider what kind of training different users need and how existing structures meet user needs. By means of a list of parameters covering needs and practices, recommendations were identified which centred on three issues: understanding and developing experience; writing training into the institution's contract; and, putting in place the resources required for action (Colas, 1999).

In Germany the *Arbeitsgemeinschaft Informationskompetenz* (AGIK) was founded as an informal organization to exchange experiences in information literacy and to build up a minimal organizational platform for common activities in this field between German librarians. The Web-site at Hamburg University of Applied Sciences and the AGIK-mailing list on a server of the University Library of Heidelberg were established (Homann, 2003).

Conferences and seminars on information literacy

In recent years several major national, regional, and local conferences and seminars have been held to address topics related to information literacy. For example, the first International Conference on Information Technology and Information Literacy was held in Glasgow, Scotland, 20-22 March 2002 and the second conference was held in June 2003. A total of 143 people from 13 countries including librarians, information technologists and academics attended this first conference. Rader (2002b) and Webber (Webber, 2002) have given good overviews of the conference and a book *Information and literacy: enabling learning in the 21st century* with selected conference papers is to be published with Martin and Rader as editors. The conference demonstrated the concern about the lack of a clear and agreed definition of information literacy or information skills in the UK. The concerns with regard to academic staff included establishing partnerships and encouraging the active promotion of information literacy programmes and the need to ensure that courses are integrated with academic programmes. Several examples of good practice were presented.

At the Nordic level, the first international conference, *Creating Knowledge*, was held in 1999 in Malmö to address information literacy concerns in higher education. However, the conference programme was quite broad and varied

with engaging presentations, workshops and discussions on a whole range of information literacy aspects. The second international conference *Creating Knowledge II* was arranged in Malmö in 2001 with presentations and workshops led by distinguished experts (for example, Christine Bruce). The third conference *Creating Knowledge III* will be held in Akureyri in Iceland in September, 2003. In the future the conference will be held every second year in one of the Nordic countries (Schröder, 2002). The Nordic seminar on information literacy (*Informationskompetens som utbildningsmål*) was also arranged in Tritonia-Vasa in February 6-8, 2003. According to the conference programme the main discussion areas were: the importance of the guiding principles; are the Information Literacy Competency Standards in the US, United Kingdom, Australia and Germany similar; means of co-operation for teachers, IT-pedagogical support and librarians in order to improve information literacy in higher education; and, information literacy in education (in basic, medium and advanced level studies).

At national level several conferences, seminars and meetings have been arranged as well. For example, **in Finland** in 2000, the Undergraduate Library of the University of Helsinki organized a nationwide seminar in which Patricia Davitt Maughan from the University of California, Berkeley, USA gave a lecture on information literacy. In spring 2001 another nationwide seminar was organized in Helsinki by the Undergraduate Library and the Student Services Working Group of the Finnish Research Library Association to evaluate how well the targets would suit Finnish university education. The same targets were discussed later at the meetings of the directors of university libraries in 2002 (University of Helsinki, 2002). The SCONUL model was presented in 2002 by Susie Andretta, from London Metropolitan University, at the third national information literacy seminar in 2002 in Helsinki. At this seminar a nationwide programme for the development of target-oriented information literacy education at all universities and polytechnics was introduced (Sinikara & Järveläinen, 2003).

In Denmark professional institutions and organizations have arranged several conferences in recent years ('Information competence via competent user education', 'The virtual educational library', 'Teaching with IT', 'Web-based learning in a library perspective' and 'Development of pedagogic competencies') (Trumpy, 2000; Skov & Skærbak, 2003).

Several round tables and study days have been organized **in France**. For example, a national study day was organised by the Association of French Librarians on 21 October 1999 on the information training of students. Participants focused on directives in force regarding user training in university libraries, accommodation for training sessions, co-operation with teaching and other staff and evaluation of training given (Riondet, 2000). Desjardins refers to a round table that was held on 21 March 2000 and organized by the training unit of the *Ecole nationale superieure des sciences de l'information et des bibliotheques (Enssib)* in the setting of the Village e-book at the Salon du livre in Paris and what was devoted to the role of libraries in training users in information literacy and the means for achieving this task. Contributions focused, for example, on issues such as the types of difficulty for users arising from both manipulating searches and from the structure of information on the Internet and in OPACs; the place of information retrieval in a university curriculum; and, the effect of training on the librarian/user relationship (Desjardins, 2000).

Since the early 1990's presentations on user education have been a common feature in all professional conferences and meetings **in Spain**. In 2000 REBIUN (*Red de Bibliotecas Españolas*), the network for academic and research libraries in Spain held a workshop on the role of the library in teaching and research where new developments and foci in student learning were one of the highlights. At the REBIUN meeting 'Learning and research resource centres' roles in innovative teaching processes' in Palma de Mallorca in May 2003, the focus was on new learning models for the information society and new roles for the academic library, with information literacy as a strong emphasis in the agenda (Gómez Hernández & Pasadas Ureña, 2003).

Other conferences organized by European institutions and organizations have included information literacy to their programmes as well. For example, the LWW (Libraries Without Walls) conferences have paid considerable attention to information literacy issues since 1995, while BOBCATSSS (the name BOBCATSSS is an acronym and describes the university network in Europe. The letters stand for the first letters of city names of the related universities: Budapest, Oslo, Barcelona, Copenhagen, Amsterdam, Tampere, Stuttgart, Szombately, Sheffield), the Online London and EADTU conferences have included information literacy in their programmes for several years. For example, in recent years the LLS WG of EADTU has provided several sessions on information literacy during EADTU annual conferences (in Paris, 2000, in Glamorgan 2002) and at the International Conference on Distance Education (ICDE) (in Vienna 1999, in Düsseldorf 2001).

Participation in information literacy movement at global level

There are also several examples of initiatives and collaboration at global level where library and information professionals from Europe have been involved. Bundy notes that progressing information literacy as a global issue depends to a great extent on the strength of belief, resources and voice of local, national, and international library associations and adds that a scan of the Web-sites of a number of library associations reveals very uneven approaches to the issue. Few have a policy statement as such, although some refer to the issue in the context of lifelong learning and the information society. The IFLA (International Federation of Library Associations and Institutions) (IFLA) has no statement and it appears that none of the European, including the British associations, yet have one (Bundy, 2002).

However, at their meeting during the IFLA Boston conference in August 2001, the previous IFLA Round Table (RT) on User Education changed their name to the Information Literacy Section. At the meeting, the terms information literacy, user education, and information competencies were discussed and the Executive Committee recommended the adoption of the first phrase 'information literacy' as the best term to describe the work of the round table, because it reflects more learning-oriented information education. The first draft of the RT strategic plan was prepared with the audience's input. The mission statement was set up as follows:

> The primary purpose of the User Education RT is to foster international cooperation in information literacy in all types of libraries'. The priorities and action plan as well as the goals of the group are tightly connected with information literacy. One planned activity includes: 'to set up a committee to work a first draft on international guidelines on information literacy. (IFLA, 2001).

It should be noted that librarians, for example from Finland, Germany, Spain and Sweden, have been quite active in the activities of the IFLA Round Table on User Education as well as other initiatives.

The possible implementation of an international information literacy certificate (IILC) as a way of improving global information literacy will be discussed in an open session at the 69th IFLA Conference in Berlin in 2003. According to Alvestrand (2003), Ross Shimmon, secretary general of IFLA, has said that there was a feeling that if the industry was going to make a serious attempt at making information literacy global, people need more than intuition, and a certificate would help. However, several professionals are concerned with how a certificate would deal with context. Hilary Johnson, chair of the SCONUL committee and chief librarian at University College Northampton notes: *'I am not convinced you can divorce information literacy from a context in the way they seem to have managed to divorce IT from skills in the EDCL.'* (Alvestrand, 2003).

UNESCO has also entered into the information literacy arena: UNESCO, the US National Commission on Libraries and Information Science, and the National Forum on Information Literacy decided to arrange a 'Meeting of Experts' to be held in early 2002 in Prague, for undertaking and planning a larger and more ambitious worldwide 'International Leadership Conference on Information Literacy'. The idea was to bring together a broad array of key professionals to capitalize on their experience and expertise in order to plan a worldwide conference. However, because of several obstacles the Prague information literacy meeting is being rescheduled and is expected to take place in autumn 2003. The NCLIS Website (International Information Literacy Conferences and Meetings) provides thirty-one individual papers and the national case studies. A paper from Bawden (2001) entitled 'Information and digital literacy: a review of concepts' has been provided as an essential background paper. It is expected that the results of the meeting can then be provided to the World Summit on the Information Society planned for Geneva in December 2003, and to other bodies worldwide, and it will be possible to move forward with plans for a Global Congress on Information Literacy. The papers prepared for the Meeting are clustered in the following: Economic Development, Learning, People and Culture, People and Health, Policy, and National Case Studies. Representatives of nine European countries have been invited to the Meeting including Finland, France, Latvia, Portugal, Romania, Slovenia, Spain, the Czech Republic and the United Kingdom. It is interesting to note that representatives from Europe contribute to all clusters except the Learning Cluster and among five papers of the Policy Cluster, four originate from Europe (Meeting of Experts, 2002).

In March 2002, AOL Time Warner Foundation and the Bertelsmann Foundation sponsored a summit in Berlin, Germany, entitled 'Twenty-first Century Literacy Summit'. More than 300 invited representatives from thirty-three countries and all five continents participated. As a result of the summit, a 'White Paper: 21st Century Literacy in a convergent Media World', was prepared. The focus of this White Paper is to help identify new standards of 21st Century Literacy. The Bertelsmann Foundation and the AOL Time Warner Foundation have joined with experts from education, business and government to demonstrate notable examples of 21st Century Literacy initiatives, and

to recommend to various institutions how they can support individuals in taking full advantage of the tools and resources of the Digital Age. The White Paper notes:

> In this new century, information and knowledge matter more than ever, and the ability to use them effectively rests on a set of abilities that extend beyond the traditional base of reading, writing, math and science. Teachers, students, and employees - all of us - must now incorporate the following components to enhance our knowledge and critical thinking skills: Technology literacy: the ability to use new media such as the Internet to effectively access and communicate information. Information literacy: the ability to gather, organize, filter and evaluate information, and to form valid opinions based on the results. Media creativity: The growing capacity of individuals everywhere to produce and distribute content to audiences of all sizes. Social competence and responsibility: The competence to consider the social consequences of an online publication and the responsibility vis-à-vis children' (Bertelsmann Foundation..., 2002).

Some examples of research on information literacy

In the past decade, several European scholars have conducted research on aspects of information literacy. In this section only research activities explicitly claiming to have be connected with information literacy or cited by prominent information literacy researchers were considered.

In the 1970s and 1980s a lot of research on information skills was undertaken **in the UK**. The British Library also published two important reviews of what researchers into information skills had been discovering and made recommendations to encourage more successful development of such skills in schools. First, Irving's (1983) review analysed relevant research work in 1973-1983 and identified future directions. Her review ended: *'The research community had produced many stimulating and embryonic ideas' on what pupils should be taught about information skills, what hadn't been resolved was how this should be accomplished.'* (Rogers, 1994). The British Library's second research review *Perspectives on a partnership: information skills and school libraries 1983-1988* (Heeks, 1989) looked at the development of information skills in schools and the school library's role in this process. Heeks considered thirty-three official reports and research findings published since Irving's review. The focus was very much on the implications of the research for the future of school libraries and what Heeks called the information skills movement. It looked at the following themes: the difference between rhetoric and practice; the relationship of information to knowledge; inter-professional viewpoints; information technology; and the process of change. (Rogers, 1994). Several reports also highlighted a whole-school policy and even expressed doubts whether this approach is achievable. Nevertheless, according to Rogers, examples of success in moving towards whole-school policies were set out in Jack Sangers's report *The teaching, handling information and learning project* (British Library research report 67), which ran from 1983-1986 and the two year project on *Information skills in GCSE and the Role of the Librarian*, which ended in November 1990 (Rogers, 1994: 5-6).

In recent years there have been several Joint Information Systems Committee (JISC) funded projects concerning information literacy which have surveyed practice and provided case studies. For example, the project titled 'The Big Blue' was managed jointly by Manchester Metropolitan University Library and Leeds University Library and surveyed current practice in information skills training for students in higher and post-16 education. The project concluded that there is still only a relatively small amount of published literature which relates to the UK experience of information skills and much of the literature describes approaches to the introduction of information literacy programmes adopted by individual institutions. However, through an audit and case studies the Big Blue project has revealed many instances of good practice within individual institutions, but still had to point out that until the recognition of information skills as an essential graduate attribute has been recognised and/or addressed at national level, the inclusion of information skills in the curriculum will continue to be patchy (The Big Blue, 2002). The JUBILEE (JISC User Behaviour in Information seeking: Longitudinal Evaluation of Electronic Information Services) at the University of Northumbria at Newcastle investigated the possible impacts of Electronic Information Services (EIS) on information seeking behaviour (JUBILEE, 2002; Rader, 2002a). The JUSTEIS Project at the University of Wales Aberystwyth Department of Information Studies, in conjunction with Information Automation Ltd's Centre for Information Quality Management, includes a general survey of end users of all electronic information services and a survey of electronic information services (EIS) provision (Armstrong, et al., 2000; JUSTEIS, 2002).

In 2002 a research grant from the Arts and Humanities Research Board (AHRB) to study UK academics'

conceptions of, and pedagogy for, information literacy was awarded to Webber and Johnston for three years. Work started in November 2002 at Sheffield University's Department of Information Studies. The study aims to answer the following research questions: What conceptions of information literacy are held by UK academics? How do these conceptions relate to previous research? What is academics' practice in educating students for information literacy? What is the relationship between conceptions and practice? Do differences in conception and practice correspond to differences in discipline? A phenomenographic method will be used for the first stages of research. (Webber, 2002).

There are also a few examples of research into various aspects of information literacy in the workplace. Alistar Mutch has reviewed the applicability of the information literacy concept in the private sector and the link between 'lifelong learning' and the 'learning organisation'. He proposes the adoption of a critical realist perspective to consider the nature of information literacy in this context (Mutch, 1996, 1997, 2000).

In Sweden one of the earliest contributions is probably Fjällbrant's (1976) PhD Thesis 'The development of a programme of user education at Chalmers University of Technology' (University of Surrey, Guildford) in 1976 (Fjällbrant & Malley, 1984). The use of phenomenography to determine varying ways of experiencing the information seeking and use process by Limberg from the Swedish School of Library and Information Studies is one of the few studies which has been widely reflected in English speaking world. A research study conducted in Sweden in 1993-94 investigated twenty-five high school seniors' information-seeking behaviour related to fact-finding, balancing information and analysing information. Within the group of students participating in the investigation, three different ways of experiencing information seeking and use were identified. For some, information seeking was experienced as fact-finding, or finding the right answer. These students wanted information that was easy to access, and disregarded what they considered to be biased information because of lack of facts. This approach to information seeking and use was associated with impoverished learning outcomes. Others experienced information seeking and use as balancing information in order to choose. These learners interpreted the information process as involving finding sufficient information to allow them to form a personal standpoint on a controversial issue. Students experiencing information use this way still sought answers to questions and found it difficult to manage subjective views on the issue. Students adopting a third approach to information seeking and use, experienced the process as scrutinizing and analysing. These students sought to understand through critically analysing and evaluating information sources. They sought to identify the underlying values and motives in the discourse they were interpreting. It was found that information seeking is closely tied to subject content from the learner's perspective. Limberg's study shows that different ways of experiencing the information seeking and use process may have a significant impact on the outcomes of learning. The conclusion of the study proposes that a relational approach to information literacy education would enhance the learning perspective for the individual. The investigation also reveals the importance of taking a holistic approach to teaching and learning information literacy (Limberg, 1999; 2000; Rader, 2002a).

The dissertation of Lantz (1999), at Linköping Univerity reported on a study of the information situations of small-company managers to arrive at an increased understanding of their information utilisation process. An interactional, cognitive approach to the problems served as a theoretical construct of the study. The effects of barriers of an individual's information utilisation were seen as a dynamic interaction between the environment and the organism in terms of the user's cognitive system and the information barriers s/he encounters in an information setting. The study used a qualitative approach within the tradition of action research. Case studies were made of the information situations of twenty-three managers from small manufacturing wood and mechanical industries. Perceived information barriers were analysed at the individual, organizational and society level. The results indicated that information utilisation reflects both person and situation. The individual's, the manager's, information utilisation behaviour is based on and controlled by his perceptions of the information situation at hand and memory representations from the past. It was also shown that mediated by motivational and other affective states, the quality of these representations, of which perceived information barriers are important constituents, guide his information utilisation behaviour. The results also indicated that educational measures seem to be a feasible way of minimising certain barriers and as the information environment continues to change, there is a need for a stable structure of support in order to bring about lasting changes. This study points to the possibility of breaking information barriers through information literacy.

In Finland, at the Department of Information Studies at Åbo Akademi University, a research project started in 1997 in which information and learning have been studied from many perspectives. The aim of this project was to study the relations between information behaviour and the learning process. The work of this project focused mainly on the following research questions: How are students' information needs, seeking and use affected by the problem-

based learning approach and by other student-oriented teaching methods? How does the individuals' personality influence his/her information behaviour and learning? Which type of personality has the ability of seeking information effectively? How does the role of the librarian change when we move from providing teaching to support learning? Where do teachers and librarians meet in their tutorial roles? Does collaboration between teachers and information professionals affect the learning process? How does emphasis on information skills affect the learning process? Does provision of tailored qualitative information resources affect the learning process? How can library instruction support the students' development to information literacy? (Ungern-Sternberg, 2000).The research project was composed of four parts: Eskola studied what kind of activating teaching methods are in use in Finnish universities and how students information behaviour is affected by these methods (Eskola, 1998). Heinström's research is connected with the impact of personality on information behaviour and learning. Rosenqvist's area is the changing role of the librarian and the challenges from polytechnic education and problem-based learning (Ungern-Sternberg, 2000). According to Eskola, in addition to the study of students' library use, a few master and licentiate theses have been undertaken in Finland in the area of students' information needs and uses at the Departments of Information Studies in Tampere and Oulu. For example, Rissanen has studied health care students' information needs, uses and information literacy in a case study. Kautto has explored instruction given to students in seeking and using literature as a part of university education (Eskola, 1998).

Kari from the University of Tampere has examined information action (needs, seeking and use) in the context of paranormal information in a particular situation, as experienced by people who are interested in the supernatural. The study is primarily theory-driven, and its conceptual framework is grounded upon Dervin's sense-making theory. The basic elements, which are situation, gap (need) and use, are enhanced by two new elements, construction (seeking) and barrier. This is done in an effort to develop a theory of information action that is more concrete and unambiguous than the original sense-making theory. The main objective of the study was to analyse the content of information action, rather than its structure. The data was obtained by twenty micro-moment, time-line interviews conducted in Finland in 1995 (Kari, 1998). Some researchers have focused aspects of information seeking and use on the workplace and looked the use and choice of information channels and sources in this context (Bystrom & Järvelin, 1994).

In the Netherlands Boekhorst of the University of Amsterdam completed his doctoral thesis on information literacy. The Dutch term used for information literacy is *informatievaardigheden*. His study *Informatievaardig worden in het onderwijs, een informatiewetenschappelijk perspectief: een vergelijkende gevallenstudie in Nederland en Zuid-Afrika* (Becoming information literate in education. An information science perspective: a comparative case study in the Netherlands and South Africa) concentrates on the informational aspects of becoming information literate for the information society in secondary education. An empirical study determined the way in which information literacy was taught in two schools, one in South Africa and the other in the Netherlands. The main outcome of the empirical study was that, although pupils were adequately trained in the use of technology, they were not trained to become information literate as the emphasis is on acquiring computer skills instead of acquiring information. The main recommendation is the introduction of the subjects at all levels enabling students to be prepared for their role in the knowledge society (Boekhorst, 2000).

According to Gómez Hernández & Pasadas Ureña (2003) several doctoral dissertations **in Spain** are also related to information literacy. A dissertation by Urbano in 1999 used a citation analysis technique to focus on the level of awareness and use of information sources by computing researchers in the University of Barcelona. Ortoll's dissertation, entitled 'Information competency in the health sciences: proposal for a training model' examines information literacy models developed for information literacy instruction mainly in the health care sector. This work analyses the approach to information literacy issues in the Spanish higher education setting related to the biomedical sciences. It proposes an integrated model to be used as a reference framework for the design and implementation of information literacy programmes aimed at the development of information competencies among health care professionals. Prof. Judith Licea from Mexico, while on sabbatical leave in the University of Murcia, has carried out a research programme funded by the Spanish Department of Education on the information skills of all academic communities of that University.

In Germany, Homann (2001) also refers to an extensive research project of the German Federal Ministry of Education and Science Research at the University of Dortmund which aimed to improve the conditions for effective use of electronic information systems.

At the **Czech** Technical University, several grant proposals have been submitted. The project 'The Concept of Information Education' was a part of a larger proposal 'Contribution to the Development of Distance and Lifelong

Education at CTU'. The other proposal was called 'Information Preparation of CTU Users'. The goal of this grant proposal was work on the system of the information preparation of users, mostly students, according to the stages of information literacy. The proposed solution exploited the possibilities of modern ICTs to advise users how to use information systems, sources and services as well as the instructional programmes for end user searching (Borovansky, 2000).

There are many other studies and research activities which include aspects of information literacy even though the term information literacy may not be used explicitly.

Conclusions

From this overview of the literature on information literacy activities in Europe it is apparent that much work has been undertaken on the part of librarians to deliver information-related competencies. Interest in 'information literacy' can be illustrated by the number of projects, conferences, workshops, working groups, adaptation of information literacy competency standards, teaching initiatives in many institutions, development of Web sites and Web-based tutorials, and in the area of research. However, while the majority of 'information literacy' initiatives and programmes in Europe have been initiated recently, librarians in Europe have been involved in delivering instruction in aspects of information literacy for many years. The initiatives outlined in this paper represent only some examples in what one might call 'information literacy movement' in Europe. It is difficult to draw conclusions about information-competence developments in the whole of Europe as material published in English is quite rare and fragmented - many initiatives have been documented mainly in local languages but not in English. However, it is possible to draw some preliminary conclusions.

First, the majority of recent initiatives come from formal education settings and examples in the workplace, community and continuing education context are very rare. Two different paths can be followed: in some countries 'information literacy' initiatives started in the school sector (UK, Netherlands, Spain), while in other countries academic libraries took the initiative (Scandinavia, Germany). In the mid-1980s there were several research projects on information skills in schools, and several models have been developed and proposals made to teach aspects of information literacy. Information literacy initiatives in higher education have taken a variety of forms: stand-alone courses or classes, Web-based tutorials, course-related instruction, or course-integrated instruction. Although during earlier years much of the teaching activities were separate from the curriculum, now there are trends towards the integration of information literacy into subject areas. Some discussions have taken place into the question of whether 'information literacy' should be taught as a separate unit or integrated into the curriculum, but the majority favour the curriculum integration model. Some institutions offer formal information literacy courses: these courses range from for-credit to non-credit, from required to elective.

There is also a shift towards increasing emphasis on faculty-librarian partnership and the implementation of modern ICTs in delivering information literacy courses. However, implementation and delivery of information literacy education depends on many factors: national as well as institutional policy, teaching and learning approaches, understandings and attitudes of faculty and students, and resources (budget, staffing, facilities, time). However, some specific characteristics of successful information literacy initiatives can be highlighted. Information literacy activities in several countries have been connected with the use of active learning methods, for example, with problem-based learning methods which presuppose that the students themselves collect, document and analyse the information they need to solve a problem. There must also be effective partnership: formation of partnerships between library and faculty is of the utmost importance. Several publications as well as the Websites of many higher education institutions show that there are several initiatives under way. Collaborative approach seems to be appreciated, especially in Nordic countries. Successful initiatives report on integrated 'information literacy' programmes and the integration of the potential of modern ICT to deliver 'information literacy' education is also a common feature.

The ACRL Information Literacy Competency Standards are being translated and used in several countries. Although some researchers do not favour these 'skills-based' and 'measurable' models, setting goals and having ways to assess whether students have met those goals is regarded as a good start. Several PhD studies, Masters Theses and other research projects have been conducted on aspects of 'information literacy' as well. However, most of them have focused on the educational environment.

There is little evidence of government initiatives but too heavy an emphasis on technology infrastructure and basic

IT skills in many countries. However, providing students and teachers with the necessary technology to learn to access information in different ways is also important. It also seems that even some important forums have already taken the word 'information literacy' into their vocabulary and referred to it as an essential competency for the 21st century, yet the majority of those concerned are librarians and information professionals. This may in part be due to the confusion caused by the varied terminologies and meanings discussed in this review. However, parallel initiatives can be followed and many researchers and institutions are developing their own definitions and models, while some EC projects represent initiatives that are crossing disciplinary, institutional and national boundaries. Again, some efforts have been made to connect 'information literacy movements' at regional and European level as well as across the world.

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