

Conceptual Relationship of Information Literacy and Media Literacy in Knowledge Societies

Series of Research Papers



World Summit on the Information Society (WSIS)

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Literacy and Competencies Required to Participate in Knowledge Societies

WSIS+10: Overview and Analysis of WSIS Action Lines C3 Access to Knowledge and C9 Media

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Executive Summary

The 21st century is an era of change. The globe is under the influence of three major world trends: the revolutionary development of information and communication technologies, the transition to a knowledge society and the new learning mode of the Net Generation. These trends have generated a shift in the educational paradigm, giving rise to the need to cultivate new competencies for citizens in knowledge societies.

The aim of this report is to explore the literacy and competencies required for citizens, communities and nations to participate in future knowledge societies, with specific reference to the implementation of WSIS Action Lines C3 (Access to Information and Knowledge) and C9 (Media).

Many novel literacy concepts have been put forward in response to the new social and technological environments. Some are independent and novel, such as digital literacy and information fluency, whereas others are compound concepts such as multiliteracies, transliteracy and media and information literacy (MIL). Recent studies have indicated that future society will comprise the semantic Web, Big Data, cloud computing, smart phones and apps, the Internet of things, artificial intelligence and various new gadgets. In short, it will be an information and communications technology (ICT)-based society. Given the complexity of the next society, this report adopts an integrated approach towards new literacy training by establishing a literacy framework of “21st Century Competencies”.

The following key future competencies, classified into three categories, are identified as essential to future society:

- (1) conceptual competencies: connectivist thinking, innovative thinking and problem solving, critical thinking, reflective thinking and positive thinking skills;
- (2) practical competencies: media and information literacy (with ICT skills as a key component) and learning skills; and
- (3) human competencies: social networking skill and virtual collaboration, self-management, humanistic consciousness, digital citizenship and cross-cultural interaction skill.

The cultivation of the 21st century competencies is essential to the implementation of the C3 and C9 Action Lines, as their fundamental spirit is to provide information and education for all. Every citizen is entitled to the updated literacy training required for full participation in the knowledge societies.

In reviewing the current status of the implementation of WSIS Action Lines C3 and C9, it has been found that access to information has improved as ICTs have developed, most notably in relation to the growth of mobile phone use. Mobile phone use in developing countries has created a “leapfrog” phenomenon that enables millions more people to access the information society. Although a digital divide still exists amongst countries and marginalised social groups, attention has shifted from

material access to actual use and application, which has been coined the “digital use divide”. Freedom of the press has not exhibited much improvement in the past decade, but the emergence of “we media”, such as social media and blogs, has offered ordinary people unprecedented opportunities to express their views and contribute to media pluralism. Other enablers in the implementation of WSIS Action Lines C3 and C9 include the OER movement, the groundswell movement, the multi-stakeholders’ approach combating the global digital divide, citizen journalism, education reform, mobile technology adaption and the strong sense of social justice upheld by the Net Generation. Barriers and challenges remain, generated by the global digital divide and a lack of access to ICTs due to low SES, race, gender, age, disability, language and political instability, in addition to restrictions in freedom of the press rooted in political reasoning and media concentration.

Recommendations for tackling these issues include:

- (1) Promoting m-learning and maximising mobile technologies;
- (2) Cultivating 21st century competencies with objectives such as responding to the specific needs of the new socio-technological environment, narrowing the “digital use divide”, fostering media pluralism and contesting restrictions on freedom of speech;
- (3) Establishing collaborative networks and strategic partnership;
- (4) Education reform and Teacher Training;
- (5) Contextualising initiatives for specific cultural settings; and
- (6) Considering the power of individuals (particularly the Net Generation) in the civil society when suggesting that more research should be conducted in this respect.

This report concludes by proposing the promotion of the new literacy for everyone in the mobile era so that future global citizens can participate in high-tech knowledge societies while maintaining the humanistic consciousness to fight for social equality and the right to information. This is also in line with the mission of the Millennium Development Goals.

1 Introduction

The past 40 years have seen great advancements in information and communication technologies (ICTs). Rich resources are available to people throughout the world, with information and knowledge driving social and economic transformation and fostering the development of individuals, communities and nations. Many countries are transforming from industrial to knowledge societies and the popularity of the Internet has accelerated the pace of this globalisation. People around the world are much better connected by social media and mobile technologies, yet some marginalised groups remain deprived of opportunities for accessing information due to the digital divide. The fast-paced development of digital technologies and their applications has had an unprecedented influence on global societies and the world economy. It is believed that human history has not witnessed another development in which new technology has so thoroughly penetrated the everyday lives of international community members. This report

analyses the literacies and competencies required for citizens of the new epoch, with particular reference to the challenges of implementing the WSIS Action Lines C3 and C9.

1.1 The World Summit on the Information Society

The World Summit on the Information Society (WSIS), held in Geneva in 2003 and in Tunis in 2005, provided a platform for a dialogue in which multiple stakeholders including international organisations, governments, the private sector and civil society discussed the opportunities and challenges of the new information and communication environment (UNESCO, 2010). The main purpose of the WSIS is to promote worldwide collaboration “to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilise and share information and knowledge” (UNESCO, 2009, p. 7; UNGIS, 2011).

According to the Plan of Action set out by the Geneva Declaration of Principles, the 11 Action Lines are intended to “advance the achievement of the international development goals, including those in the Millennium Declaration, the Monterrey Consensus and the Johannesburg Declaration and Plan for implementation, by promoting the use of ICT-based products, networks, services and applications, and to help countries overcome the digital divide” (WSIS, 2003, p. 1).

UNESCO, together with the International Telecommunication Union (ITU), the United Nations Development Programme (UNDP) and the United Nations Conference on Trade and Development (UNCTAD) are engaged in shaping the overall multi-stakeholder coordination of the implementation of all Action Lines. A number of follow-up events have been conducted to provide opportunities for the participants to share information and form partnerships (WSIS, 2011).

The first WSIS +10 Review meeting will be held in 2013 to mark the 10th anniversary of the adoption of the Plan of Action of the WSIS (UNESCO, 2012a). UNESCO will host this event, together with the ITU, the UNDP, the UNCTAD and the UNGIS. The meeting will address an interdisciplinary and multistakeholder approach towards the development of knowledge societies. The partners and audience will include ministers and high-level government officials, heads of UN agencies and intergovernmental organisations, CEOs from the private sector, NGO leaders and civil society representatives.

Participants will assess the progress made, along with the future ICT trends affecting all societal sectors, and post-2015 recommendations will be presented for policy makers’ consideration. Stakeholders from various countries submitted suggestions to the Open Consultation on the Overall Review section (UNGIS, 2011). It has been proposed that the WSIS +10 Review should aim to discuss not only achievements, but also shortages and challenges while identifying solutions and best practices by proposing further actions. It has also been suggested that the Review have a strong link to Millennium Development Goals, with special

consideration given to the less-developed countries and marginalised societal groups. All of the stakeholder submissions shared the view that past ICT development has introduced new technologies and challenges that must be handled by the international community as new themes. The outcomes of this Review will inform subsequent meetings and inform the 2015 UNGA overall review on WSIS. It is this background that shapes this study.

1.2 WSIS Action Lines C3 and C9, and Knowledge Societies

Amongst the 11 Action Lines, several are central to the development of inclusive knowledge societies (UNESCO, 2010), particularly C3 Access to Information and Knowledge and C9 Media. Action Line C4 Capacity Building is also relevant. These three Action Lines are concerned with the enhancement of universal access to information and knowledge, building the necessary skills to benefit fully from future society and the fostering of pluralistic, free and independent media and information structures.

In the Geneva Declaration of Principles (WSIS, 2003), Action Line C3 reads that “ICTs allow people, anywhere in the world, to access information and knowledge almost instantaneously. Individuals, organisations and communities should benefit from access to knowledge and information.” Meanwhile, C9 reads that “The media – in their various forms and with a diversity of ownership – as an actor, have an essential role in the development of the Information Society and are recognized as an important contributor to freedom of expression and plurality of information.”

Information for all is a basic human right. Universal access to and plurality of information are crucial to the development of inclusive knowledge societies.

1.3 Purpose of the Study

This report studies two specific Action Lines, C3 and C9 with focus on those aspects related to literacy and competency training in the emerging knowledge societies. The objectives of the study are:

- (1) examine the new socio-technological environment and analyse the need for a shift in educational paradigm and literacy education;
- (2) study the literacy concepts developed in recent years, map out future skills and produce a framework of 21st century competencies;
- (3) analyse the challenges of implementing the WSIS C3 and C9 action lines and relate them to the cultivation of the 21st century competencies in both developed and developing countries; and
- (4) develop recommendations regarding the cultivation of competencies that facilitate the fruitful participation of all people in the knowledge societies.

This report’s analysis of future literacy and competency is also in line with the “Education for All” framework established in the United Nations Literacy Decade. There should be equal opportunity for the acquisition, by every citizen, of future

needed competencies that enable them to effectively participate in the societies and economies of the 21st century. It is considered important that people achieve both the Millennium Development and EFA goals.

2 The Changing World: Major Global Trends

The 21st century is an era of change. Policy and decision makers, scientists, educators, IT experts, business professionals and futurist authors are all trying to research and predict future developments in the coming decades. This section reviews such prophecies in the light of the aforementioned global trends, which will be analysed according to their educational relevance.

2.1 Studying the Future

A number of research reports, books and journal publications introduce the driving forces of our future society and discuss the major characteristics of the world we can expect to inherit. There are some common themes in these works including technological development, knowledge acceleration and socio-cultural reconstruction.

In the early 1980s, Alvin Toffler (1980) put forward the idea of the Third Wave, predicting that we were entering a new society that was technologically driven and highly personalised. Following Toffler's analysis of the "de-massified media", a 6D notion was proposed (demassification, decentralisation, denationalisation, despatialisation, disintermediation and disaggregation) to illustrate a globalised and fragmented society (Brown and Duguid, 2000). Although future societies are typically described as fragmented, people and organisations are expected to be connected by new communication technologies. Manuel Castells (2000) discussed informational capitalism in his renowned book, *The Rise of Network Society*, emphasising the important role of information and communication in the future world. In his book, *Supertrends*, Tvede (2010) also identified information technology (IT) as one of the four major industries in the coming knowledge society. Friedman (2006) argued that the future world is not only a network society, but also a "flat" world. Internet technologies blur many hierarchical distinctions, including the demarcation between professional communicator and ordinary audience. With more advanced communication technologies to come, people all over the world will have increasingly more power to become global individuals. Friedman (2006) predicted that individuals would replace nations and multinational companies as the driving force of globalisation.

The Apollo Research Institute released a report on future work skills that analysed six drivers of change in the coming decade (Davies, Fidler and Gorbis, 2011, pp. 3-5):

- The rise of smart machines and systems, with workplace automation nudging human workers out of rote, repetitive tasks.
- The new media ecology, with new communication tools that require novel media

literacies beyond text.

- The computational world, with massive increases in sensors and processing power that transform the world into a programmable system.
- Super structured organisations, with social technologies that drive new forms of production and value creation.
- The globally connected world, in which increased global interconnectivity puts diversity and adaptability at the centre of organisational operations.
- Extreme longevity, with increasing global lifespans that change the nature of careers and learning.

Also concerned with the future of work, Gratton (2011), from the London Business School, identifies five similar future-shaping forces including technological development, globalisation, population composition change (longevity and the rise of Generation Y), social transformation and sustainable energy.

In view of these predictions, this report concentrates on analysing three of the most important world trends related to the role that information plays in society, along with the need for new literacy.

2.2 First Trend: Revolutionary Development of ICTs

Since the end of the 20th century, communication technology has undergone revolutionary changes. The significant change in the 1990s was the convergence of media and computer technologies, what Koelsch (1995) called the “infomedia revolution”, during which the line between media and information was blurred. The most significant communication revolution in human history thus far, however, has been the emergence of the Web 2.0 Internet application in the mid-2000s that ushered the world into the “second media age”, in which the media is characterised by two-way, decentralised communication.

2.2.1 Web 2.0 Application

In the early years of the 21st century, the Internet shifted from Web 1.0 to the Web 2.0. The Web 2.0 application has changed how people deal with the media and handle information, with user-generated content entering the mainstream media. Media users become “prosumers” with Web 2.0 acting as a “read-write Web” from which a wealth of “we media” such as YouTube, Twitter, Facebook, Wikimedia and other social networking sites has emerged (see Table 1). Likewise, media and information technologies have further converged.

Table 1: Mapping the Development of Information and Communication

First Media Age	Second Media Age		
Mass Media	Web 1.0	Web 2.0	Web 3.0 and beyond
<ul style="list-style-type: none"> - Printing - Photo reproduction - Radio broadcasting - Filming - Television Broadcasting - VCR - Cable technology - Satellite - Telecommunication 	<ul style="list-style-type: none"> - Websites - Online media - Video on demand - Digital broadcasting - IPTV 	<p>'We Media':</p> <ul style="list-style-type: none"> - Citizen journalism sites - Blogs - Wikis - Social networks (e.g. Facebook, MySpace, Bebo, Google+) - Media sharing sites (e.g. podcasting, photo-sharing sites such as Flickr, video sharing services such as YouTube) - Social bookmarking sites (e.g. Delicious) - Microblogging services (e.g. Twitter, Weibo) 	<ul style="list-style-type: none"> - Semantic Web - Cloud computing - Smartphones and apps (location-based services with GPS) - Social network sites as platforms - HTML5 - Big data - The Internet of things - Artificial intelligence applications - Robotics - Virtual avatars - New gadgets: Inexpensive and small size tablets and smart phones, wearable computing devices, iTV, smart vehicles, memory machines, e-reading devices

2.2.2 Rapid Development of ICTs

The 21st century world is basically ICT driven. Table 2 shows the latest ICT developments. By the end of 2011, one third of the world population (2.3 billion people) were online. On a global level, there are 5.9 billion mobile phone subscriptions. According to the ITU (2012a, 2012b) survey, a total of 159 countries have launched 3G services and there were 590 million fixed (wired) broadband networks worldwide. Section 4 of this report provides a more detailed discussion of ICT trends.

Table 2: ICT Trends (The World in 2011)

Areas	Facts and Figures
Internet	<ul style="list-style-type: none"> - The world was home to 7 billion people, one third of which were using the Internet. A total of 2.3 billion people were online. 45% of the world's Internet users were below the age of 25. - The proportion of individuals using the Internet in the developed world reached 70%. - In developing countries, the number of Internet users doubled between 2007 and 2011. Over the last five years, developing countries increased their share of the world's total number of Internet users from 44% in 2006 to 62% in 2011. Internet users in China represented almost 25% of the world's total Internet users. - Of 1.8 billion households worldwide, one third had Internet access. - By the end of 2011, 70% of the total households in developed countries had Internet access, whereas only 20% of households in developing countries had Internet access. - Total international bandwidth increased seven-fold over the last five years. - Younger people tended to spend more time online than older people.
Mobile phones	<ul style="list-style-type: none"> - With 5.9 billion mobile-cellular subscriptions, global penetration reached 87%, and 79% in the developing world. - Growth was driven by developing countries. - Mobile-broadband subscriptions had grown 45% annually over the last four years and in 2011 there were twice as many mobile-broadband as fixed-broadband subscriptions.
Mobile broadband	<ul style="list-style-type: none"> - By the end of 2011, there were 1.2 billion mobile-broadband subscriptions worldwide. - A total of 159 global economies had launched 3G services commercially. - Europe led in broadband connectivity, with fixed and mobile broadband penetration reaching 26% and 54%, respectively. - A number of developing countries were able to leverage mobile-broadband technologies to overcome infrastructure barriers and provide high-speed Internet services to previously unconnected areas. - In Africa, mobile-broadband penetration reached 4%, compared with less than 1% for fixed broadband penetration. - The world's top broadband economies were from Europe, Asia and the Pacific. - In Hong Kong, the mobile penetration rate was over 200%.
Fixed (wired) broadband	<ul style="list-style-type: none"> - By the end of 2011, there were 590 million fixed (wired) broadband subscriptions worldwide. - Fixed broadband prices in developing countries dropped by over 50% in just two years.

Source: ITU World telecommunication/ICT indicators database, 2012.

2.2.3 Web 3.0 and beyond

It is predicted that by 2016, the world will enter the Web 3.0 era, which will feature a semantic Web (Tsoi, 2010). Super computers will help us analyse all kinds of online information while providing personal services. In the near future, the search engines within the Web will comprehend not only the keywords, but also the specific meanings of our requests. The computer will use artificial intelligence (AI) to draw useful suggestions and solutions for us from databases, at which point going online will be very convenient through mobile devices. People will be closely linked to the Web (Hammersley, 2012). Thus, the Internet will play an increasingly dominant role in our work and lives.

Table 1 illustrates the additional significant technological breakthroughs anticipated in the Web 3.0 era. Amongst these, some key innovative information technologies include:

(1) Cloud Computing:

The US National Institute of Standards and Technology defines cloud computing as “a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction” (Pallis, 2010, p. 70). Microsoft has already released the newest generation of cloud productivity services, Office 365 (Salcito, 2012).

(2) Smartphones and Apps:

Today’s advanced smartphones are more computer than telephone, capable of combining with 4G and broadband access to provide a new hardware platform for using the Web. In the future, they will also include a wide range of sensors, motion detectors and GPS navigation systems. Thus, they will ultimately become sensory devices for a variety of location-based services, essentially creating a “mobile Web”. Later, this mobile Web will be accessed by interacting with individual client applications (apps) that run directly on the phone’s operating system, rather than through a Web browser (Andersen, 2012).

(3) Big Data:

The progression of smart devices will introduce a flood of data pouring from the Internet, referred to as “Big Data” (Ackerman and Guizzo, 2011; Bollier, 2010). A whole new generation of technologies will emerge to handle such large-scale data, and companies are expected to race to create large datasets and develop new techniques to mine them.

(4) The Internet of Things:

The above term refers to linking physical objects to the Internet. While Web 2.0 is used to connect people to people, the Web 3.0 application will be used to connect things to things, and people to things (Andersen, 2012).

(5) New Gadgets:

In the coming decade, a surge in inexpensive and smaller tablets and smart phones is expected. There will also be wearable computing devices available, such that the Web moves from our desks into our pockets (O’Reilly and Battelle,

2009). Memory machines and e-reading devices will also be widely used in schools.

(6) Artificial Intelligence:

Scientists predict that by 2100, people will control computers via tiny brain sensors and move objects with the power of their minds. Many have also claimed that AI will be widely available, and Internet-enabled contact lenses will allow people to access the world's information base literally with the blink of an eye (Kaku, 2011).

2.2.4 The Challenges of the New Technologies

Communication technology is going to shape a brave new world, but the resultant scenario will post a number of challenges to media and information users, particularly young people. The first challenge will be to master the ICT skills needed to take advantage of the new technologies.

The second challenge will be how to handle the influences of these communication technologies. On the one hand, super computers can “think the unthinkable”, which may lead to the emergence of new theories, ideas, ideologies, technical advances and economic innovations. On the other hand, the new media and information environment breeds “blip culture” (Toffler, 1980), which is characterised by greater individuality and a de-massification of personality and culture. As a result, the world becomes more fragmented. Moreover, an intelligent Web may also prove very manipulative. For example, scholars have warned of the negative consequences of “Googlization” (Vaidhyathan, 2011), a state in which it is so convenient to go online and search the Web that people no longer feel the need to memorise things. Heavy search engine users will suffer from memory loss and may also ultimately find themselves unable to read long, in-depth articles. This digitisation trend will change public life. People must understand the effects that innovative communication technologies such as microblogs, mobile phone apps, QR codes, AI search engines and cloud computing will have on their lives. Thus, we will not only need to learn how to use new devices wisely, but also how to develop strategies to handle their influence.

The third challenge is how to deconstruct the huge amount of information coming from different sources and channels. In the 21st century, people will have to develop a new kind of literacy that will allow them to wisely search, select, evaluate, organise, share and handle information from different sources. Information overload is already an immediate problem. In addition, it is worth noting that the new ICTs not only “construct”, but also “manufacture” reality. People must be equipped with high-level reflective and critical thinking skills to receive and deconstruct different kinds of content. They must also develop systemic thinking skills to help them put fragmented information together to form a full picture (To and Lau, 2012).

The fourth challenge is to learn how to use the communication power. New technologies offer media users the communication power they have never before

enjoyed. Web 2.0 turns people into prosumers, producing media products and delivering them on the Web at any time, and in any place. In recent years there has also been a trend called “groundswell”, which refers to “a spontaneous movement of people using online tools to connect, take charge of their own experience, and get what they need – information, support, ideas, products, and bargaining power – from each other” (Li and Bernoff, 2008, pp. ix-x). An updated literacy programme and training in positive thinking are needed to guide the use of this power towards constructive creativity and social participation.

The fifth challenge addresses online security. E-commerce is well built into the business world, and online shopping has become a way of life for many consumers. E-banking is also prevalent. With such online economic development flourishing, e-crime is also on the rise. Parents also worry that their children do not know how to protect their privacy online. With the mushrooming of “we media”, a mass of unfiltered, user-generated content is circulating around the globe. Cyber bullying, invasion of privacy, breach of copyright and other malpractices have become serious Internet-related social problems. Surfing the Web without security consciousness becomes a risky act and netizens must gain the specialised knowledge and skills to master their online activities.

The sixth challenge is how to respond to the social inequalities generated by the ICTs. In the past two decades, the rapid development of ICTs introduced intense economic growth, but the digital revolution also left many groups behind. The Internet was once regarded as an emblem of a free and open society, but some scholars have accused it of being an active reproducer and possible accelerator of social inequality (Witte and Mannon, 2010). Digital divides exist between rural and urban areas, young and old people, women and men, persons without disabilities and persons with disabilities, ‘haves’ and ‘have nots’, affluent and poor countries and technologically advanced and technologically less developed societies. Large segments of the world population, particularly in developing countries, remain barred from the social, political and economic potentials of the ICTs. As political participation moves online, e-commercialism grows more prevalent. Traditional media is presented in digital formats and advertisements are delivered through social media to the extent that participation in the public sphere requires ICT access and competency (DiMagio et al., 2001). People without the ICT skills, and those with low socio-economic status or poor language skills, will be easily excluded from participating in the future society. Therefore, striving to establish ICT access for all is an important aspect of tackling the social inequality problem.

Thus, in the Web 3.0 age, a person will need to acquire new competencies and skills to maintain critical autonomy and avoid succumbing to the manipulations of new technologies. Moreover, people must discover how to overcome digital divides to ensure that they will not be deprived of opportunities to fully participate in the digital world.

2.3 Second Trend: Transition to Knowledge Society

In the 21st century, many countries are transforming from industrial societies into knowledge societies. The majority of the population in a knowledge society are “knowledge workers” because knowledge is the means of production. According to Peter Drucker (1998), the father of contemporary management and a pioneering researcher on the knowledge society, in the next society, the reception, production and transmission of information/knowledge will be essential in economic, political, social and cultural sectors. For Castells (2000), the emergence of information processing as the core and fundamental activity in the informational economy conditions the effectiveness of all production, distribution, consumption and management processes (Stalder, 2006). Knowledge management becomes very important due to the international division and individualisation of labour.

In the new society, information power and infoledge will become important life skills (Mak, 1998). Cultivating a population capable of mastering information will be essential to societal development. If a population has low information competency, the lack will make a smooth march into the knowledge society state very difficult. Moreover, in the new society people will need to constantly innovate and cultivate higher-order thinking skills (Collins and Halverson, 2009). The goal will be to learn generic skills, rather than special subjects, as in the industrial era.

In the knowledge societies, knowledge, intelligence and ideas will be important resources, but they have to be converted into results (Harvard Business School, 2007). The greatest challenge in the 21st century is to increase the productivity of the knowledge workers. To achieve this goal, knowledge workers must learn to be effective and “get the right things done” (Drucker, 2002, p. 5). Table 3 reveals the roles played by manual and knowledge workers. According to Drucker (2002), knowledge workers concentrate on contribution, and thus they require competencies that are very different from the manual labours of the last century, but can and must be learned.

Table 3: Manual Workers vs Knowledge Workers

Manual Workers	Knowledge Workers
Need efficiency	Need effectiveness
The ability to do things right	The ability to get the right things done
Judged in terms of the quantity and quality of a definable and discrete output	Knowledge work is defined by its results
Told what to do	Self-directed towards performance and contribution

UNESCO (2010) echoed the unique role of knowledge workers by stating that in the knowledge societies, people should have the ability to not only acquire information, but also transform it into knowledge that empowers them to improve their livelihoods and contribute to the social and economic development of their society. Thus, the

cultivation of new literacy amongst citizens is regarded as the most urgent task of every country making the shift to a knowledge society.

2.4 Third Trend: New Learning Mode of the Net Generation

In a traditional society, a person was considered illiterate if he or she could not read and write. In the future society, social scientists believe that illiteracy will not describe someone who cannot read, but rather someone who has not learned how to learn. Toffler (2008) noted that in the Third Wave society, information can replace most of the material resources, which makes learning how to handle information very important.

Today's youth are called post-80s, post-90s or millennials and they all belong to the Net Generation. Their media habits and learning modes are different from those of previous generations because they have grown up digital (Tapscott, 2009), live online and are already good at multitasking. They tend to reject spoon-fed educations and prefer to pursue knowledge through exploration and discovery. They are particularly interested in actively seeking information through the Internet.

Regarding future schooling, the current school curricula and educational systems are already outdated and need to be reformed (Aviram, 2010). In knowledge societies, the technological environment has changed, with the new society dominated by ICTs. Distant learning will become increasingly prevalent as schools no longer require a specific physical location and because the Net Generation prefers electronic curricular materials, book learning will fall out of favour. School systems will be challenged by ICT capabilities and students will have to study continuously because yesterday's knowledge is no longer relevant today. Future knowledge workers will need to take lifelong learning seriously. Aviram (2010) noted that every epoch has its own mode of learning, making it impossible for the educational systems in postmodern society to be the same.

In fact, two knowledge systems have already existed at present. One is the school system and the other is mass media and other information platforms. The young people of the Net Generation have already used information sources outside schools to get information, pursue knowledge and engage in creativity activities. The above analysis shows that active learning through ICTs will be the future educational trend. A new kind of literacy is needed to educate the Net Generation, so that they are able to pursue life-long learning using the new technologies.

2.5 The Educational Paradigm Shift

As digital technology continues to advance, schools around the world, particularly those in developed countries, are using ICTs for teaching and learning. Many schools are not only targeting a 1:1 classroom (each student has one computer), but also planning for "smart classrooms". While Korean schools are digitising all of their textbooks (Trucano, 2011), students in the United Arab Emirates countries learn

their lessons through e-platforms using tablets and smart boards in technologically savvy classrooms (see Case 1: Mohammad Bin Rashid Smart Learning Initiative). Sweden has even opened a school with no classrooms in which digital media plays the key role in learning (see Case 2: School without Classrooms). Meanwhile, Microsoft's Partners in Learning programme promotes the most updated technologies such as tailor-made laptops and cloud services to be used in schools (see Case 3: Innovative Schools and the Cloud for Education).

In the infographic for "Envisioning the Future of Education Technology" produced by Swedish technology strategist and futurist, Michell Zappa (2012), it is predicted that future classrooms will be equipped with tablet computers, digital projectors, interactive whiteboards, educational games, video-based lessons and other e-devices. By 2040, schools will have evolved from digitised classrooms and studios to virtual learning spheres.

Case 1: Mohammad Bin Rashid Smart Learning Initiative

The Mohammad Bin Rashid Smart Learning Initiative is an integrated e-learning platform that involves teachers, students, parents and administrators through a network. The Dh1 billion initiative was launched in April 2012 and will be implemented in four phases over the next five years.

The initiative is part of the United Arab Emirates' (UAE) Vision 2021, which aims to shape a new learning environment in public schools through the launch of "smart classes". It will provide every student with an electronic tablet and access to high speed 4G networks by 2017.

The smart learning approach aims at transforming a conventional learning setting into a smart classroom – laptops for teachers, an interactive board (e-Board) and tablets for students. Students can enjoy collaborative learning with their peers and interact with the teacher. While they connect with the school intranet, they can also log into networks outside the school via Wi-Fi and other connection channels. Some of the classes will be filmed and uploaded onto the tablet so parents can see how the teacher taught the course. The schools will be linked with intelligent campus networks. Wireless technology will enable mobile access, which is important for the delivery of learning on and off campus at any time and in any place. The smart devices will shape the 1:1 classroom in which students can simultaneously view streaming video content from the Web or from a third-party education video management system. Students can then learn and work in their own ways. Initiated by the government, this project is expected to generate an educational revolution that will transform the Middle Eastern educational sector.

Source: Staff Reporter (1 August 2012)

Case 2: School without Classrooms

Vittra, which runs 30 schools in Sweden, opened an innovative school with no classrooms. The school, located in Telefonplan, Stockholm, provides students with an interactive environment that encourages exploration, creativity and collaborative learning. The school threw away the old thinking of straight desks in a line within a four-walled classroom and focused its design on allowing students to work independently in open spaces while lounging or discussing group projects. Instead of classes, students learn in groups based on their level, rather than their age. This is regarded as a showcase for schools of the future.

Digital media play an important role in this new vision of learning. There are various workstations for reading, relaxing, learning and even watching films. Ample spaces and lounge areas are available for ideal laptop study areas. The school emphasises integrating digital media with learning and students are assigned to work on individual laptops in large or small groups. Flexible digital laboratories make it possible for the children to have hands-on experience with themes and projects. The architect Rosan Bosch designed the school by linking the concepts of space use and educational technology. She used flowing indoor topography to facilitate digital learning. Because students mainly work on laptops instead of blackboards, the seating arrangements make it convenient for them to steal a peek at each other's screens. Special furniture sets have been created that allow the students to work side-by-side with their laptops. Comparisons have been drawn between this kind of school and the Google office.

Sources: Chan (11 January 2012) and Chen (23 January 2012)

Case 3: Innovative Schools and the Cloud for Education

Cloud computing is going to change how people handle information in their work. It will also have a great influence on education. Some schools have already begun the transition into the cloud and related digital learning environments. The Innovative Schools programme under Microsoft Partners in Learning establishes partnerships with governments and educational institutions to promote innovative use of cloud services. Microsoft announced that more than 22 million people use its Live@edu cloud service. In the digital era, access to computing devices anytime and anywhere becomes increasingly important, and thus the need for cloud services is growing. The latest cloud products for education include email, instant messaging, group video, voice chat and online document viewing and editing. They help teachers save time and manage their curriculum and give students access to tools that facilitate their learning.

Source: Salcito (16 November 2011)

In developing countries, policy makers and educators are also concerned about the role that technology plays in education and human resources training. Many African countries are eager to use the new technologies for educational purposes such as

the mobile phone-based literacy and numeracy programme in Niger (see Case 4: Project ABC). Even in remote villages, efforts are being made to provide ICT facilities for learning (see Case 5: Mobile ICT Labs).

Case 4: Project ABC

Project Alphabetisation de Basepar Cellulaire (Project ABC) is a mobile phone-based literacy and numeracy programme for adults in Niger. Developed and implemented by Catholic Relief Services (CRS), the project was conducted in two regions – Dosso and Zinder. The illiteracy rate in Niger is very high. This adult literacy programme was implemented over a two-year period from 2009-2010. First, the participants were trained how to use a simple mobile phone, such as turning it on and charging it, learning how to recognise numbers and letters on the handset, sending and receiving calls, and writing and reading SMS. Basic mobile phones were then provided to groups of literacy students at wholesale prices. The students were then expected to use the phones to practice their literacy skills.

A survey found that the participants of this programme, particularly the younger students, demonstrated substantial improvements in literacy and numeracy test scores. The greatest advantages of the programme are its low cost and relevance to the adult students. The cheaper SMS in the country provides a great financial incentive for illiterate adults to read and write text messages. They can use the mobile phone for doing trading and handling personal affairs such as transferring money, getting in touch with family and friends and accessing useful information. Mobile phones have become a cost-effective teaching tool for adult literacy programmes in countries like Niger, easing the need for costly village-level libraries and local language newspapers.

Source: Aker, Ksoll and Lybbert (2010)

Case 5: Mobile ICT Labs

A Mobile ICT Labs model for cultivating ICT-literate human capital in the remote villages of third-world countries has been presented based on the technoeconomic paradigm theory. The traditional approach to improving ICT literacy is to get rural villagers into the city or build large labs in poor villages to house computers and the supporting technological infrastructure. Both of these approaches are too costly. The alternative is to set up mobile ICT labs.

Mobile labs are vehicles such as buses that are equipped with ICT facilities for education, jobs and business use. Computers are installed in the labs with basic functions such as word processing, spreadsheets and e-mailing – enough for teaching ICT literacy and accommodating basic business needs. The mobile labs can be driven to an ICT centre where the computers can be maintained by technicians. In this case, a limited number of ICT experts can trouble shoot and upgrade systems as needed, rather than wasting time travelling to different

locations. Meanwhile, the mobile labs can be driven to select rural locations on certain days to conduct the “train the trainer” programme. Once a sustainable pool of trainers has been educated, they can help to train their fellow villagers.

Small scale mobile labs projects were carried out to promote ICT literacy in economically disadvantaged locations in the United States and Malaysia, with supporting funding from the UNDP in the latter. Larger projects are proposed for remotely located rural populations to combat poverty.

Source: Samudhram (2010)

Apparently technological advancement strongly influences the paradigm shift in education. “Technology is the answer to educational reform” is the slogan put forward by some educational technology scholars (Marquis, 2012, p. 3), yet other educators have not focused on the technology per se, but on interpreting the spirit of School 2.0 as the creation of open-ended learning environments that engage collaborative groups of students in using technologies to learn and solve meaningful problems (Lee, 2012; Morrison and Lowther, 2010; Yelland, 2007). The manifesto of Microsoft’s Partners in Learning also states that technology is simply a tool that must be used appropriately in an educational context to help improve teaching and learning (Microsoft, 2012). Hence, educating students in the necessary 21st century skills via innovative pedagogies is the most crucial task of schools in the coming decades.

3 Future Competencies in Knowledge Societies

In light of rapid technological, social and educational developments, there are two frequently asked questions. What competencies will be needed in the future? What kind of literacy programme should be provided for future global citizens?

Literacy and communication technology share a symbiotic relationship. It is argued that literacy is basically a technological phenomenon; that is, the ability to master the dominant mode of communication (Casaregola, 1988). Therefore, changes in communication technology will lead to changes in the concept of literacy.

3.1 Flourishing Literacy Frameworks

Many novel literacy concepts have been presented in the digital world, some of which have been independent, novel concepts while others have been compound concepts.

3.1.1 Stand-alone Literacy Concepts Related to Digital Technologies

A large number of new concepts have been proposed for the digital age including ICT literacy, digital literacy, Internet literacy, computer literacy, technology literacy, cyber literacy, new media literacy, electronic literacy, new online social literacy,

mobile literacy and information fluency. They are all related to the skill sets for using, understanding and evaluating digital information and media. For example, ICT proficiency is “the ability to use digital technology, communication tools, and/or networks appropriately to solve information problems in order to function in an information society (Educational Testing Services, 2003; Markauskaite, 2006, p. 2). That includes the ability to use technology as a tool to research, organise, evaluate, create and communicate information.

The most popular literacy concept for new media is possibly digital literacy. Gilster (1997, p. 1) introduced this concept and defined it as “the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers”. The importance of reading with meaning is particularly highlighted, emphasising that digital literacy for Internet use involves mastering a set of core competencies including reflective and critical thinking, sequential hypertext reading and search skills. When the Internet technologies advance, the digital literacy concept evolves accordingly (Ilomaki, Kantosalo and Lakkala, 2011). Some scholars have begun to associate it with communication on social networking sites while others have linked it to digital curation and mobile digital learning (Buck, 2012; Hoivik, 2011). For the UNESCO Institute for Information Technologies in Education (IITE) (2011), the content and development of digital literacy in the 21st century will be significantly different from that in the past. It proposed that digital literacy education must meet the challenge of the new age by introducing “the use of social Web applications, ecosystems of participation that enable collaborative knowledge construction and creativity” (p. 10). In Australia, the Australian Communications and Media Authority (ACMA) (2009) considered it important that citizens have the ability to intelligently use and interact with communication services in today’s complex communication environment. Thus, the ACMA has undertaken a range of activities to promote countrywide digital media literacy.

‘Cyberliteracy’ is a term introduced by Gurak (2001) to address the issues of communication and participation on the Internet. To Gurak, cyberliteracy indicates more than just technology use, it suggests active participation in the online discussion. This approach is related to the critical consumption of online content and how to use a variety of Internet formats to express opinions.

Electronic literacy is another concept that embraces active expression in cyber space. Schools are encouraged to educate their students about computer-mediated communication and hypertext writing. Warschauer (1999) argued that electronic literacy involves not only shifting our media consumption from print to screen, but also adapting our vision of the nature of literacy and the purpose of comprehension. This concept is close to those of network and Internet literacy (Bawden, 2001).

The concept of information fluency also shares the common objective of moving beyond the acquisition of basic computer skills. The Committee on Information Technology Literacy has published *Being Fluent with Information Technology* to promote the acquisition of a deeper level of comprehension and engagement than simply learning how to use a computer. The concept is defined as “a set of

intellectual capabilities, conceptual knowledge, and contemporary skills associated with information technology” (Mackey and Jacobson, 2011, p. 67).

3.1.2 Compound Literacy Concepts Related to Digital Technologies

While a number of new, stand-alone literacy concepts have gained attention, some scholars and educators have noted that people in the new age are going to need a more sophisticated literacy training programme that integrates a set of relevant literacy modes. To these individuals, the convergence of contemporary media means that people must acquire the skills and competencies of compound literacy such as multiliteracies, transliteracies, new literacies, metaliteracies, infomedia literacy, digital media literacy and media and information literacy (MIL) (Fahser-Herro and Steinkuehler, 2009; Hobbs, 2010; Koltay, 2011; Kress, 2003; Lee, 1999; Livingstone, 2004; Luke, 2007; Westby, 2010). The movement is away from a singular notion of literacy and towards a pluralistic understanding of it.

Early in 1994, a group of 10 scholars met in Britain and coined the term “multiliteracies” (New London Group, 1996), arguing that the young people would need to become skilled in many forms of communication. They proposed to broaden the concept of literacy, which had focused exclusively on linguistics in the past, to include multimodal textual practices that combined linguistic, audio, visual, gestural and spatial modes. They also drew attention to literacies that were culturally inclusive (Kalantzis and Cope, 2000; Mills, 2009). The most cited work in this area may be the theoretical framework of “multimodality” provided by Kress (2003). He explained that the theoretical change from traditional to multimodal literacy is from linguistics to semiotics; that is, from a theory based on language alone to a theory “that can account for gesture, speech, image, writing, 3D objects, colour, music and others” (Kress, 2003, p. 36).

Buckingham (2007, p. 53) echoed this approach by explaining that in facing media convergence, “we need to be addressing the skills and competencies – the multiple literacies – that are required by the whole range of contemporary forms of communication”. He agreed that with the growing convergence of media, the boundaries between “information” and other media have become increasingly blurred. Thus, there is a call for a broader reconceptualisation of what we mean by literacy in a digital world.

A similar response to the new technological environment is transliteracy, which refers to “the ability to read, write and interact across a range of platforms, tools and media from signing and orality through handwriting, print, TV, radio and film, to digital social networks” (Taylor, 2012, p. 22). The aim is to equip learners to engage in and use the new media “to develop deep knowledge and understanding” (Todd, 2010, p. 2). In the advocates’ view, the global communication mode is moving from paper-based, print-centred texts to screen-based, image-centred texts. This establishes the need for a literacy that transcends all information delivery platforms.

Jenkins (2006) responded by proposing that young people need “new literacy” to address the challenges posed by the participatory culture of Web 2.0. People are presently communicating with one another in a globally networked world (Beck, 2012), and the concept of new literacy or literacies is not defined by acquaintance with updated communication technology, but rather is related to how to promote people’s collective intelligence and facilitate constructive interaction. The management and use of information in the Web 2.0 era are in great contrast with that in the Web 1.0 age. According to O’Donnell (2006), new forms of literacy promote a horizontal view of learning as linked and networked. This is a clear departure from the traditional vertical deep-surface learning mode. In this new world, the concept of literacy also moves away from “academic literacies” (literacy practices emphasised and tested in schools) towards “nonacademic communicative literacies” (generally practiced outside of schools). To function well in an Internet-mediated and participatory culture, people must master the traditional print-based literacies along with the digital literacy of online communication (Greenhow and Robelia, 2009). Therefore, social network sites will become useful social learning resources.

Metaliteracy training also addresses the competencies needed in the Web 2.0 age. Mackey and Jacobson (2011) pointed out that information is no longer a static object that is simply accessed and retrieved. It is “a dynamic entity that is produced and shared collaboratively with such innovative Web 2.0 technologies as Facebook, Twitter, Delicious, Second Life and YouTube” (p. 62). Thus, metaliteracies are critical thinking and collaboration abilities in a digital age that provide a comprehensive framework from which to effectively participate in social media and online communities. Information literacy is central to this theoretical construct as it is reframed as an umbrella concept (metaliteracies) that includes other literacies such as media, digital, cyber, visual and critical literacies (Kurbanoglu, 2012).

As the concept of information literacy was broadened to include other literacies, media literacy was also extended to encompass “digital and media literacy”. Hobbs (2010) published a white paper entitled *Digital and Media Literacy: A Plan of Action*. This initiative was generated by the growing momentum supporting the integration of digital and media literacy into education. In the United States, Senator Jay Rockefeller proposed a bill, the 21st Century Skills Incentive Fund Act, which provided funding to states offering students curriculum programs that include information and media literacy. According to Hobbs (2010), literacy types such as information, media, visual, news and digital are all part of the same family. She used the term ‘digital and media literacy’ to “encompass the full range of cognitive, emotional and social competencies that includes the use of texts, tools and technologies; the skills of critical thinking and analysis; the practice of message composition and creativity; the ability to engage in reflection and ethical thinking; as well as active participation through teamwork and collaboration” (Hobbs, 2010, p. 17).

A report from the European Commission (2007) suggested that as media and information technologies converge, media literacy and information literacy should follow suit. Badke (2009) agreed that the two literacies should be merged, but he proposed adding ICT literacy. The Partnership for 21st Century Skills (2008) also regards ICT, media and information literacies as essential elements of its program. According to Markauskaite (2006), while many new literacy types have emerged in the past two decades, not all of them have gained a broader recognition. She observed that three literacies – ICT literacy, media literacy and information literacy – have so far achieved some status in the academy and secure a place in secondary and higher school curricula.

In the last decade, UNESCO took the lead to pull together these three concepts together and form a combined set of competencies needed for modern life. UNESCO consultants studied the similarities and specifics of the concepts of information literacy and media literacy to develop the theoretical framework known as media and information literacy (MIL) (Lau, 2010). Since 2003, UNESCO has attempted to develop MIL indicators for its member countries (Catts, Lau, Lee and Chang, 2012; Moeller, Joseph, Lau and Carbo, 2011; UNESCO, 2011), and its *Media and Information Literacy Curriculum for Teachers* has been published and implemented around the world (Wilson et al., 2011). In the UNESCO documents, MIL is defined as the ability to access, evaluate and use media and information – a concept that strives to incorporate the ideas of the majority of the literacy frameworks discussed above, such as digital media literacy, multiliteracies, transliteracies and new literacy.

Based on the Moscow Declaration on Media and Information Literacy, MIL is “a prerequisite for the sustainable development of open, plural, inclusive and participatory knowledge societies, and the civic institutions, organisations, communities and individuals which comprise these societies” (Russian IFAP Committee, 2012, p. 2).

3.2 Future Skills for 2015 and beyond

As various literacy concepts have emerged, technologies continue to develop as the world approaches the Web 3.0 era. Educators and policy makers are eager to know what competencies will be needed by knowledge workers in the coming decades and a number of authors have presented their forecasts.

As previously mentioned, the ICT-based society of the future will be shaped by Big Data. People’s lives will be fully engaged in the semantic Web as cloud computing, smart phones and apps, the Internet of things, AI and a continual stream of new gadgets populate users’ daily activities.

In *Total Recall*, Bell and Gemmell (2009) wrote that in the near future convenient digital recording, storage and search options will lead to an e-memory revolution that will change everything. The power of electronic memories will facilitate people lifelogging and conducting unprecedented research. In this world, students will be

taught active learning rather than having knowledge deposited into their brains. Knowledge workers will be expected to excel at collecting data, organising and making sense of information and creating knowledge.

Kenichi Ohmae (2011), a well-known Japanese author in the field of business management, also stated that it is important to cultivate competent knowledge workers capable of searching information efficiently and evaluating it logically to develop innovative ideas and action plans. This suggestion is in line with the proposal in *Greater Expectations*, a document released by the Association of American Colleges and Universities that highlights how empowered and informed learners in the future should be able to transform information into knowledge, and knowledge into judgment and action.

In addition, according to Drucker (1998), in knowledge societies, information-based organisations operate through taskforces. Therefore, future knowledge workers must not only accept information responsibility and be capable of knowledge management, but also be good at building partnerships and working in teams. Knowledge workers are self-directed, and good self-management skills are crucial to effective performance and results.

Gratton (2011), a professor at the London Business School, proposed that future employees be equipped with several competencies: (1) trans-disciplinary knowledge and skill capital; (2) social capital, such as networking and collaborative skills; (3) reflexivity capital, such as self-understanding and emotional strength; and (4) creativity.

Meanwhile, the International ATC21S Project is also concerned with the 21st century workforce. Its research team categorised 21st century skills into four broad categories (ATC21S, 2010):

1. Ways of thinking such as creativity, critical thinking, problem-solving, decision-making and learning;
2. Ways of working including communication and collaboration;
3. Tools for working such as ICT and information literacy; and
4. Skills for living in the world including citizenship, life and career, and personal and social responsibility.

The most up-to-date research on future competencies may be the “Future Work Skills 2020” project conducted by the Apollo Research Institute (Davies, Fidler and Gorbis, 2011), which highlighted the six drivers that are going to reshape the landscape for future organisations and workers. The report identified 10 vital skills (pp. 8-13):

1. Transdisciplinarity: the ability to understand concepts across multiple disciplines;
2. Virtual collaboration: the ability to work productively, drive engagement and demonstrate presence as a member of a virtual team;
3. Sense-making: the ability to determine the deeper meaning of what is being expressed;

4. Social intelligence: the ability to connect to others and to stimulate desired interactions;
5. Cross-cultural competency: the ability to operate in a variety of cultural settings;
6. Cognitive load management: the ability to filter information for importance, and know how to maximise cognitive functioning using a variety of tools and techniques;
7. Novel and adaptive thinking: the ability to produce innovative solutions that go beyond rule-based thinking;
8. Computational thinking: the ability to translate large amounts of data into abstract concepts and to understand data-based reasoning;
9. New media literacy: the ability to critically evaluate and develop content that uses new media forms; and
10. Design mindset: the ability to develop tasks and work processes that address desired outcomes.

3.3 Towards an Integrated Framework for 21st Century Competencies

The above overview and assessment of the future technological environment and new competencies indicate that literacy training in the 21st Century is going to meet great challenges. Future knowledge workers will require mixed, novel competencies to constructively participate in the knowledge societies. Neither the stand-alone nor the compound literacy concepts introduced above address this holistic need. That is not to say that those previous concepts are not useful, they simply are not inclusive enough. Based on management theory and an analysis of the three major world trends, this report proposes an integrated literacy framework entitled “21st Century Competencies” that introduces the 12 key competencies needed in the future society (see Table 4).

Table 4: Framework of 21st Century Competencies

21 st Century Competencies	
Conceptual Competencies	<ul style="list-style-type: none"> - Connectivist Skills - Innovative Thinking and Problem Solving Skills - Critical Thinking Skills - Reflective Thinking Skills - Positive Thinking Skills
Practical Competencies	<ul style="list-style-type: none"> - Media and Information Literacy - Learning Skills (collaborative learning, self-driven learning and lifelong learning)
Human Competencies	<ul style="list-style-type: none"> - Social Networking and Virtual Collaboration - Self-Management - Humanistic Consciousness - Digital Citizenship - Cross-cultural Interaction Skills

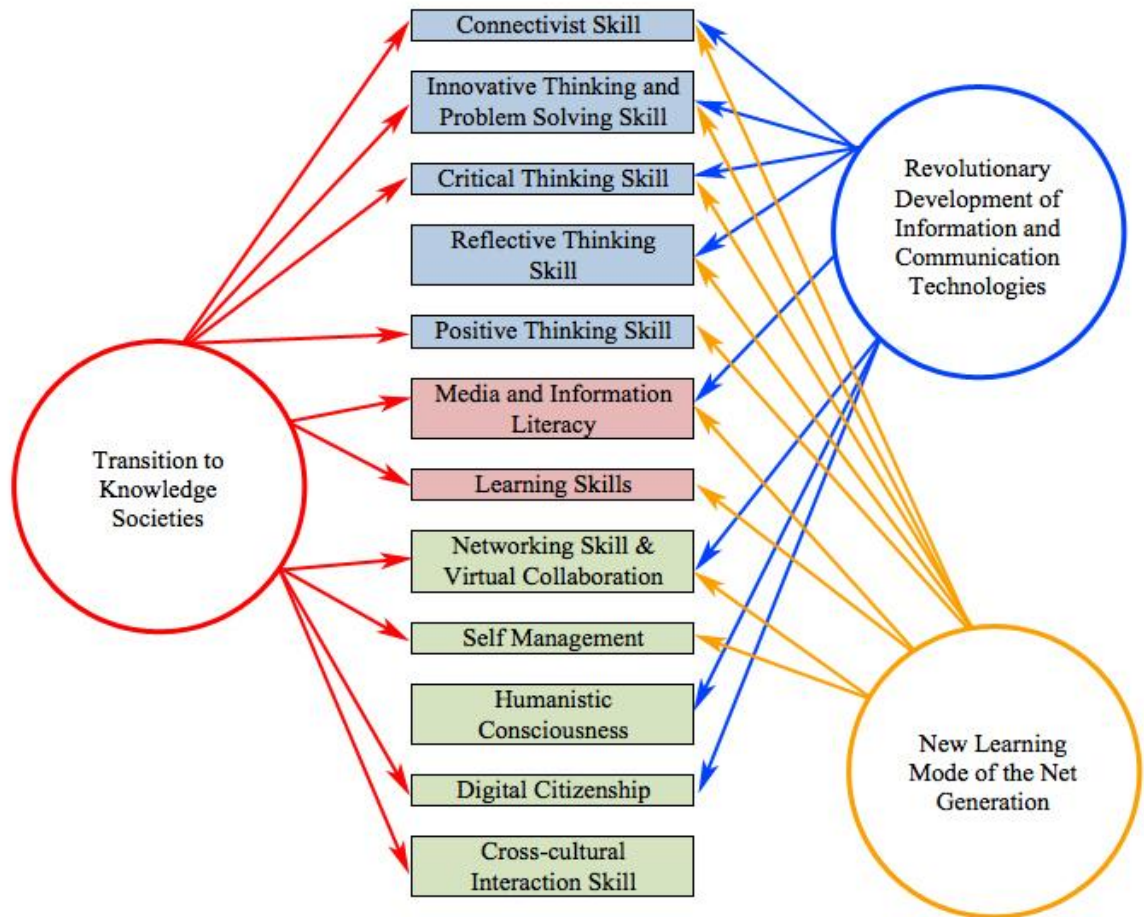
Notes: Conceptual competencies: ways of thinking. Practical competencies: ways of handling

information in work and life.

Human competencies: ways of interacting with people.

Peter Drucker, the father of contemporary management, asserted that “every knowledge worker is an ‘executive’ if, by virtue of his position or knowledge, he is responsible for a contribution that affects the capacity of the organisation to perform and to obtain results” (Drucker, 2002, p. 5). According to traditional management theory, managers and executives should have three types of skills: conceptual, technical and human (Bartol and Martin, 1998). Figure 1 demonstrates that the three major world trends have generated a set of competencies that people will need in the future society. These competencies are divided into three broad categories: conceptual, practical and human.

Figure 1: The Need for 21st Century Competencies Generated by the Three World Trends



- Conceptual Competencies
- Practical Competencies
- Human Competencies

3.3.1 Conceptual Competencies

Conceptual competencies are ways of thinking. Five thinking skills are regarded as important in this framework. Firstly, in a network society, connectivist thinking skills, such as those that are transdisciplinary and systemic, are essential because they foster the ability to make connections between ideas, examine an issue from

multiple perspectives, understand concepts across multiple disciplines and create a whole picture from fragmented pieces.

Secondly, a knowledge society is a world of constant innovation, and knowledge work is defined by its results. Innovative thinking and problem solving skills are a must for knowledge workers. Moreover, emerging technologies constantly create new scenarios. Novel and adaptive thinking skills can facilitate the development of innovative solutions.

The 21st century is characterised by rapid technological development. Section 2 of this report outlines a number of challenges posed by the ICT revolution. People in the Web 2.0 era need an advanced level of critical and reflective thinking skills to develop their own independent judgment by reflecting on the ways in which media and information products are consumed and produced.

Today's young people will be tomorrow's knowledge workers. The Net Geners are characterised by their discontent with the society. However, in the Web 2.0 era, they share the communication power that results from producing user-generated content. Therefore, it becomes very important to equip them with positive thinking skills to guide their use of communication power in a constructive way that will not cause social damage. Effective knowledge workers make strength productive, and one cannot build on weakness (Drucker, 2002). A positive thinking mindset helps knowledge workers explore their own strengths and use the strengths of their teammates. Positive thinking skills based on positive psychology have recently been developed into "appreciative inquiry movements" in the business, social work, counselling and education sectors (Pao, 2009; Seligman, 2002).

3.3.2 Practical Competencies

Practical competencies are ways of handling information in work and life. They include MIL and learning skills.

Mastering media and information as well as handling knowledge creation will be essential life skills in the knowledge societies. Therefore, MIL is the core competency in the 21st century competencies framework. MIL combines information literacy and media literacy with ICT skills. It is a set of competencies that empower citizens to access/retrieve, understand/evaluate and use/create various forms of media information in a critical and effective way.

Based on the recent research on future skills, Table 5 summarises the new MIL model for the future world.

Table 5: Media and Information Literacy (MIL) for the Future World

Components	Knowledge, Skills and Attitude
Access/Retrieval of Media and Information	
Access	<ul style="list-style-type: none"> - 'Button knowledge': the technical skills needed to use digital technologies - Information search skills - Curation intelligence - Transmedia navigation skills
Evaluation/Understanding of Media and Information	
Understanding	<ul style="list-style-type: none"> - Understanding media and informational content, format, institutions and audience - Computational thinking: ability to translate vast amounts of data into abstract concepts and understand data-based reasoning
Assessment and Evaluation	<ul style="list-style-type: none"> - Cognitive load management: ability to discriminate and filter information for importance - Sense-making: ability to determine the deeper meaning or significance of what is being expressed - Critical digital literacy: ability to critically assess the quality and validity of content that uses new media forms, and to leverage these media for persuasive communication - Photo-visual skills: ability to read instructions from graphical displays - Real-time processing skills: ability to process and evaluate large volume of information in real time
Organisation and Synthesis	<ul style="list-style-type: none"> - Knowledge management - Skill of abandonment
Use/Create/Communicate Media and Information	
Communication and Use	<ul style="list-style-type: none"> - Effective communication and information sharing - Story-telling skills - Specific medium use - Interactive tool use - Security practice - Application and goal achievement - Ethical use of media and information
Creation and Problem Solving	<ul style="list-style-type: none"> - Creativity - Design mindset: ability to represent and develop tasks and work processes for desired outcomes - Media and information production techniques - Collective knowledge construction and collaborative problem solving
Monitoring	<ul style="list-style-type: none"> - Media and information criticism and monitoring

Note: Some of the items (computational thinking, cognitive load management, sense-making, critical digital literacy and design mindset) are adopted from the Future Work Skills 2020 model

3.3.2.1 Access/Receive

Mastering “button knowledge” – technical skills (including sophisticated ICT skills and data mining) – is a must for future knowledge workers. Apart from traditional information search skills such as “defining and articulating media and information need” and “location and retrieval of media and information”, they should also be equipped with curation intelligence and transmedia navigation skills because the future promises a world of aggregation.

3.3.2.2 Understand/Evaluate

A media- and information-literate person should be able to understand the content, format, institutions and audiences of media and information, and wisely assess them. Yet, in the coming Web 3.0 age, such individuals must be equipped with a number of new comprehension skills such as computational thinking, cognitive load management and photo-visual skills, amongst others. Information overload and anxiety are common pathologies in the digital world, and knowledge management and abandonment skills act as cures (Bawden and Robinson, 2009; Drucker, 1998). Knowledge management is a directed process of figuring out what information a person or organisation has that could be useful and then devising ways of making it easily available. Abandonment skills allow one to take control of one’s media and information environment and discard information according to the principle of relevancy (Yamashita, 2011).

3.3.2.3 Use/Create

A media and information literate person will know how to communicate well and engage in the ethical use of media information. Moreover, abilities such as knowledge creation and creative expression are also important because individuals must accept the responsibilities of an active citizen and be able to monitor and influence the development of media and information. The 21st century is a product of the creative class, such that creativity and a design-oriented mindset are both vital for success.

It is worth noting that MIL competencies are not just skills, but also the ability to meet complex demands by drawing on knowledge, skills and attitudes in a particular context (Kurbanoglu, 2012).

Apart from MIL, learning skills are another set of practical competencies. In the new age, knowing how to conduct self learning, collaborative learning and life-long learning will be very important. Therefore, learning skills related to data processing will become a vital competency.

3.3.3 Human Competencies

Human competencies refer to ways of interacting with people. Our future society is ICT-based. Therefore, living and working in this world will mean mastering the people/networking skills in cyberspace and being good at virtual collaboration and engagement. Knowledge work is outcome-based and must be accomplished via taskforce. Mastering collaborative problem-solving skills and know how to build partnerships is essential in achieving effectiveness.

Knowledge workers are autonomous, independent specialists that tend to be self-directed as opposed to being told what to do, as is the case with manual workers in the industrial societies. Moreover, an increasing number of knowledge workers will be self-employed, thus self-management and self-discipline, life planning and self-development are regarded as the key to becoming a competent knowledge worker.

Humanistic consciousness is another human competency that cannot be neglected. In *Habits of the High-Tech Heart*, Schultze (2002, p. 22) suggested that people should nurture their moral wisdom and humanistic values to help them “act rightly with prudence and good judgment, rather than merely effectively and efficiently” in the quest for informationism. In the postmodern world, an unprecedented abundance of information, contrasting perspectives and overwhelming choices are causing severe social damage. Citizens must take responsibility for themselves, as the basic tenant of personal autonomy, and for those around them, as the basic tenant of morality (Aviram, 2010). The erosion of self and the neglect of responsibility could lead “directly to the weakening of the main sustaining fabric of Liberal Democracy and Humanistic society” (Aviram, 2010, p. 285).

Digital citizenship is of growing importance in relation to competency. As e-government grows more prevalent and an increasing number of people move online to connect, compete, collaborate and debate, they must know all of the aspects of citizenship – not only understanding their rights and obligations in their own communities, but also at the global level.

In the next society, advanced technologies will connect the world and increasing globalisation breaks down geographical and political barriers. Skilful cross-cultural interaction suggests the ability to operate in various cultural settings with cultural literacy, and future knowledge workers and global citizens must be equipped with this capability.

3.4 Literacies for Different Social Groups

In the knowledge societies, all citizens will need the 21st century competencies in work and life, yet specific social groups may require profession-specific competencies.

Journalists are expected to be highly media and information literate and hyper-capable in areas such as information searching, communication and story-telling. In the Web 2.0 era, curation, engagement, partnership and mobile communication are amongst the most important concepts for the news profession (So, 2012). Therefore, curation/aggregation intelligence, networking skills and virtual collaboration are all important. In addition, data journalism also requires computational thinking skills, cognitive load management and connectivist skills. Dudash (2010) argued that young reporters should also display freedom of information (FOI) competency. The 24-hour news cycle leads media organisations to deliver news too soon, and many journalists are moving away from using FOI to dig up more facts and relying, instead, on easily available sources.

Businessmen are expected to have excellent information aggregation skills, a variety of vital thinking skills and a good design mindset. According to Ohmae (2011), success in the business and management sector requires the ability to conduct logical analyses of information, make sensible decisions and produce innovative ideas.

Research has shown that medical doctors need to improve their communication skills, particularly in dealing with patients who exhibit low literacy skills. Such poorly educated patients often have difficulties following doctors' orders (Ofri, 2011). Some non-profit organisations teach doctors how to better support these patients (Virginia Gazette, 2012), but complaints have also been made about the literacy levels of social workers, who are also expected to develop good communication skills and sense-making competency (Gillen, 2011). A great deal of present-day social work activities are performed online, such that networking skills have become increasingly important.

Blue-collar jobs such as driving, however, require fewer 'digital' skills. Traditional literacy skills such as reading, writing and speaking remain more significant. There have been reports that some veteran taxi drivers lose their jobs due to low literacy skills (Cayman News Service, 2012), yet given globalisation, taxi drivers, particularly those working in the big cities, have come to need cross-cultural interaction skills.

Specialists in the technological fields need MIL and high-technology competencies. However, studies show that women and minority groups (African Americans and Hispanics) in the United States have far fewer opportunities in high-tech employment (Griffin and High, 2011). In fact, many minority students lack adequate access to computing and Internet technologies at home and in school, and thus

command a poorer chance of earning a degree in fields such as science, technology, engineering and mathematics (STEM). To build a culturally pluralistic, high-tech workforce, policies must be made to ensure that minority groups have access to adequate STEM educational resources and opportunities.

Meanwhile, many women are not only barred from high-tech jobs, but also excluded from other literacy training. Women and men are equally capable of contributing to the knowledge societies, but they need the ICT skills to participate in the emerging knowledge economy. Hence, global advocates are developing training programmes. For example, the Women of Uganda Network (WOUGNET, 2013) is an NGO that promotes and supports the use of ICTs by women and their organisations in Uganda. In Rwanda, a Digital Baskets project was also launched to enhance Rwandan women's ICT literacy and lead them into the e-marketplace (see Case 6: Digital Baskets Project).

Case 6: Digital Baskets Project

The Digital Baskets project was carried out in the Kamonyi district in Rwanda from 2009-2010. The Blekinge Institute of Technology joined the Duhuzimbaraga Cooperative to use basket weaving, a practice that local women were skilled at, as a gateway to introducing ICT. A group of women were given laptops and digital cameras and taught to capture their basket weaving skills and the finished products. They then learned how to upload the photos and create a descriptive log for each basket.

This project had three objectives: (1) expose Rwandan women to ICT through everyday activities, (2) preserve traditional knowledge and skills by creating digital presentations and delivering them to a wider audience and (3) create e-business opportunities.

The lack of support from local leaders and the language barrier posted great challenges to the women, but they managed to accomplish the project, which proved that rural women can learn how to use ICT as long as the activity is relevant to their everyday lives. The project had several fruitful outcomes. It convinced the Rwandan women that their craft is valuable and appeals to an audience that is both wider and geographically remote from their homes. Documenting the weaving processes digitally was the best way to preserve a disappearing traditional skill and pass it on to future generations. During the learning process, the women also shared patterns with other members in their cooperative with the result of diversifying and enriching their practical skills. Meanwhile, they also shared their computer skills with others.

This project adopted a bottom-up learning approach – learn by doing. The next goal is to encourage these women to design their own website and extend their basket market beyond their home town.

Source: Wamala (2012)

According to the World Health Organization (WHO), about 15% of the world population deals with disabilities. ICTs can improve their lives and enhance their social and economic integration into communities by making more activities available to them (UNESCO, 2012b). Assistive technologies should be provided to them, and offering personalising learning through technology to them is also important. All students need to learn the life-skill of personalising their technology and of self-accommodation.

University students are supposed to be well trained in ICT skills so that after their graduation they can become leading knowledge workers. However, surveys have found that in many developing countries, marginalised college students remain low in digital literacy. A study in South African universities reveals that non-white students have minimal access to digital technology, particularly outside the university context (Kajee and Balfour, 2011). Thus, providing adequate in- and out-of-university ICT training for all college students is an urgent task for the tertiary education policy makers in developing countries.

Due to uneven economic development across regions, an increasing number of people are migrating to other locations within their countries or overseas to seek job opportunities. The migrant worker population has rapidly increased in recent years. A huge number of rural Chinese are moving to the big cities in eastern China to look for work. Many workers from the Philippines are now working in Hong Kong, Singapore, the Middle East and Korea. In Africa, the situation is the same. These people need high cultural literacy and language skills to work well in another regions and countries. Most importantly, they need to have access to information if they intend to survive in a variety of cultural settings, and they must also keep in touch with their family members in their home towns. Because the majority of these workers have less access to fixed line communication services, mobile technologies offer great help and being mobile literate can certainly improve their work and life. In many developing countries, m-banking services have also been offered, which allows them to send money home. However, many may not be able to use such services due to low literacy levels and language skills (many of these services are in English) and they would benefit from proper mobile literacy training.

In the era of Web 3.0 and beyond, technological development will accelerate globalisation. People in developed or developing countries and citizens in urban or rural areas will be connected by a global village. Marginalised groups such as the persons with disabilities, migrants, ethnic groups, poor families and the less educated are also global citizens, all of whom deserve equal opportunities to join and contribute to the future knowledge societies. It is important that every global citizen receive training in the 21st century competencies, especially the MIL, in which ICT skill training is a key component.

4 Meeting the Challenges of Implementing Action Lines C3 and C9

The previous sections have introduced the future development of communication technologies and analysed the need for literacy training in the coming years. These needs are directly related to the implementation of WSIS Action Lines. A new world awaits exploration, and this section examines the current implementation of WSIS Action Lines C3 (Access to Information and Knowledge) and C9 (Media) and explores ways to better implement them to help individuals and countries develop the necessary capabilities to fully participate in the future knowledge society.

4.1 Access to Information and Knowledge

4.1.1 Recent ICT Trends and Access to Information

ICT growth in the past decade was impressive, and the ITU's reports indicated that new ICTs continued to develop in countries around the world as more people became connected (ITU, 2012a, 2012b). Table 2 lists the latest global ICT developments, revealing that one third of the world's population is online and there are about 6 billion mobile phone subscriptions worldwide. The Internet is increasingly accessible to an ever-growing population.

ICT growth is evident in both developing and developed countries. For example, in China the online population has reached 538 million (CNNIC, 2013). The penetration rate is 42.1%, and people in China are also active in social media (particularly through Weibo) and heavily involved in online shopping (see Table 6). The World Wide Web Foundation (2012) stated that a dramatic increase in Internet access would lead to significant socio-economic development and greater political representation amongst the billions of people who currently have no voice. According to the Foundation, the global top 10 countries in terms of Web development and influence are Sweden, the United States, the United Kingdom, Canada, Finland, Switzerland, New Zealand, Australia, Norway and Ireland.

Table 6: Internet Development in China (2012)

	Facts and Figures
Internet Access	<ul style="list-style-type: none"> - By December 2012, 564 million of the people in China had access to the Internet. - The penetration rate was 42.1%.
Mobile Access	<ul style="list-style-type: none"> - By December 2012, the number of people accessing the Internet through mobile phones reached 420 million, 64 million more than the previous year. The rate increased by 18.1%. - 74.5% of netizens used mobile phones to access the Internet. - The number of netizens who accessed the Internet using mobile phones exceeded that of users who did so by desktop computer - Mobile phones became the top means of accessing the Internet in China.
Social Media Use	<ul style="list-style-type: none"> - An increasing number of netizens used Weibo through mobile phones. - The number of Weibo users reached 309 million, 202 million of them (65.6%) used Weibo through mobile phones.
Online Shopping	<ul style="list-style-type: none"> - Online shopping continued to grow. - By December 2012, 242 million people had engaged in online shopping. - China matched the United States in terms of the scale of online shopping.
Characteristics of Netizens	<ul style="list-style-type: none"> - There were more male (55.8%) than female (44.2%) netizens. - Most of the netizens (81.4%) were under 40 years old. - About 78.8% of the netizens had received secondary education. - Students (25.1%) were the largest group in terms of Internet use. Next (18.1%) was freelancers and self-employers. - Low income individuals (9.8%) were also frequent Internet users. - There were more netizens in cities than in rural areas (72.4% vs. 27.6%, respectively).

Source: 2013 Report of China Internet Network Information Centre (CNNIC)

The most notable development in ICTs has been in the mobile sector. It is estimated that about 60% of the world's population now have access to a mobile phone. A World Bank mobile research report noted that "the pace at which mobile phones spread globally is unmatched in the history of technology" (Kelly and Minges, 2012, p. 11). The report also predicted that the mobile revolution had just started and would accelerate rapidly in the next five years. Its research findings show that the developing world is now more mobile than the developed world, with most phones owned by people living in low-income regions. In China, the number of mobile phone users with access to the Internet reached 388 million in June 2012. More of the netizens in China use mobile phones rather than desktop computers to connect to the Web (CNNIC, 2013). Mobile use studies in African countries also confirm the "leapfrog" phenomenon, in which technology allows African countries to technologically "leapfrog" across the digital divide by providing access to millions of people who were previously unable to participate in the information society. Respondents to a survey in South Africa even indicated that they believed mobile technology could replace computer-based Internet technology due to convenient

physical and financial access to mobile phones (Hyde-Clarke and Tonder, 2011). The price of SMS messages is especially low, which makes them affordable for low-income groups.

There has also been a shift away from traditional mobile-cellar services such as voice and SMS towards mobile-web services such as exchanging text, data, audio and video through the Internet. Due to technological convergence, a mobile handset can now be used as a wallet, camera, television, alarm clock, calculator, address book, calendar, newspaper, gyroscope and navigational device (Kelly and Minges, 2012). Mobile applications not only empower individual users, they enrich lifestyles and boost the overall economy. As Kelly and Minges (2012) explain, “Mobile communication promises to do more than just give the developing world a voice. By unlocking the genie in the phone, they empower people to make their own choices and decisions” (p. 3). Likewise, smartphone applications are helping mobile phones transform the lives of people around the world. Researchers are now exploring the development of the emerging “app economy”.

In the past decade, the implementation of WSIS Action Line 3 seems to have made good progress. ITU has continued to promote universal access with equal opportunities for all, holding workshops, conferences and symposia. A number of online resources including web-based information portals, practical ICT toolkits and online databases have been made available and a survey was conducted to monitor the development of the digital divide. *Measuring the Information Society* and *ICT Facts and Figures* were released for worldwide reference (ITU, 2012a, 2012c). The Broadband Commission for Digital Development was established by the ITU and UNESCO with the aim of promoting the adoption of broadband-friendly practices and policies for all. Recommendations have been put forward to governments to help them formulating inclusive broadband policy, making broadband affordable, connecting homes to broadband, and bringing people online (Broadband Commission, 2012).

The World Bank Group (2012) also contributes by offering support for ICT sector reforms, attracting an estimated USD30 billion in private investment for mobile network infrastructure in International Development Association countries.

While the ICTs have made remarkable progress and the Web makes it possible to improve the lives of billions of people at a global level, Berners-Lee warned that it is necessary to monitor whether people are becoming part of the information society. There must be an increase in the awareness that access to information is as significant as access to water and vaccinations, particularly in developing countries (World Wide Web Foundation, 2012).

UNESCO’s document, *Towards Knowledge Societies*, stated that to remain human and liveable, knowledge societies will have to be societies of shared knowledge (UNESCO, 2005). However, Ryan (2012) argued that Internet access for all is only a

possibility but is not assured. A number of studies have reported that many obstacles remain in achieving the goal of information for all.

The Report of the Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression, presented by the Human Rights Council of the United Nations, observes that “access to content” and “access to the physical and technical infrastructure required to access the Internet” remain problematic in many countries. The obstacles include increased censorship of online information by the states through the arbitrary blocking or filtering of content, the criminalisation of legitimate expression, the imposition of intermediary liability and the act of disconnecting users from Internet access, amongst others (La Rue, 2011). The report recommends that there should be as little restriction as possible to the flow of information via the Internet, except in exceptional circumstances prescribed by international human rights laws.

4.1.2 Digital Divide amongst Countries/ Social Groups

Although there are six billion mobile subscriptions in the world, some are double subscriptions. It is estimated that there are still three billion people who do not have a mobile phone, thus the digital divide remains severe.

The term ‘digital divide’ generally refers to the gap between privileged individuals who have access to ICTs and less privileged individuals who do not. Huang and Chen (2010) examined the global digital divide issue by analysing data from 48 countries and found that cultural, economic and educational factors were the major causes of the global digital divide. Other studies have produced similar findings. In Brussels, socioeconomic status (SES) is the variable with the highest explanatory power in relation to the access divide. Ethnicity is also a significant factor. Youth from migrant families tend to use computers and the Internet less (Mertens and d’Haenens, 2010). A study published by the Australian Communications and Media Authority (ACMA, 2009) noted that amongst those earning less than AU\$60,000, only 54% were connected to the Internet, compared with 92% of those earning over AU\$60,000. In terms of age, those aged over 65 were also much less connected to the Internet, compared with those under 35-years-old. The Pew Research Center found other digital differences in American society (Zickuhr and Smith, 2012). For example, more white people (80%) than Hispanics (68%) were Internet users, while young people aged 30 and under had greater access to the Internet (94%) than individuals over 65 years of age (41%). Only 62% of people who earned less than US\$30,000 US dollars a year had access to the Internet, compared with 97% of those who earned more than US\$75,000 annually. This study in the United States drew similar conclusions. Education and income explain much of the variation in Internet use, while age and race are also important factors (Witte and Mannon, 2010). Family status and education also reproduce privileges. Individuals in higher SES families learn the ICT skills they need to gain a competitive advantage, whereas those without an email address or a Facebook account may be excluded from the larger society.

In terms of gender, there is a slight difference regarding ICT use in developed countries. More men than women are using the Internet, but the gap has narrowed over the years. In some developing countries due to religious or social barriers, women have far less access to the Internet. To bridge this gap, UNESCO has launched the Mobile Phone Literacy Project to empower the women and girls in African, Asian and Pacific regions (see Case 7: UNESCO Mobile Phone Literacy Project). In Uganda, WOUGNET provides a series of ICT programmes including the SMS Campaign on ICTs and Poverty Reduction (WOUGNET, 2008). These programmes are designed to close the digital divide by encouraging women to use ICTs. In addition, community ICT centres have been set up in many countries to provide access to computers, satellite radios, telephones (fixed and mobile) and fax machines, particularly for women users. In fact, many gender-based programmes are trying to empower women through ICTs because it is believed that women will not achieve equality if they continue to have limited or no access to ICTs (Connect a School, Connect a Community, 2012).

Case 7: Mobile Phone Literacy Project

The Mobile Phone Literacy Project, launched in 2011, uses mobile technologies to support literacy development among women and girls in Africa, Asia and the Pacific regions. The project is implemented within the framework of the United Nations Literacy Decade (UNLD) Fund and the Global Partnership for Girls' and Women's Education – "Better Life Better Future: Quality Education for Girls and Women". UNESCO conducted a comparative analysis of the nine effective initiatives to identify practices that ensure the sustainability of programmes and offer opportunities to scale-up promising approaches.

The goal of the Project is to empower women and girls through education via mobile technology-based learning and information programmes. On the one hand, it aims to retain and improve the literacy skills of neo-literate women and girls. On the other hand, it provides access to information that is important to their everyday lives, such as health and hygiene, agriculture, banking, nutrition and civic and human rights.

Mobile phones are used in this literacy project because they are portable, affordable (the basic ones), practical and their messages are easy to read. They are an attractive means of maintaining literacy skills and a convenient channel for obtaining information.

Regional reviews of the project suggest that mobile phones are an effective and affordable enabler that motivates women and girls to help connect culturally and geographically isolated females, create post-literacy alumni and retain the post-literacy rate. Yet mobiles do not replace teachers or the importance of face-to-face interaction and teaching. The case of the Adult Literacy Center in the Pakistan project indicates that the determining factors for a successful mobile literacy programme lie in human intervention into social mobilisation, content development and interpersonal interaction. It is also important to make the project relevant by putting it in a local socio-economic context that accommodates domestic needs.

Source: Ms Diane Boulay, Division for Teacher Development and Higher Education, Education Sector, UNESCO, December 2012

A large access gap remains between urban and rural areas. Taking China as an example, 72.4% of netizens live or work in cities and only 27.6% are in rural districts (CNNIC, 2013).

People with disabilities also have very limited access to ICTs. International partnership groups are seeking practical solutions for offering personalised learning programs through technology in the classrooms for students who have difficulties and physical disabilities (UNESCO, 2012c). Empowering students to “self-accommodate” and learn their own preferences and settings when using technology for learning is now the task of educational leaders in many countries.

On the other hand, the digital divide remains significant between developed and developing countries. Large groups of people in developing countries have difficulties using ICTs efficiently due to illiteracy, language problems or political instability. Forty-eight countries currently are designated by the United Nations as ‘least developed countries (LDCs) in the *Least Developed Countries Report 2012*. People from these countries are in a very disadvantaged position to access information due to global digital divide.

For a few countries, Internet is not only filtered but also not easily available for the citizens. The use of mobile phones is also under tight control.

4.1.3 From ‘Digital Divide’ to ‘Digital Use Divide’

In the past few years, the digital divide scenario seems to have shifted with the introduction of mobile technologies. In the past, developed countries such as those in North America were at the top of the list for Internet penetration and African countries were at the bottom. Now, people in low-income regions are accelerating the process by subscribing to mobile broadband services. In China, people from low income groups are also heavy Internet users via mobile phones. The ITU (2012c) report *Measuring the Information Society* indicated that Ghana is amongst the most dynamic countries in the IDI 2011, marking a 23% growth in its ICT development index from 1.81 to 2.23 in 2011. It would be worthwhile to study how mobile technology can be used to level the digital gap both amongst nations and within a country.

Another new trend is that, at this stage of ICT diffusion, the concern shifts from physical access to the use and application of information. The ACMA (2009, p. 1) in Australia pays close attention to “a shift from a ‘digital divide’ towards a ‘digital use divide’ that responds to high levels of basic access to Internet services”. Other researchers echo this view. Wei and Hindman (2007) stated that as the Internet has become increasingly widespread in the world, there should be a conceptual change in the digital divide from material access to actual use. A World Bank report also noted a movement away from the traditional focus on ICT connectivity and towards

a new focus on applications because the ICT industry is also moving from networks and hardware towards software and services (Fay, 2012). Jung (2008) commented that even after people gain access to the Internet, the ways how they incorporate the Internet into their everyday lives counts more. Witte and Mannon (2010) suggested that ICT use in its truest sense requires learning a new way of identifying and communicating. For example, “one must know not simply how to access a site like Facebook, but how to use the site and how to employ mash-ups to create a seamless web of information and communication” (p. 156). These new trends have tremendous implications for the implementation of the WSIS Action Line C3 Access to Knowledge. It seems that facilitating physical access to information is significant, but enhancing people’s capability to better apply information in their everyday lives is also important. In this case, MIL training may have an increasing role to play.

Research shows that individual governments’ dedication to “information use” training is essential for achieving information for all. Howard, Busch and Sheets (2010) examined how North American countries handle the issue of Internet access and find that both Canada and the United States are working hard to improve access to new ICTs, but using different approaches. Public policy in the United States has focused largely on physical access, whereas Canada has included the promotion of digital literacy and the development of cultural content online. Their research indicates that Canadian public policy initiatives have done more to close the digital divide in Canada than the initiatives attempted in the United States, suggesting that apart from investment in Internet infrastructure, public education is also important. A wise strategy involves policy makers investing in both public goods, such as telecommunications infrastructure, and media and information literacy and cultural content production.

4.1.4 Freedom of Information and Information for All

As ICTs rapidly develop, the challenge the world faces is to ensure equitable access for all people to seize new opportunities. In the past decade, numerous efforts were made by the global community to address this issue. The Information for All Program (IFAP) of the UNESCO is one of them. The IFAP is an intergovernmental programme through which local governments promote equal access to information in their countries.

Many governments have recognized the importance of ICTs in their national development and they are trying to provide universal access for school children to new technologies. The governments in Turkey, Portugal and the Middle East have taken the initiative to introduce large-budget programmes revolutionising their school systems by providing students with updated laptops and tablets (see Case 8: FATIH Project in Turkey; Case 9: National Technology Plan for Education in Portugal; and Case 1: Mohammand Bin Rashid Smart Learning Initiative). The case of Portugal also shows that Portuguese government has established partnerships with private computer manufacturers, such that its project not only benefits students’ learning, but also promotes local economic development and international trading.

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Source: Ms Diane Boulay, Division for Teacher Development and Higher Education, Education Sector, UNESCO, December 2012

Case 8: FATIH Project in Turkey

FATIH is the moniker of the Movement of Enhancing Opportunities and Improving Technology Project launched by the Turkish government with the aim of revolutionising the public school system. It aims to equip 40,000 schools with the latest information technologies and turn traditional classes into computerised education classes (smart classes). All students and teachers will be provided with tablet PCs and the classrooms will be equipped with interactive smart boards. Educational e-content will be developed and new e-books will replace current textbooks, allowing students to access course materials through their tablet PCs. In classrooms, teachers will instantly access any information they need for the class from anywhere in the world and project it on the interactive smart board. The project is expected to cost about USD1.7 billion. The pilot program began in February 2012 and 12,800 tablet PCs have already been distributed in 52 schools in 17 provinces.

The Turkish educational authority has declared that information and ICT is one of the main instruments of the education process, and it is preparing Turkish people to participate in the information society. The long-term goals of the project include: (1) the provision of lifelong learning opportunities for all individuals, (2) providing all secondary education graduates with the ability to use ICTs, (3) ensuring that one out of three individuals in society benefit from e-education facilities through effective Internet use, (4) equal opportunities to learn and use ICTs, (5) ensuring that one out of every two individuals in society becomes an Internet user and (6) making the Internet available to all members of society. This project is regarded as the largest single educational investment in the history of modern Turkey.

Sources: Bilgen (20 February 2012) and FAITH (19 March 2012)

Case 9: National Technology Plan for Education in Portugal

The National Technology Plan for Education was initiated by the Portuguese government with the aim of transforming the country's educational system. The ultimate goal is to build a knowledge-based society. The project tries to offer students access to modern technology and the training and support they need to develop 21st century skills. It also works to create jobs and develop business.

The programme has the following characteristics: (1) it invests in a comprehensive educational programme that uses the introduction of ICTs, low cost laptops, broadband connectivity, educational content, training and support; (2) it establishes a local, sustainable economic model capable of creating jobs and trade opportunities; and (3) it forms public-private partnerships to lower the costs and use the experience and resources of both sectors to sustain ICT development across Portugal.

The eEscola project and Magellan initiative under the framework offer Portuguese students with customised and age-specific PCs. While primary school students have

access to PCs with simpler functions, the older students can get more powerful PCs. From the beginning, local industries have participated in the program. In the European Union, Portugal is one of the first countries to manufacture its own computers. A local manufacturer has produced half a million Magellan PCs for the country's primary school students, boosting local industry development. The funding model for the programme is also regarded as innovative. The budget for the programme came from telecom service providers. Companies in Portugal purchased 3G mobile licenses from the government through an auction that raised EUR460 million in 2001 and 2002. The Portuguese government set aside the auction proceeds to fund the educational technology plan.

Source: Trucand (5 April 2012)

Meanwhile, the Global e-Schools and Communities Initiatives (GeSCI), founded by the United Nations ICT Taskforce, is putting forward strategic advice to Ministries of Education, particularly in developing countries, which will contribute to the creation of enabling environments for large-scale deployment and integration of ICTs in their education systems.

In Norway, the government has supported the National Library's effort to digitise its collections and develop a mobile phone platform that makes library information more accessible to the public (see Case 10: Mobile Digital Library in Norway).

Case 10: Mobile Digital Library in Norway

The National Library of Norway, as Norway's "memory bank", is the first library in Europe to digitise its entire collection. Recognising the need of the people in knowledge societies to access information anytime and anywhere, it developed a mobile phone platform for that purpose. The library has positioned itself as a multimedia centre of knowledge and employs digital curation to select, preserve, maintain and impart digital assets.

The Library has designed and implemented a visual website prototype (m.nb.no) that provides services such as mobile written search, text/voice input to the database and mobile photo display. Examples include picture slide shows on mobile devices, the insertion of user provided pictures and comments into the library's database through mobile phones, location-based information search and building a mobile user community that investigates usage modes, particularly in educational contexts.

Traditional libraries feature open-shelf collections and provide one-way services. Libraries in the digital age have a new face, and they pay attention to users' individual needs, regarding users as members in a wide variety of networks. Interactive services that encourage active feedback are emphasised. The mobile network users share comments and blogs with one another, chat with librarians and

give feedback on usage patterns. Through the mobile platform, the library also uses such networks to distribute news, journal and book information regularly to their registered mobile users. As libraries become both physical and virtual spaces, mobile online access is an essential development.

Source: Hoivik, J. (2011)

The open data movement in recent years has also contributed to the promotion of information for all. Open data is defined as structured standardized data in machine readable formats published for the public (Black, 2012). Many governments and institutions in the civil society are encouraged to set up Open Data Websites. The movement has already taken root at the local level, particularly in countries such as Canada, U.S. and UK. City councils, government departments and healthcare units in many countries are declaring their data open. The general public is not the only beneficiary of the movement. It is said that the local officials also benefit from open data because “data that were historically locked away in departments have become available and accessible” (Black, p. 23).

UNESCO is developing an Open Educational Resources (OER) platform that offers select UNESCO publications. OER refers to “teaching, learning or research materials that are in the public domain or released with an intellectual property license that allows for free use, adaptation, and distribution” (UNESCO, 2012d, p. 1). The aim is to provide opportunities to improve the quality of education and facilitate policy dialogue, the sharing of knowledge and the building of capacity. The Paris OER Declaration is the outcome of the OER World Congress aiming at creating awareness on policy, governmental, institutional and user level. The Declaration emphasises that “access to OER should be widened throughout society, in particular for special needs education as well as marginalized groups towards social inclusion” (Pawlowski and Hoel, 2012).

As higher education systems play major roles in social and economic development, *Guidelines for Open Educational Resources in Higher Education* has also been published by the Commonwealth of Learning and UNESCO. The guidelines points out key issues and makes recommendations for integrating OER into higher education. In many developing countries, access to hardware and software of ICT remains challenges. It is regarded as significant to introduce OER to these countries to ensure high quality and relevant educational opportunities.

In the United Kingdom, the University of Birmingham has established an Information Literacy Open Educational Resources site through which librarians can share resources, host links and find help when creating materials. The project began with British resources, but aims to recruit partners globally (Graham and Secker, 2012). These OER projects operate on the belief that universal access to high-quality education is essential for sustainable social and economic development.

Sharing information on the Web depends on the use of language. However, in the current cyberspace, many languages are not present. The meaning of 'access to information' includes access to quality content created not only in world-dominant languages, but also in local languages. Only when people can use their own language to express themselves on the Internet will they be able to fully participate in emerging knowledge societies (UNESCO, 2012e). Thus, Member States of UNESCO and international organizations are encouraged to support capacity-building for the production of local and indigenous content on the Internet. Recommendations concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace also include international cooperative efforts regarding automated translation services accessible to all.

Apart from the concern for open data, there is also attention for open software. The Free and Open Source Software (FOSS) model put forward by UNESCO provides tools and process with which all people can create, exchange and share software and knowledge freely. In UNESCO's view, the development and use of open non-discriminatory standards for information handling and access are important elements in the development of effective infostructures.

Apart from facilitating free access to information, it is also crucial to equip citizens with the ability to use the resulting knowledge. Research on Internet connectedness has found that those who score high in publishing and technology literacy tend to use the Internet to accomplish a large number of goals including socialising, interacting, seeking information and entertainment (Leung, 2010), and subsequently enjoy a better quality of life.

In fact, 'effective data use' has been highlighted by many people who are concerned with equal access to information. For example, Gurstein (2011, p.2) on the one hand recognized the open data movement as powerful emerging force, on the other hand worried that open data "empowers those with access to the basic infrastructure and the background knowledge and skills to make use of the data for specific ends." He warned that the likely immediate beneficiaries of open data are possibly those people in the private sector who have the resources to make effective use of the data and translate it into new commercial products or services. There is also a chance that open data not be used by the poor but used 'against the poor"! There was such a case in Canada. He suggested that attention should be shifted from "open data access" to "open data effective use." While an open data program is launched, the development of end-user oriented training program should follow so that the target users are capable to use the data. This aims to narrow the gap of "data divide."

4.1.5 Summary

According to the document of UNESCO's follow-up to the WSIS (UNESCO 2009, p 16), to implement Action Line C3 and to support universal access to information and knowledge should be undertaken, focusing on: (a) information literacy through

capacity building; (b) information preservation to safeguard original material; and (c) information accessibility through open and free access.

In the last ten years, we could witness that tremendous efforts have been made by multiple stakeholders to implement C3. Firstly, through IFAP, governments in many countries are taking action to ensure better access to information. Many MoEs have launched significant reform in their education systems by upgrading their ICT infrastructures. Information literacy (IL), media and information literacy (MIL) and mobile literacy programs have been promoted for capacity building. Assistance has been offered to governments and institutions, particularly those in the developing countries, in developing national policy frameworks to enhance access to information and narrow the digital divide. Secondly, Memory of the World and world digital library programs have been launched by UNESCO. Individual governments and NGOs are also working on digitalising and preserving original materials. The mobile digital library in Norway and Digital Baskets Project in Rwanda are outstanding examples. Thirdly, the open data movement, OER campaign, FOSS model and multilingualism on Internet movement are contributing to increase information accessibility.

Yet, there are still a lot of challenges and barriers. Although ICT growth was impressive, digital divide still commonly exists amongst nations and within a country. Moreover, the battlefield of digital divide has moved from physical to conceptual. “Digital use divide” or ‘data divide’ is now the new concern.

In the coming decades, mobile technologies, clouding services, social media, artificial intelligence and the semantic Web will accelerate the circulation of information in society. Without proper literacy training for the underprivileged groups, the open data movement may have the risk of widening the “knowledge gap” among social groups.

Hence, in the coming years, promoting the 21st century competencies training programs and cultivating media and information literate citizens may become a useful means through which policy makers can narrow the digital use divide and build inclusive knowledge societies. The mobile technology has created a leapfrog phenomenon in developing countries and it has great potential to help more people in the underdeveloped countries to better access information and receive literacy training.

4.2 Freedom of Expression, Press Freedom and Pluralistic Media

Action line C9 is concerned with both traditional and new media. The media environment in the 21st century is undergoing a sea change, with rising concerns about freedom of expression, press freedom and legislation guaranteeing the independence and plurality of the media. As the media landscape has changed so much, how to foster media development through capacity building for media professionals, promote media and information literacy, support the growth of community media, promote a legal environment enabling free, pluralist, and

professional media, and encourage gender equality in the media professions have become challenges to policy makers in the new age.

4.2.1 Freedom of Expression and Press Freedom

The rise of “we media” such as wikis, blogs, social networks, citizen journalism sites and media sharing sites has given ordinary people the unprecedented opportunity to express their views. Yet, in many countries, the governments have set up a number of ways to limit freedom of speech. For example, in some countries in the Arab region, growing censorship threatens the development of a knowledge society (Lord, 2008). In China some of the most popular Internet services such as Facebook, YouTube and Twitter are not accessible while in North Korea Internet is not available for most of the citizens.

While new communication technologies and Internet have prompted notable improvements in terms of citizens’ access to information and freedom of expression in general, as well as increased the diversity of sources for reporters, on the other hand the situations for independent journalists and bloggers in many countries of the world is still very critical if not dramatic. Therefore, in terms of reporters’ safety, the new communications technologies unfortunately have not prompted substantial improvements. Furthermore, in certain cases the ICTs have also been used to illegitimately monitor journalists (e.g. monitoring of mobile communication) or to try to violate their right to protect sources (e.g. the hacking of the *New York Times*). According to the 10th annual press freedom index report from Reporters without Borders (2012, p. 1), “crackdown was the word of the year in 2011”. *The World Press Freedom Index 2013* also points out that numerous cases of censorship and physical attacks on journalists were reported. In those countries which are at the bottom of the press freedom index list, civil liberties were under great constraint. The top six nations on the index were Finland, Netherlands, Norway, Luxembourg, Andorra and Denmark (Reporters without Borders, 2013), which suggests that media independence is much easier to maintain in strong democracies. When examining the issue from another perspective, however, it might be said that democracy requires media freedom (Reporters without Borders, 2012).

Violence against media professionals and censorship appear to have increased in Africa and Asia over the past few years, particularly in Syria. Violence has been the major concern for journalists, who have been under constant threat from the religious extremists, separatist movements and political groups. In some countries, the press operates under the dictatorship of their leaders, and journalists, bloggers and cyber-dissidents are put into prisons. These countries have also tightened their control over the Internet, particularly the social media (Reporters without Borders, 2012 and 2013). Even in Hong Kong where the press enjoyed high level of freedom in the past, there was a sharp deterioration in press freedom in 2012 (Mak, 2012). The social and political transitions in Middle East and North Africa in 2011 and 2012 have resulted in the involved countries enjoying some improvements in press freedom but there are still many setbacks. *The World Press Freedom Index 2013*

comments, “After the fall of dictators, the promise of media pluralism and independence are not always sufficiently translated into action” (Reporters without Borders, 2013, p. 16).

The Belgrade Declaration (2004) strongly urges government and non-government agencies to include media development as part of their strategy for reconstruction and development in conflict and post-conflict zones. It also suggests that training of journalists should include safety concerns and conflict management. The UNESCO’s Media Development Indicators project also highlights the important of media development (UNESCO, 2008).

Freedom of expression is a pivotal element of the Universal Declaration of Human Rights (United Nations, 1948) as well as of the International Covenant on Civil and Political Rights (ICCPR). Furthermore it is a fundamental pillar of the knowledge societies. Given all of the advancements in new communication technologies, fighting against restrictions in freedom of expression remains a major task of media professionals in many countries who understand the importance of building dynamic, innovative and participatory knowledge societies. A country’s social and human development depends heavily on democratic communication, specifically the conversation created by the citizens (Hamelink, 2002). An effective dialogue cannot take place between people whose lives are threatened, who are not free to speak or to assemble, who have no means of expressing their opinions and who cannot speak with confidentiality and privacy. The Declaration of Windhoek (1991, p.1) declares that “the establishment, maintenance and fostering of an independent, pluralistic and free press is essential to the development and maintenance of democracy in a nation, and for economic development.”

Young people of the Net Generation are technological savvy and have a strong sense of social justice. They are also very expressive and eager to voice out their views. They are active in social media and enthusiastic in information searching. Even in countries where free flow of information is under constraint, many Net Geners use strategic ways to “jump” the firewall or break the information blockage. Some of them even openly oppose information censorship. The Net Geners will possibly be a strong social force for fighting for freedom of expression in the coming years.

4.2.2 Pluralistic Media

Media pluralism is essential to the democratic development of a society. UNESCO’s promotion of media pluralism has focused on freedom of expression, building the capacity of media professionals, media and information literacy and community media. For many years, UNESCO has promoted World Press Freedom Day; issued publications related to freedom of information, public service broadcasting, and media legislative frameworks; produced educational materials such as the Freedom of Expression Toolkit for Secondary School Students; developed a set of Media Development Indicators; developed model journalism curricula for journalism

schools; set up creativecontent.unesco.org and launched the Community Media Centres Programme (UNESCO, 2009).

The rapid development of the new media has diversified the surrounding environment. There are more channels for news delivery and more platforms from which citizens can speak their minds. The explosive growth of citizen journalism sites has created a situation in which social media and sharing sites now compete with traditional media for an audience. According to the State of the News Media (2012), community news sites have reached a new level of maturity, but new issues related to media pluralism have surfaced.

A number of technology giants have recently entered the media production arena. YouTube plans to become a producer of original television content by funding Reuters to produce original news shows. Meanwhile, Yahoo has developed a partnership with ABC News that has made the network to its near sole provider of news videos. AOL purchased the *Huffington Post* and Facebook has entered partnerships with the *Washington Post*, the *Wall Street Journal*, the *Guardian* and others. On the one hand, this trend indicates that more diversified media products are being provided on a global level. On the other hand, it raises concerns about the increasing influence of the technology giants on the information market (The State of the News Media 2012). It is worried that there may be a new risk of concentration.

Meanwhile, some existing big global media corporations continue to develop. For example, the Gannett Company is an international news and information company with multiple platforms including mobile, Internet, TV stations, newspapers and magazines. It publishes 82 daily U. S. newspapers, 23 television stations, more than 200 weekly newspapers, magazines and trade publications. In recent years, it has developed rapidly in the online sector. It introduces itself as “an Internet leader with hundreds of newspaper and TV web sites” (Gannet, 2013, p.1). News Corporation is also one of largest media companies in the world with operations in six industry segments: cable network programming, filmed entertainment, television, direct broadcast satellite television, publishing and other. Its total assets grew to US\$60 billion by September 30, 2012 (News Corporation, 2013).

Media concentration has always been under the surveillance of media regulators and concern group members. Many countries have media ownership regulations to protect from media pluralism (Harcourt, 2008). The old methods of media regulation in Europe are regarded as outdated in the light of the complicated and dynamic media environment in the new digital age, and there is a new proposal to develop legal indicators of media ownership to boost media pluralism for EU member states (Valcke, 2009).

There has been a call within the participatory media environment for a new approach to training media content producers. The Center for International Media Assistance (CIMA) and the National Endowment for Democracy (NED) presented a report to encourage the development of media literacy programmes for citizen journalists (Moeller, 2009). The aim is to examine projects that focus on training and

educating citizen journalists about media's importance in relation to democracy while helping them cultivate journalistic skills. In fact, it has been argued that both ordinary people and traditional journalists should receive media literacy training because the new media has joined the journalistic field. The United States Agency for International Development has created Internet literacy programs that train both traditional and citizen journalists (Moeller, 2009). In China, a group of college students and citizens started a citizen journalism website and linked it to social media to release the censored Chinese news to the outside world and their fellow countrymen (see Case 11: Free More News). The project aims to enhance the public sphere of the Chinese community.

Case 11: Free More News

Free More News (FMN) (<http://cn.fmnnow.com>) is a bilingual news website providing updated news of China's politics, society, business and other aspects. It is operated by a group of citizen journalists. Taking advantage of the Web 2.0 Internet application, the site aims to bring uncovered news to the Chinese people and the outside world. Its wide network of citizen reporters and social connections give the site a unique position to capture timely events in China. Technologically savvy Chinese netizens access the site by "jumping over the firewall" and spread the news via social media in China. Then, more citizen journalists provide information about the news events under discussion.

The site was founded in 2007 by several college students. Most of the citizen reporters and editors are young people who believe in free access to information. They travel to different cities in mainland China to cover news events, social movements and disasters that may not be covered by the official media.

FMN began as a news blog that transformed into a site focusing on censored Chinese news content. In 2009, it adopted a new model to work closely with social media sites, using networks such as Twitter, Facebook and YouTube to connect citizen journalists from all walks of life. The news site does not adopt the "subjective viewpoint" in its coverage, as do many citizen journalism sites. It insists on objective reporting based on the belief that the most important function is to expose the truth and then let the Chinese people judge the issues.

Source: The English Site of Free More News (<http://fmnnow.com>)

The Declaration of Windhoek suggests that international organizations (governmental and non-governmental), development agencies and professional associates should provide funding support towards the development and establishment of nongovernmental media that reflect the society as a whole and the different points of view within the communities they serve. Actually, in the past two decades, there has been growing internationally-available funding both from bilateral donors as well as from philanthropists for promoting press democracy, better journalistic practices and media pluralism around the world. These efforts yielded

results in many countries. Yet, according to Waisbord (2009), there have been reservations about the outcome of some of the programs. There have been suggestions for improving the situation by calling attention to the concrete real-world conditions of press systems and news organisations that determine the constraints and opportunities of media diversity given that media diversity is not merely a technical question, but a political matter. Noting culturally specific issues will improve the implementation of these media pluralism programmes.

4.2.3 Summary

Regarding implementing Action Line C9, stakeholders agreed to work on four priority areas (UNESCO, 2009, p. 23): (1) Freedom of expression and press freedom; (2) Media development and capacity building of media professionals; (3) Media and information literacy; and (4) Community media.

In the last decade, efforts have been made to enhance freedom of speech and media pluralism. World Press Freedom Day was held annually to promote press freedom. Model journalism curricula for journalism schools was published and adopted by 38 countries for their journalism training institutions. *Media and Information Curriculum for Teachers* was launched (Wilson et al., 2011). Community Centres Programs were carried out to reinforce community media. Net Geners are showing enthusiasm in fighting for freedom of speech while the emergence of we media is contributing to media pluralism.

However, press freedom has still been under severe constraint in many countries for political reason. There is also increasing media concentration that threatens media pluralism. The barriers are the political force and market force.

In the future high-tech knowledge societies, knowledge workers, particularly the young ones, have powerful communication power and strong social consciousness. Individuals are the driving force for development. Joint effort of the international stakeholders is of course helpful to tackle the press freedom and media concentration issues. But the major contributing force may come from the individuals in the civil society. With proper training of the 21st century competencies (digital citizenship and humanistic consciousness as important components), future knowledge workers may be able to fight for greater freedom of expression as active citizens. In addition, equipped with MIL training, they can also produce high quality of user-generated content and contribute to media pluralism.

4.3 Sustainable Development and Democracy

Berners-Lee hopes that the Web can be used as a basic framework to support true cultural transformation (World Wide Web Foundation, 2012). How to ensure that the new communication technologies facilitate the global effort to achieve sustainable development and democracy is a serious concern for many policy makers. There is a common understanding that adopting the new technologies may not necessarily

empower people. The new media are products of modernity (Mazrui and Ostergard, 2002). Adopting a new type of communication technology, such as smart phones, may be regarded as an act of modernisation, but modernisation is not development. True development gives everyone in a society equal access to information and equal opportunities to receive an education. Only in this way can a society achieve sustainable growth.

5 Conclusion and Recommendations

5.1 Conclusion

The socio-technological developments in the past decade have re-charted the world landscape and brought new challenges to the implementation of the WSIS action lines. This report has explored the global trends and emerging innovations connection to literacy and capacity building.

5.1.1 The Need for New Competencies

Three important world trends have profoundly influenced the social and economic development of all societies: the revolutionary development of information and communication technologies, the transition to a knowledge society and the new learning mode of the Net Generation. These key trends have given rise to the need for new competencies and literacy training.

This report identifies the 12 essential “21st Century Competences” under the following categories.

- (1) Conceptual competencies (ways of thinking):
Connectivist skills, innovation thinking and problem solving, critical thinking, reflective thinking and positive thinking
- (2) Practical competencies (ways of handling information in work and life):
Media and information literacy (MIL) and learning skills
- (3) Human competencies (ways of interacting with people):
Social networking skill and virtual collaboration, self-management, humanistic consciousness, digital citizenship and cross-cultural interaction skill

5.1.2 Physical Access to Information Has Improved with ICT Development

ICT growth has been impressive, and the deep penetration of mobile technologies is unprecedented in human history. Mobile use in developing countries has created a “leapfrog” phenomenon that has provided access to millions of people who were previously unable to join the information society. Many of the cases cited in this report reveal that governments and NGOs in both developed and developing countries are putting great effort into making updated ICTs available to their citizens, particularly for educational purposes. Access to ICT infrastructure and hardware is

also improving, and the increasing adoption of mobile technologies is expected to further enhance information availability.

5.1.3 The Challenge of Digital Use Divide

As physical access to ICT improves, attention shifts to the use and application of information with how to narrow the digital use divide becoming the more pertinent concern. The concept of the digital use divide addresses two issues. First, it deals with the technological knowledge and skills needed to make full use of ICT devices. Second, it refers to the competency to interpret and apply the information gained through ICTs and the ability to use ICTs to build knowledge. To build inclusive knowledge societies, policy makers in each country not only need to enhance physical access to information, but also provide appropriate literacy training.

Many new literacy frameworks related to digital technologies have been introduced, including the stand-alone and compound literacy concepts. MIL is regarded by many educators to be both current and important. However, rapid social and technological development is likely to move from a fragmented approach to literacy training towards one that is more holistic. This report provides an integrated approach to the literacy framework of 21st century competencies so that future knowledge workers can equip themselves for full participation in the next society.

5.1.4 The Balance Power of “We Media”

Press freedom did not improve much in the past decade, and freedom of expression is still constrained in many countries as the concentration of mainstream media increases. The rise of “we media”, particularly social media, in the Web 2.0 era has offered ordinary people remarkable opportunities to express their views. It is believed that a higher quality of citizen journalism, blog production and sharing via social media can contribute to the pluralism of media. Greater democratic and citizenship consciousness may also support greater press freedom. The training of 21st century competencies can help in these aspects because it aims to cultivate autonomous and active global citizens who are willing to contribute to the building of inclusive knowledge societies.

5.1.5 Barriers and Challenges of Implementing the WSIS Action Lines C3 and C9

The major barriers to Action Line C3 are the digital divide and lack of access (both physical access and use ability) to ICTs due to differences in SES, race, gender, age, disability, language and political instability. The poor countries and marginalised social groups remain disadvantaged. The challenges to the implementation of C9 are political limitations to freedom of speech, constraints on the right to information and the increasing concentration of media ownership.

5.1.6 Enablers and Opportunities for Implementing the WSIS Action Lines C3 and C9

There are a number of enablers including multiple stakeholders' contributions, international and domestic donors' funding support, education reform, adult education opportunities (lifelong learning), updated literacy training programs, mobile technologies and the leapfrog effect, IFAP, open data movement, OER initiatives, FOSS model, multilingualism movement, the flat world scenario, citizen journalism, the self-efficacy of the Net Generation and groundswell movement (global volunteer networks).

5.2 Recommendations

This report puts forward the following recommendations.

1. Promoting M-learning and Maximising Mobile Technologies

The mobile era is fast approaching, and educating the world population to make good use of mobile devices is an urgent task. Mobile phones are not only useful for enhancing access to information, but also valuable as educational tools.

(1) Mobile Learning:

More educational initiatives are suggested to be developed using mobile technologies, as illustrated by UNESCO's Mobile Phone Literacy Project. The aim would be to empower marginalised people and groups in developing countries. In developed countries, digitalising libraries, archives and museums as well as developing mobile platforms for these information sources can facilitate self-learning and life-long learning of the knowledge workers.

(2) Access to Mobile Web and Mobile Software:

Mobile devices and related infrastructures should be made widely available amongst the world population, particularly in developing countries, to accelerate the "leapfrog" effect. Local governments are encouraged to work with local computer manufactures to produce tailor-made tablets for school children. It is also important to make good use of the FOSS model to develop software and apps for public use.

2. Cultivating 21st Century Competencies

(1) Training Competent Knowledge Workers:

The 21st century is an epoch of rapid social and technological changes for which people need updated life skills. Meanwhile, as the concept of the digital divide shifts from material access to actual use, it is time to pay full attention to ICT users' ability to master the new technologies along with the information they provide. It is recommended that literacy programs for the 21st century competencies be implemented in all school systems and communities with particular emphasis on MIL and ICT skills.

Table 7 illustrates the goals and strategies of promoting the 21st century competencies. The major objective is to equip all citizens with the necessary skills to become competent knowledge workers fully participating in and contributing to future knowledge societies. If ordinary citizens are well equipped with 21st century competencies, they will be better able to express themselves

through user-generated content that enhances media plurality. If every citizen has the chance to be trained to be MIL literate and ICT capable, the digital use divide will dwindle. Improved media monitoring skills will also enable them to regulate media concentration while better citizenship consciousness will motivate them to resist restrictions on freedom of speech.

Curriculum Framework of 21st Century Competencies	
Goals	<ol style="list-style-type: none"> 1. Equip citizens in all societies with necessary literacy and competencies to fully participate in future knowledge societies 2. Narrow the digital use divide 3. Foster media pluralism and promote right to information
Curriculum Content	21st century competencies (conceptual, practical and human competencies)
Pedagogy	Collaborative and participatory learning
Venue	Inside and outside classrooms located both inside and outside schools
Target	School children, college students and adults
Curriculum Delivery Approach	<ol style="list-style-type: none"> 1. Knowledge pull, not information push 2. Individual modules on 12 competencies
Promotion Strategies: Partnership Model	<ol style="list-style-type: none"> 1. Establish partnerships amongst international institutions, governments, NGOs, business sectors, schools and parental organisations 2. Provide affordable mobile tools for information access 3. Set up international clearinghouse for 21st century competencies 4. Form OER platform 5. Build up local implementation network 6. Develop local curriculum content 7. Design digital courses (online and mobile versions) 8. Explore innovative teaching practices 9. Provide training for school teachers, youth workers and community educators

The proposed programme should be available to young students and adults through appropriate curriculum packages. In the past, literacy programs have mainly been offered in schools and colleges, but the growing need for lifelong learning suggest that the scope must expand to be open to all segments of the population. The pedagogy is collaborative and participatory learning and the 12

key components can be combined or provided in individual modules. The curriculum can be taught in schools, community centres or online.

(2) **Cultivating Global Citizens with Critical Autonomy:**

It is worth noting that the training of 21st Century Competencies also aims at cultivating active global citizens with strong human competencies and moral sense. The training also helps them to handle the negative influences of the ICTs (e.g. information overload, information anxiety, online security) so that they can remain as constructive and autonomous actors in the high-tech societies.

3. Establishing Collaborative Networks and Strategic Partnership

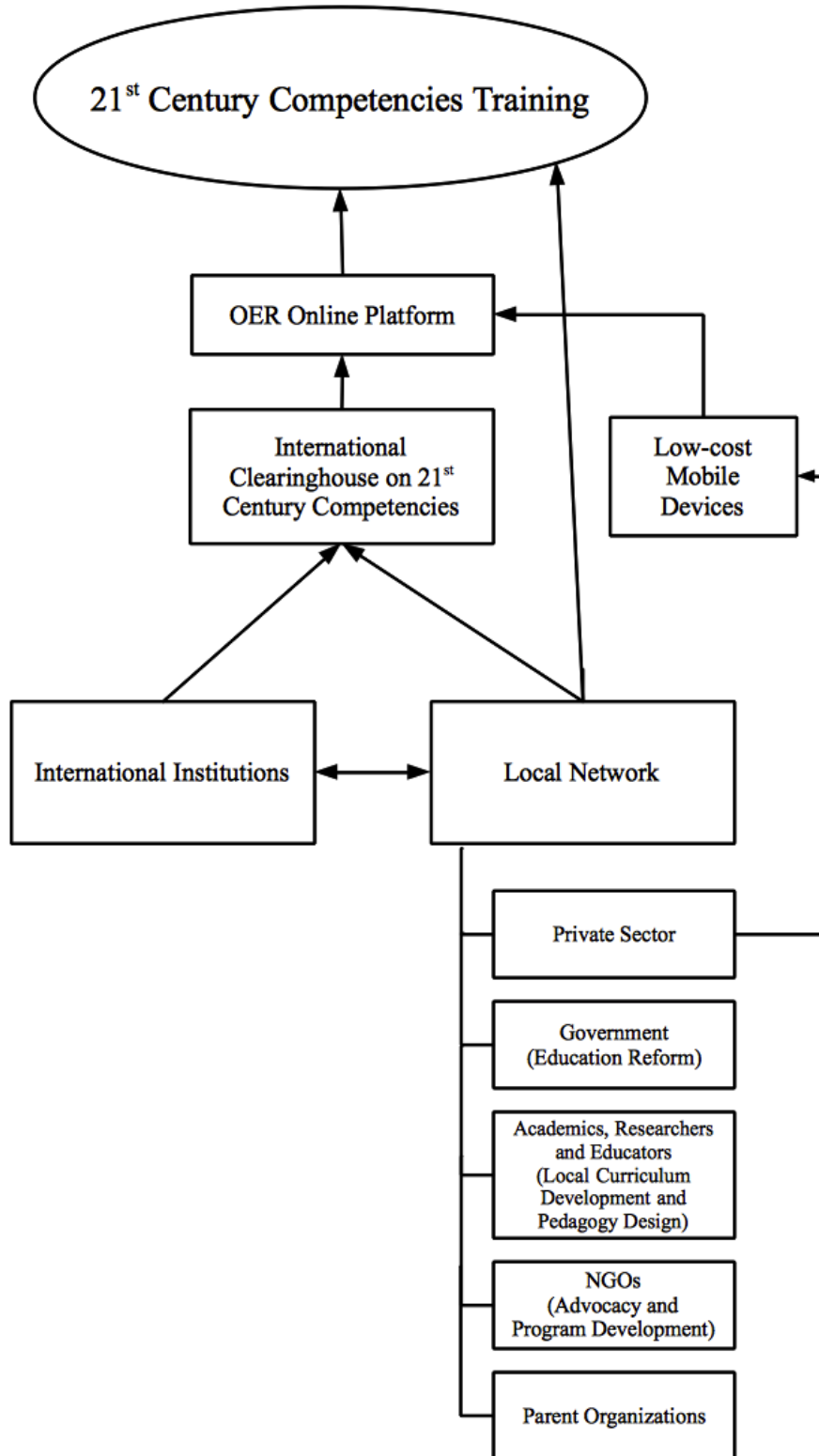
(1) **Multi-stakeholders Approach and the Involvement of Private Sector:**

The 21st century features a network society in an era of collaboration and teamwork. The findings of many studies in both developed and developing countries indicate the importance of governmental initiative and group partnership across social sectors. The ongoing literacy projects in the Middle East, Turkey and Portugal all involve cooperation amongst the government (ministry of education), schools, parents and private companies. Other efforts are the joint effort of international institutions, NGOs and civil society members. It is particularly worth noting that the private sector not only serves as suppliers of hardware and software, but also in promoting the effective use of ICTs. They may also contribute to teacher training, curriculum development and building digital content. Forming partnerships that combines the experiences and resources of the public sectors can ensure sustainable success.

(2) **Strategic Partnership Model:**

Figure 2 illustrates a partnership model that promotes the 21st century competencies. The model brings all stakeholders together to contribute. On a global level, it is proposed that an international clearinghouse (or OER centre) on 21st century competences be established to encourage research, coordinate international cooperation, organise conferences and seminars and collect curricular and educational resources. An OER platform is also recommended to facilitate the sharing of all information online.

Figure 2: Partnership Model of Promoting 21st Century Competencies



At the country level, an active local network is essential to effective promotion and informs the international clearinghouse. Governments' leading role is also important. In a few years' time, tablet PCs and other mobile devices are expected to replace desktops and laptops. Thus, it is suggested that low-cost mobile devices be made available to all learners, especially those in developing countries. Governments may negotiate with private sectors to manufacture low-cost mobile devices for educational use. For example, in China, local small factories are manufacturing "knockoff cell phones" for low income groups and migrant workers. The private sector may also develop games to cultivate the 21st century competencies, but only providing learners with hardware and software is not enough. Educational reform that promotes collaborative and active learning is the key. Curricula must also be contextualised within local cultures and developed alongside innovative teaching practices. M-learning materials should be made available with training for school teachers, youth workers and community educators. In developing countries, it is particularly important to simplify the curricula and modules. Simple digital courses should be developed for facilitating online self-learning.

4. Education Reform and Teacher Training

MoEs in all countries should try to revolutionize their education systems and school classrooms by adopting the latest ICTs. Many current large-scale national education projects have already put emphasis on deployment of ICT hardware and software in their school systems, such as delivering tablets to school children, constructing smart classrooms and adopting cloud service. However, not all of them are supported by substantial education reform. Without the follow-up measures of pedagogic changes, proper teacher training and innovative curriculum development, there may not be desirable outcome. Emphasis has to be put on using the new technologies to establish an open environment which facilitates active learning and collaborative learning. Teacher training is particularly crucial since the teachers need to develop their technological skill and progressive educational mindset in order to effectively guide their students' learning in ICT-based societies.

5. Contextualising Initiatives in Specific Cultural Settings

Many studies show that gaining access to ICTs affects the ways in which technologies are incorporated into the daily lives of users, who tend to be situated in various social and cultural contexts. Many researchers and NGO workers have suggested launching educational initiatives in a culturally sensitive way to avoid the pitfalls of a "one for all" model. The Digital Basket Project in Rwanda is successful because it is relevant to the women's traditional practice of basket weaving, and the SMS literacy campaign is popular in many African countries because it meets people's daily communication needs. It is recommended that all overseas practices and design programmes relevant to learners' everyday lives be localised.

6. Considering the Power of Individuals, Particularly Members of the Net Generation

(1) Training for Producing High Quality User-generated Content:

Friedman's (2006) "flat world" thesis clearly states that in the Web 2.0 era and beyond, individuals are the major driving force behind development. Online power makes everyone a prosumer (media and information consumer and producer). It is suggested that more MIL training be provided to citizen journalists and bloggers so that they can produce high-quality, user-generated content that enhances media pluralism and breaks down news blockages.

(2) Groundswell Movement and Social Network Support:

As a large number of voluntary activities initiated by netizens reveal, many civil society members are willing to help marginalised groups and under-privileged citizens of developing countries. Therefore, it is worth exploring the feasibility of facilitating "groundswell" educational activities (spontaneous movements of people using online tools to connect) to offer new literacy programs, particularly to disabled or under-privileged children.

(3) Self-efficacy of Net Generation:

The Net Generation comprises sophisticated ICT users with a strong sense of social justice. NGOs may recruit these young individuals as volunteers to deliver ICT literacy programs to those who need it most, but are least likely to receive it. In the last century, only adults could teach, but the tide has changed. Now young people are eligible to teach adults, particularly regarding new technologies.

(4) Research on Net Generation:

The Net Geners are early adopters of ICTs and they will constitute the core population of the knowledge workers in the near future. Tapscott (2009) predicted that these young people will transform the workplace, market, education arena and government in the coming decades. They are the major force of social transformation. However, they deal with and learn information in very different ways. To better educate them and benefit from their potential, more research on the best practices should be conducted in the coming years.

5.3 The Millennium Development Goals and Education for All

The successful implementation of WSIS Action Lines C3 and C9 very much depends on the international cooperation needed to confront the global digital divide, promote press freedom and media pluralism, and advocate the right to information. It also relies on strategically using the "enabling factors" to combat the barriers. This report recommends meeting these challenges by providing 21st century competencies training for all citizens, so that they develop the ability to participate in the future knowledge societies, improve their livelihoods, and strive for social equality and the right to information. Equipping future knowledge workers with necessary competencies can help to achieve the Millennium Development Goals, including developing a global partnership for development, achieving universal education, eradicating extreme poverty and promoting gender equality.

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Conceptual Relationship of Information Literacy and Media Literacy

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Executive Summary

The objective of this paper is to provide background on the conceptual convergence of media and information literacy, as well as the differences that both literacies have, according to the literature from both fields. The paper is divided into seven sections. The first one 1) discusses the concept of information, a key term for media literacy (ML) and information literacy (IL), as mass media messages are part of this general concept. The second one 2) is on the topic of quality of education and the role of media and information literacy (MIL), followed by a discussion 3) on the convergence of ML and IL. The last sections are devoted to 4) the analysis of the mediating role of the two literacies, and to 5) a brief listing of additional similarities and specificities of each of them, ending the paper with 6) conclusions, and 7) references.

1 Definition of Information

The term information is defined differently in several disciplines, but, in general, without going into the technical theories of information, the concept refers to “knowledge derived from study, experience, or instruction”, or as the “knowledge of specific events or situations that has been gathered or received by communication; intelligence or news” (West Encyclopedia of American Law, 2010). A distinction is normally made between data, information and knowledge; the first as “numbers, words, or images that have yet to be organized or analyzed to answer a specific question” (Three Rivers District Council, 2008). The second is defined as the processed data that adds/generates knowledge of the receiver; while the third, knowledge, is what a person or persons learn or mentally construct from information. In a more technical form, information is “something (as a message, experimental data, or a picture) which justifies change in a construct (as a plan or theory) that represents physical or mental experience or another construct” (Merriam Webster’s Dictionary, 2010). Information, in simpler words, includes or depends on the process of communication.

Information literacy and media literacy both include the concept of information within their definitions, the first more literally than the other. “Information literacy empowers people from all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals.”

This definition was crafted by an international group of experts that represented different regions of the world in an IL summit (Alexandria Proclamation on Information Literacy and Lifelong Learning, 2006). The term media literacy is, in turn, generally conceptualized as the knowledge and skills individuals need to analyze, evaluate, or produce media messages, according to Martens (2010), who recently completed a fine state of the art review of “all” English language scholarly (peer-reviewed) literature (165 papers) with the terms media literacy and media education. The review was a backbone of this paper, because it made it easier to

follow the ML concept evolution and trends, although it is limited to Anglo Saxon publications. As these two definitions are expressed, one can deduct that messages, as media expressions, are part of the broader term of information that includes media constructs as well as any other encapsulated knowledge or data in any format/medium including printed, electronic, digital, images, sound, or realia objects.

2 Quality of Education

Information literacy and media literacy contribute to increase the quality of education, because both aim to foster critical thinking and are competencies-oriented, approaches that our current knowledge societies demand (Horton, 2007).

The MIL role to enhance part of the multiple competencies that students require to be fully capable citizens is analyzed in this section. Universal education has been a major concern for UNESCO since its origins, but it was officially adopted following the 1960s, when regional meetings were held to form the basis of the treaties that later became the International Bill of Human Rights in the 1970s, and in the decades after gave origin to the World Declaration on Education for All in 1990. Later the Millennium Development Goals currently under assessment at the UN, were adopted in the simply titled multi-cited Dakar Goals to “ensure that by 2015 children everywhere, boys and girls alike, will be able to complete a full course of primary schooling,” among other education objectives (UNESCO, EFA, Global Monitoring Report 2005). Education is certainly a key social process: “development and economic prosperity depend on the ability of countries to educate all members of their societies and offer them lifelong learning. An innovative society prepares its people not only to embrace and adapt to change but also to manage and influence it” (UNESCO Medium Term Strategy 2008-2013, 2008). UNESCO stresses that it upholds “education as a human right, and as an essential element for the full development of human potential.” However, most of the educational goals of UNESCO have been mainly quantitatively oriented, and most countries have been able to meet universal education at primary level, and the more advanced have made other higher education levels compulsory to their societies, but the quality of education is a challenge in several nations.

Quality education is a term that poses challenges to define and measure. How can the creative and emotional development of children to acquire skills, knowledge, values and attitudes be defined, so that they are responsible, active and productive citizens? According to the Dakar Framework for Action (UNESCO, 2008) quality is framed in the fundamentals of enrolment, retention and achievement. The last qualifier is the most complex one to measure, but an expanded definition in the same document expresses the “desirable characteristics of learners (healthy, motivated students), processes (competent teachers using active pedagogies), content (relevant curricula) and systems (good governance and equitable resource allocation), although an agenda was established for achieving good education quality, it did not ascribe any relative weighting to the various dimensions identified” (UNESCO, EFA Global Monitoring Report, 2005).

The same Dakar Framework more specifically pledged, in the second of the six goals, the commitment of nations to provide “primary education ‘of good quality’.” The sixth goal also more specifically stated “commitments to improve all aspects of education quality so that everyone can achieve better learning outcomes, especially in literacy, numeracy and essential life skills” (UNESCO, EFA Global Monitoring Report, 2005). Two elements characterize this approach, the first “cognitive development as the major explicit objective of all education systems”, and second the “education’s role in encouraging learners’ creative and emotional development.”

These mean to focus on the “quality and relevance of education, on its content and pedagogical methods.” The attainment of such goals presupposes changes and transformation of the “how and why of the learning, especially in creating a sustainable development by encouraging countries to reorient their education systems” (UNESCO, 2008b). Media and information literacy are part of the changes that education needs to adopt to enable young and adult to be life-long learners by acquiring vital information skills. Meaningful education content needs to include the information skills that are needed by citizens to be able to intellectually feed themselves to take decisions in life: at school, at work, in society and meet every challenge and opportunity that life offers (UNESCO, 2008b). If information is regarded as a basic knowledge input, individuals ought to know how to find it, how to evaluate it, how to use it and how to communicate it.

The inclusion of MIL skills in the education curricula has been justified in the both information skills disciplines’ literature (Akyeampong, 2009; Horton, 2007; Martens, 2010) as essential to learners. For instance, the National Commission on Libraries and Information Science, in response to *A Nation at Risk*, stated that education has the objective of preparing each “student to learn how to identify needed information, locate and organize it, and present it in a clear and persuasive manner” (Haskim, 1986, cited by Taylor, 2005). Early IL concepts included all the facts and ideas that one wants at different times for any part of one’s life (Carroll, 1981, cited by Taylor, 2005). If the development of countries is related to their capacity to offer quality education, one can understand the reason why some member countries of the Organization of Economic Co-operation Development (OECD) lag behind in the international education surveys. They are those nations with less robust education systems such as the case of Mexico, Turkey and Greece (OECD, PISA, 2006). Since the mid-1990s, international, regional and other national assessments show poor learning outcomes in many other countries worldwide (UNESCO, Quality Education, Equity and Sustainable Development, 2008b), a challenge that needs to be re-addressed to improve teaching and learning processes. MIL skills development offer the great potential of enhancing the learning process of students without having to overload the curriculum, because they can be taught in non-formal and informal context for learners of all types, young and adult, at school or at work, because what is needed is a change in the pedagogical methods to make information use part of all learning subjects. A change of this type requires a transformation of teaching practices and the roles of teachers - education can change if teachers change. This opportunity to help teachers to transform their roles

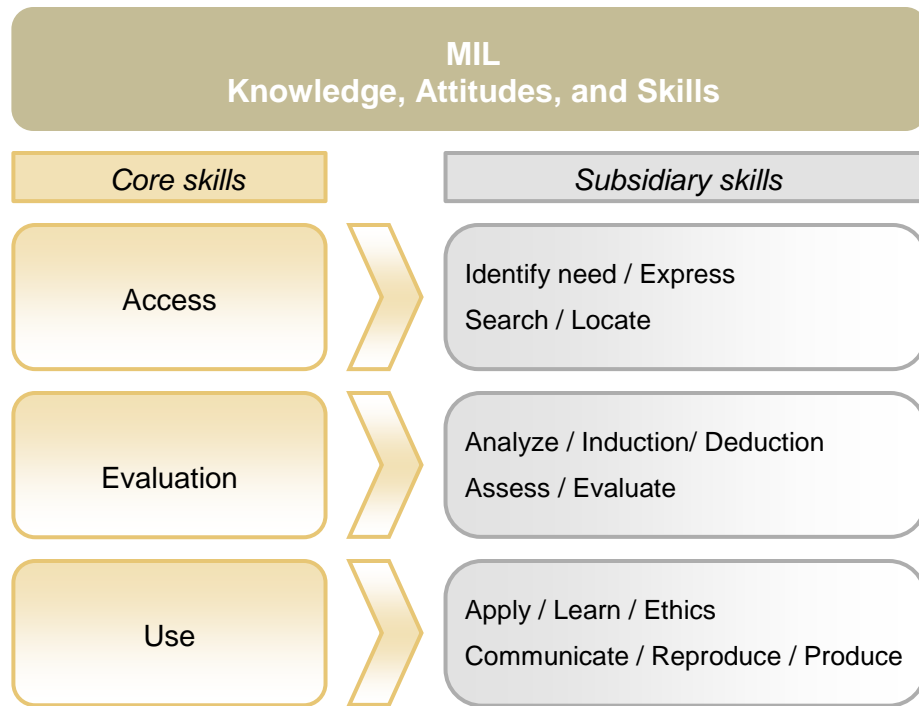
is being addressed by UNESCO with the drafting of a MIL curriculum, an appropriately combined approach to include media and information literacies into a single curricula package. This is a welcome project because teachers, as expressed, play a vital role in the development of information skills. The UNESCO MIL curriculum, developed by an international expert group from both fields, offers a framework for teachers' education. The original intention was "to enrich teacher-training curricula with media and information literacy components on a pilot basis in at least eight developing countries and to synthesize and share the experience with a view to enhancing teachers' abilities to impart media and information literacy to school children" (UNESCO, MIL Curricula, Background paper, 2009).

3 Convergence of Media and Information Literacy

The concept of media literacy also means many things to many people (Brown, 1998). The most standard media literacy definition (Martens, 2010) dates back to 1992, when the National Leadership Conference on Media Literacy defined it as the "ability to access, analyze, evaluate and communicate messages in a variety of forms" (Aufderheide, 1993, cited by Martens, 2010). This definition is widely quoted in the related literature. Martens (2010) has a similar definition, stating that "media literacy is mostly defined in terms of the knowledge and skills individuals need to analyze, evaluate, or produce media messages." Other authors, such as Potter (2004), define media literacy as "the set of perspectives from which we expose ourselves to the media and interpret the meaning of the messages we encounter" -- knowledge and skills related by Martens (2010) "to four key facets of the mass media phenomenon, i.e. media industries, media messages, media audiences and media effects."

The four facets cited by Martens (2010) do differ from information literacy aims, where the focus is mainly on the document, instead of focusing on the message. Information literacy excludes the study of the publishing industry and does not discuss the information audience or its effects, because it is assumed that the publishing industry is "reliable" due to their editorial assessment and peer-review system. If we take into account the definition of information literacy, it certainly encompasses media literacy that focuses mainly on mass media information, a concept that is defined by the Merriam-Webster Dictionary as "a medium of communication (Newspapers, radio, or television) that is designed to reach the mass of the people — usually used in plural" (Merriam Webster's Dictionary, 2010).

Figure 1



The concepts of media and information literacy overlap or complement each other, because both aim to foster the same information literacy skills in individuals, but both terms separate somewhat in the information constructs that each of them regards as the key media (See Figure 1). Information literacy is a term that sprung up developed from library science, therefore its focus on information is basically on the printed word, that is books, journals, and newspapers. However, the concept, as in any modern library, includes all forms of media and records, not only printed documents: films, web pages, video, and all sorts of electronic information, as well as oral information.

An analysis of countries with formal or *de facto* national information literacy standards coincides with the following core skills: information needs awareness, and the abilities to locate, retrieve, evaluate, use, and communicate information. Some IL standards include complementary skills such as ethical use of information (ACRL, 2000). Four nations have national IL standards: the United Kingdom with The Seven Information Pillars from the Society of College, National, and University Libraries (SCONUL); Australia with the Australian and New Zealand Institute for Information Literacy; Mexico with Information Literacy Standards (8) for Higher Education; as well as the United States with several at state level, but with two of national relevance, the ones created by the American Association of School Libraries (with 9 standards), and the Association of Colleges and Research Libraries

(ACRL), both part of the American Library Association (ALA) that also has a well known definition, along with the Chartered Institute of Library and Information Professionals (CILIP), the major British library association. The two main information literacy meetings, one attended by UNESCO representatives, and the other organized by UNESCO with the National Forum on Information Literacy in Prague, Czech Republic, in 2003, and the symposium of information literacy experts in Alexandria, Egypt, in 2005, crafted an international definition of IL that was quoted at the beginning of this paper.

For IL authors their main information objects are peer-reviewed and evaluated publications, such as academic publications (books, and journals that increasingly are becoming more electronic), and place as second priority mass media, but IL does have it as part of its concerns. Media literacy instead -focuses on mass media that normally does not include evaluated information sources, such as the already mentioned newspapers and television that are characterized by having less source validation, because of the quick production that characterize them. However, it must be said that there are also well researched television news programs, or research-based films, but even then, fiction may take place to make the story more appealing. Newspaper editorials from the largest, usually national, newspaper titles, as well as weeklies or more digested news information, written after serious investigations, but this is not the norm for most news items included in dailies. Media literacy, as a summary, focuses on newspapers, television, radio, and/or advertisements (Martens, 2010). Some authors narrow the ML concept, such as one given by Brown (1998) who states that media literacy covers the “ability to analyze skillfully print journalism.” Brown (1998) even involves media literacy as the “appreciation of works of literature and, by extension, to communicate effectively by writing well”, a concept position that does not seem to be discussed much by other authors. In conclusion, ML and IL have as their concern the communication process of information either as a document or as a message.

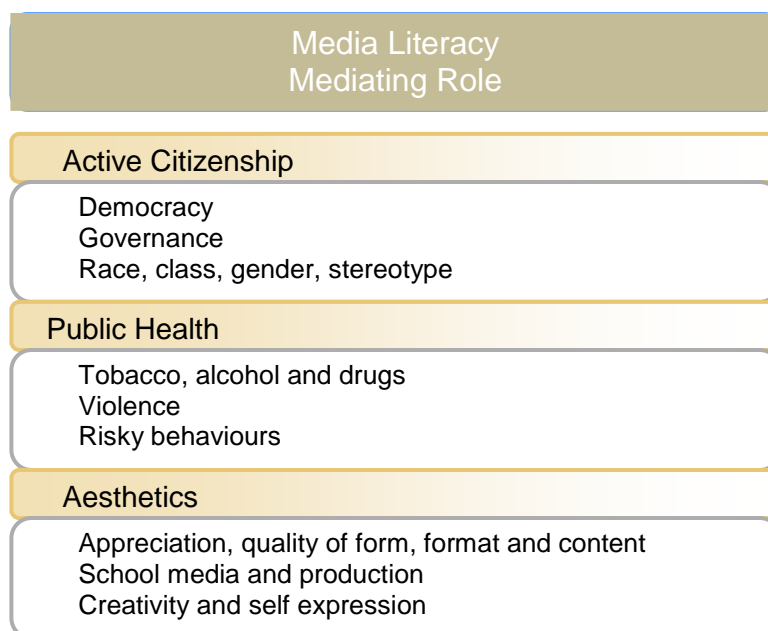
The measurement of MIL skills as compound competencies does not pose great methodological challenges because both attempt to measure how people satisfy its information needs through locating, retrieving, evaluating, using and communicating information. The different focus either on media messages and document information does not, it is assumed, affect the skills assessment, because both require similar skills. Individuals from all walks of life do need to use information, regardless of their education background and culture. It can be a citizen in an oral-culturally based society that requires to find, evaluate and use the proper advice from elders or from other community members who may have the data or information needed; to the academic, student or scientist, who needs to find the relevant and reliable source to enhance the research process, or the businessman who needs to take more informed decisions.

4 Their Mediating Role

Media literacy, in most respects, is not taught as a goal in itself, media educators aim to “maximize the positive media effects and minimize negative ones”. (Martens, 2010) There are three broad social issues ML aims to work on: active citizenship, health, and aesthetics. Scholars who favor the teaching of students to be good citizens see ML as providing “access and understanding of contemporary media as a vital aspect of citizenship in general” (Martens, 2010). Silverstone (2004) sees ML as “enabling individuals to take full participation in late modern society, involving as it does the critical skills of analysis and appreciation of the social dynamics and social centrality of media as framing the cultures of everyday.” Some other authors even give ML the role of providing a “counterbalance of the effects of race, class, and gender stereotypes in mass media messages” (Martens, 2010).

The other field where ML is active, health-related issues, is a shift that has taken place in the last few years (Kubey, 2003). This approach aims to help youngsters to understand that “media is in the business to sell them products and behaviors that are not always good for them.” The main concerns are on tobacco, alcohol, violence, and heavy diet; assuming that media literacy can mitigate these effects. Health-related ML promotes critical examination of messages on TV, and the marketing used by other mass media programs to avoid risky behaviors. The field of aesthetics, a more historical approach from Europe, focuses on the learning to appreciate the aesthetic qualities of mass media, especially in the film arts. Brown (1998) considers that this approach of media literacy remains “to develop selective viewers who seek out and appreciate distinctive high-quality of form, format, and content in mass media” (Martens, 2010). These three broad social concerns of media literacy give more weight to the use skill of how to benefit or reject media (See Figure 2). This stand is, it is assumed, mainly from the Western countries, where mass media is more based on marketing and profit-making unlike the more controlled one from centralized governments.

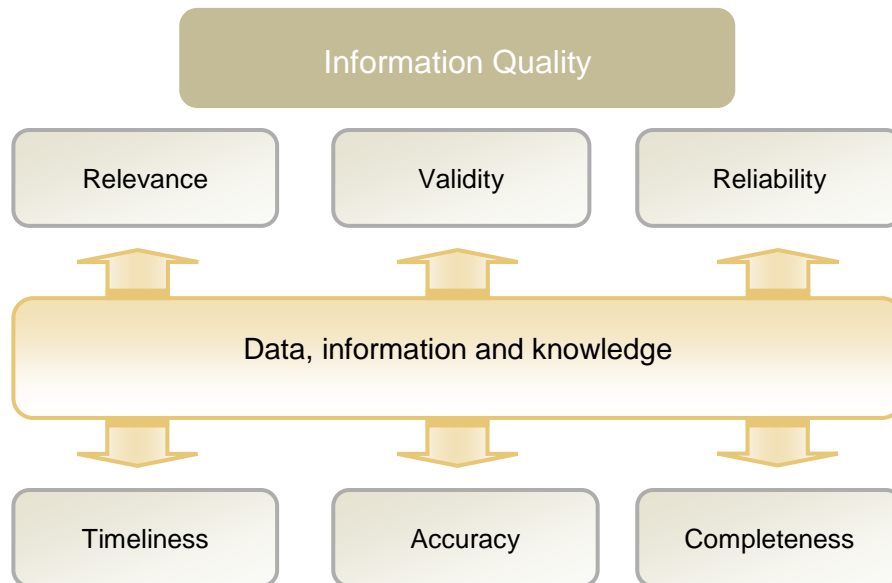
Figure 2



Information literacy, on the other hand, has more plain social concerns than media literacy. IL normally focuses on the objectivity and rational of information, and to a great extent on the research value of finding the “truth” in documents. IL’s concern is to enable individuals to be critical about how the content meets the information quality criteria that is normally centered on research-related principles (See Figure 3):

- a) *Relevance*, information should be pertinent, connected, or applicable to the purposes it is to be used.
- b) *Validity*, information needs to be in compliance “with relevant requirements, including the correct application of any rules or definitions” (Three Rivers District Council, 2008)-
- c) *Reliable*, information has to be consistent and with valid measures.
- d) *Timeliness*, it should cover the needed time span and should be opportune, and delivered/received at the right time (Three Rivers District Council, 2008).
- e) *Accuracy*, information ought to have the condition or quality of being true, correct, or exact.
- f) *Completeness*, information has to be as complete as possible to the expressed needs.

Figure 3



These six quality information principles are well described in the requirements of data quality of the Three Rivers District Council, even though they use the term data as an interchangeable concept with information and knowledge (2008). IL spins in the use of these quality information principles that are the base for the selection and creation of library collections that normally aim to have relevance, a concept that, in general, encapsulates the described information quality principles.

5 Similarities and specificities

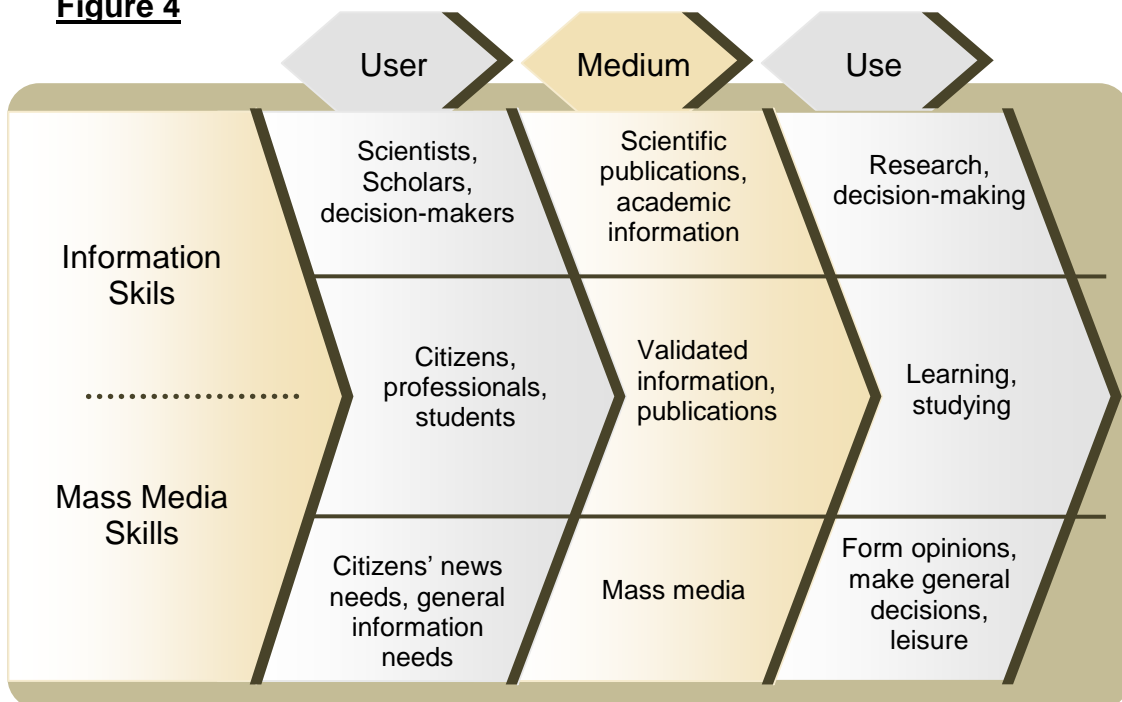
The conceptual similarities and differences of both disciplines have been discussed in the previous sections; however, some specificities are analyzed, along with some already discussed in the following paragraphs, to make clearer the opportunities of having a compound literacy approach (See Figure 5).

- A. Concept evolution. In regard to the time that both concepts have taken to evolve, media literacy “has been growing for roughly twenty-five years” according to Martens (2010), while information literacy dates back to 1974 (Taylor, 2005). The term information literacy was firstly used by Paul Surkowski, 1974, then president of the Information Industry Association, defining it as “people trained in the application of information resources to their work” (Spitzer, Eisenberg & Lowe, 1998, cited by Taylor).
- B. Education concerns. The two literacies have as the main aim to enhance the education process; ML is basically applied to K12 education (Christ and Potter, 1998), while IL covers the whole span of education cycles, from kindergarten to

higher education (ACRL, 2004; AASL, 1998). However, in the case of IL some work is also devoted to explore the enhancement of the information skills of the workforce and citizens in general, as it was the origin of the concept, when coined by Surkowski. The Secretary’s Commission on Achieving Necessary Skills (SCANS) Report (2000) indirectly included information literacy stating that workers who demonstrate competency with information can “acquire and evaluate information; organize and maintain information; interpret and communicate information; and use computers to process information” (cited by Taylor, 2005).

- C. Social concerns. The social impact of each of mass media and information, as they are defined in previous sections, differs in the social groups that they influence. Mass media products have an impact in most members of society, because it shapes opinions, beliefs, shopping decisions, and a myriad of other decisions in health and education. Our contemporary society, the more advanced, at least in countries with Western living-style, are heavily influenced in their daily decision making by television, marketing and news services. Information, as it is understood in information literacy, has an impact mainly in the education, scientific, economic, and health, sectors. In other words, it is for more complex-decision making. However, the border lines of both concepts are difficult to set.

Figure 4



Adapted from: Lau, J. and Cortes, J., “Information Skills: Conceptual Convergence between Information and Communication Sciences.” *Mapping Media Education Policies in the World*. New York: UN Alliance of Civilizations, UNESCO, European Commission, Grupo Comunicar.

- D. Compound MIL skills. Media and information skills can be, as discussed, measured as compound competencies, because both approaches aim to help an individual to make judged use of the information, developing the capabilities of individuals to be able to locate, retrieve, evaluate, use and communicate information, regardless of the media format it may be. The assessment work done by international bodies like OECD in testing related information skills of students provides good ground examples of how both literacies can be tested and measured, because those surveys would yield data that is relevant for both literacies' attainment (Catts and Lau, 2008).
- E. Location and retrieval. The other difference is that ML mass media is overwhelmingly present in people's everyday life in a way that search and retrieval is not as necessary, and this is reflected in the concepts discussed in the ML literature (Martens, 2010). On the other hand, it is almost the opposite in IL: good information needs to be looked for and located in the different formats and multiple repositories, either at a library, database, or at Internet websites. However, as stated, both literacies do focus on evaluation and use.
- F. Information production. Another subtle difference between both literacies, as discussed earlier, is that ML scholars place emphasis on the understanding of how media messages are constructed, and this is because of the subjective characteristic of these media. This is not the case of IL because it focuses on information products and services that aim to be objective, and incorporate quality processes: peer-review journals, edited books, or the validation of industrial patents, etc. -- a quality process that all academic and scientific publications aim to have. In fact, IL treats mass media as subjective information, with the proper exceptions of well-researched media.
- G. Distinctions: being skilled user of media and skilled user of information. Information literacy skills cover a greater number of skills than media literacy, according to the different quoted information literacy standards, most of them, include, at one extreme, the information needs awareness and the ability to express such need. On the other side of the competence, information literacy skills include within the communication skill, the capability to use the proper bibliographic style and the ethical use of information. In the case of media literacy, the concept does include the understanding of how media messages are crafted, and for some scholars there is concern about the political and market-oriented information. However, as expressed, both literacies regard individuals as being literate when able to locate, a skill that carries more weight in IL, retrieve, evaluate, use and communicate information/mass media messages. However, ML also considers an individual media literate when he or she is able to identify the bias media messages may have.
- H. Justification for a compound literacy. The main justification to have a unified approach in the conception of MIL survey is that both can be tested, using similar tools and with fairly and if not completely similar questions. A joint approach

would require the provision of wider information categories of answer-reply options to the population to demonstrate their information and media skills. It does make sense from the cost and logistics investment to have a single survey or whatever research tool is devised and decide as appropriate.

- I. Strengths and weaknesses – MIL inter-disciplinary approach. The two literacies share the same subject concern. It is like the distinction between algebra and statistics, they may be taught one after the other, or interrelated, but can also be part of the same subject when taught at schools. The principles of looking, evaluating and using information are the same for both disciplines. As for the user, his or her need, is in learning the distinction of the different types of information, and the benefits, advantages and challenges that each of them offer to him/her. If one needs to update information on opinions, facts and events, the best sources mass media types, such as daily news in paper or electronic, or if the need is for more processed news information, then weekly publications or newspaper editorials are the best sources. Further, if the information need is for academic, objective information, regardless of time, a scientific article, journal or conference proceedings are the relevant sources.

6 Conclusions

The concepts of media literacy and information literacy have significant overlap in the skills that they aim to develop: location, retrieval, evaluation and use of information. However, they focus on different information categories; one is on mass media (messages) and the other on information (document/hyper-document).

The merging of their literacy efforts into MIL does make great sense in terms of their education purposes, because both can be taught and assessed as part of the same pedagogical strategy. Information literacy encompasses media literacy, because it includes the holistic variety of media.

The similarities of ML and IL are that both aim to facilitate the development of information skills, so an individual can make a judgment regarding the use of the information accessed, either that comes by itself, such as marketing media, or information that he or she has had to locate.

The differences between ML and IL are, as explained, in the information objects that they focus on; one is on mass media messages and the other on information in general although with emphasis on academically produced documents. However, both fields, although ML with less emphasis, aim to cover all types of information products, but mass media products are in the periphery. IL is clearer in the sense that it regards all types of information sources, just as the library does, and is also where the IL concept began.

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Conceptual Relationship of Information Literacy and Media Literacy:

Consideration within the broader Mediacy and
Metaliteracy Framework

A paper for UNESCO

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Executive Summary

The objective of this paper is to discuss the conceptual relationship of Information Literacy and Media Literacy within the much broader context of what has been referred to as “Mediacy,” or more recently as “Metaliteracy.” Drawing extensively upon the literature from the early 1970s when the term “information literate” was first used, the paper argues for broadening the concept of literacy for the Knowledge Society and for emphasizing similarities among specialties within the broad concept, rather than focusing on differences. The paper is divided into seven sections: 1) Background and Context, 2) Information Literacy, 3) Digital Literacy, 4) Media Literacy, 5) Broader literacy concepts, 6) Conclusion, and 7) References.

1 Background and Context

Information – Knowledge – Wisdom Continuum

Information has been defined in many different ways and is often considered within a framework that forms a continuum, beginning with signal and moving through data, information, knowledge to wisdom. This has been discussed by numerous writers over time, including by Jesús Lau in his review paper (Lau, J., 2010) and will not be explored further in this paper. The UNESCO Background Paper for the Experts Group Meeting (EGM) on Media and Information Literacy (MIL) Indicators – Formulation and Measurement, held in Bangkok, Thailand, 4 to 6 November 2010, to which this author contributed, discusses these distinctions in detail. Within this continuum, the ability of individuals to move successfully from information to knowledge, and then ideally to wisdom, depends in great part on the competencies that form what was originally referred to as information literacy.

2 Information Literacy

Information and Digital Literacy -- Historical Background

In 1974, Paul G. Zurkowski, then president of the Information Industry Association, first introduced the concept of information literacy referring to individuals with special competencies as “information literates”. He noted that:

“(…) people trained in the application of information resources to their work can be called information literates. They have learned techniques and skills for using the wide range of information tools as well as primary sources in molding information solutions to their problems.

The individuals in the remaining portion of the population, while literate in the sense that they can read and write, do not have a measure for the value of information, do not have an ability to mold information to their needs, and realistically must be considered to be information illiterates.” (Zurkowski, 1974, p. 6)

Drawing on his experience with many leaders in the information industry as well as with academics and not-for-profits, Zurkowski used the term “primary sources,” not print or even digital documents, to cover all types of sources, including person-to-person communication, documents (as later used by Buckland (Buckland, 1997) drawing on the work of Otlet), and certainly news and political media of all kinds. In addition, he used “information tools,” again a broad term, to encompass all types of tools from the human voice to print to emerging Information and Communication Technologies (ICTs). This broad definition challenges us to frame our concept of the new literacy in terms of competencies that cover all types of content and communication, including text, news/political media, art objects, music, collections of scientific data (such as the human genome project or satellite data), indigenous knowledge, etc. This broad framing also emphasizes the very important differences among types of content/communications, their context and situations, cultural differences, etc.

Zurkowski then called for the U.S. National Commission on Libraries and Information Science (NCLIS), for which his paper was prepared as part of its original National Program for Library and Information Services to make this a high priority, saying:

“The top priority of the Commission should be directed toward establishing a major national program to achieve universal information literacy by 1984.” (*Ibid.*, p. 27)

NCLIS did make this a majority priority and it was one of the major topics at the first White House Conference on Library and Information Services in 1979 and became part of its programs throughout much of the 1980s, when this author was its Executive Director from 1980-1986.

Also in the United States, the American Library Association began to focus on this area in the 1980s and in 1989, its Presidential Committee on Information Literacy stated:

“Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand.” (American Library Association, January 10, 1989)

Information Literacy received continued attention throughout the 1990s in many countries around the world, and the related area of Digital Literacy or Computer Literacy was raised as the Internet and later the Web introduced expanded the scope of the competencies needed for the Information Society as it was often called.

Importance of Information, Knowledge and Communication for Society

In preparing the Background Document for the November 2010 UNESCO meeting, the experts worked through several drafts to describe the importance of information, knowledge and communication to society. The final wording states:

Information and knowledge have always been critical resources for the survival of human beings and for ensuring sustainable development. Since the dawn of human civilization, in every sphere of human activities, the access to information, the creation and application of new knowledge, and the communication of such knowledge to others have contributed to the evolution of societies and the economic welfare of people. Information and knowledge of how to do things, how to communicate and how to work with other people has therefore been regarded, since ancient times, as the most precious 'wealth' that humans possess.

In the backdrop of major societal trends and their implications for the future, it is argued that knowledge and how it is communicated to others will play a central role in shaping economic growth, social development, cultural enrichment, political empowerment and democratic systems/institutions. Information, media and other means of communication (including media) are integral to democratic processes, to building communities and strengthening civil society. Individuals need to have access to content and people to meet their fundamental human needs, to communicate with others, and to continue to improve the quality of their lives. Media and Information are needed for life-long learning, community development, economic productivity, healthcare, and all aspects of social life. (UNESCO, *Op cit.*, p.5)

3 Digital Literacy

This term has been used, along with computer literacy and digital media literacy, in different ways over the past several decades. Most people in the information and media professions, and in the wider society, no longer separate these concepts. As far back as 1983, F. W. Horton, Jr. argued that:

"In short, information literacy goes beyond computer literacy, and updates the working level of knowledge of users on such machine-assisted tools and resources as: online databases; telecommunications services; electronic mail; (...) foreign information resources; alerting-early services (...) While computer literacy is a prerequisite to information literacy, it is no longer adequate." (Horton, 1983, p. 16)

It is also important to note that among different types of information resources, he included: all emergency (police, fire and ambulance) services, diabetes treatment centers, sermons, theatre, paintings, sculpture, legends, cinematography, and chronicles – many of would be included in media.

4 Media Literacy

Again drawing upon the work of the experts group for the Background Document for the Bangkok meeting, the group recognized that:

“A conclusive universal definition (of media literacy) proved unworkable – as it has done for more than 20 years.” (Study Assessment Criteria for Media Literacy Levels, 2009)

The Background Document also notes that:

“While that is the case, a large consortium of international actors now subscribe to a one-sentence definition similar to those adopted by the British regulatory agency, Ofcom, and by the European Commission. Ofcom’s definition of ML, created in response to ‘a wide-ranging stakeholder consultation in 2004,’ is: “the ability to access, understand and create communications in a variety of contexts.”

The European Commission’s definition of ML, articulated in its Communication on a European approach to media literacy in the digital environment, reads:

‘Media literacy is generally defined as the ability to access the media, to understand and to critically evaluate different aspects of the media and media contents and to create communications in a variety of contexts.’

Equally simply, UNESCO’s MIL Curriculum for Teachers outlines the components of ML as follows:

Media Literacy

- Understand the role and functions of media
 - Understand the conditions under which media fulfill their functions
 - Critically analyze and evaluate media content
 - Use of media for democratic participation, intercultural dialogue and learning
 - Produce user-generated content
- ICT and other media skills

(UNESCO, *Background Document*, p. 29)

It is critical to recognize that media as used here extends far beyond simply different formats. Media, such as broadcast news, journalism, films and theaters, and, more recently social media, such as blogs, tweets, Facebook, etc. require new competencies, especially related to evaluation. How an individual determines which news sources to trust, how to interpret different candidates’ positions, how to vote, and how to participate in civil society in all ways are all key issues related to Media Literacy.

5 Broader Literacy

It is this author's opinion that, instead of continuing to focus on the differences among specializations of types of literacies, we should be identifying the commonalities and building a broader framework – a “bigger umbrella”— to bring together the many different competencies needed to succeed in today's Knowledge Society. For example, in addition to important Media Literacy competencies, there is a growing need for Medical Literacy competencies. Some organizations, such as the Association of College and Research Libraries of the American Library Association, have developed many other specialized forms of literacy. (See, for example, Psychology information literacy standards, June 2010, *C&RL News*, October 2010)

Succeeding in the Knowledge Society will require life-long learning and increasingly competencies related to social networks, increasingly referred to as “living in The Cloud.” It is essential to focus on all of the competencies, not simply skills, and to address the knowledge, skills and attitudes.

In addition to the many resources available through UNESCO, such as F.W. Horton's Primer (Horton, *Understanding Information Literacy: A Primer* 2009), many other resources, such as Jarson's toolkit (Jarson, 2010) provide helpful aids for understanding and developing these competencies. Another useful resource is the [U.S.] National Forum for Information Literacy. (<http://infolit.org/>)

In 1997 at the First International Congress on Ethical, Legal and Societal Aspects of Digital Information,” sponsored by UNESCO and held in Monaco, 10-13 March, 1997, two papers addressed what they referred to as “Mediacy” in an attempt to bring together the many types of information, media and digital literacies. In one paper, the author (Carbo, 1997) noted that she used the term, “Mediacy,” as an umbrella for “the competencies needed to deal with the technologies, information content, and the different media. (...) It has a connotation of ‘immediacy’ – that very shortened ‘time cushion’ (...) between social and technological changes and their impact. It also brings to mind the notion of mediation, between one individual and another and between one person and information content; as well as the interaction between a person and various media and content. (...) It refers to the knowledge and skills needed to be successful in exploring information space; discovering, learning, finding, evaluating, analyzing, using, organizing, managing, preserving, synthesizing, and creating information; and particularly important is understanding the ethical implications of all of these and, ideally, behaving in an ethical way. Out of all of these should come new knowledge. This ongoing series of processes is very much dependent on and related to context, culture and tradition and to each individual uniquely. (...) There is no single set of knowledge and skills for everyone – no common answer or single ideal interface, whether human, print, or electronic. (...) Each medium, and the many new multimedia resources require different knowledge and skills.” (Carbo, 1997, p. 399)

At the same Congress, Hitoshi Inoue and his colleagues at the National Centre for Science Information Systems (NACSIS) in Japan also used the term, “mediacy” to address scope, definitions, and the importance of considering “multimedia handling in native languages and thus keep the cultural integrity of nations.” (Inoue et al., 1977, p. 413) They looked back at the results of UN International Literacy Year in 1990, reminding us of the fact that “Literacy requires a cultural context for its definition and measurement. (...) literacy and education have been political issues since Plato’s time.” (*Ibid.*, p. 404)

The term, “Mediacy,” is not one that this author or anyone else considers to be the best terminology. Many other terms, such as “Transliteracy” and “Metaliteracy,” have been proposed recently. Some argue that any “-literacy” term is too limited, because of its relationship to letters, as opposed to broader formats and to all aspects of media. Some terms, such as “Information Fluency” or “Information Proficiency,” have been also been used, but again some see the use of “Information” as too limiting.

The term, “Transliteracy,” was introduced in its plural form by Alan Liu (Liu, 2007) and is described by Thomas et al. as: Transliteracy is the ability to read, write and interact across a range of platforms, tools and media from signing and orality through handwriting, print, TV, radio and film, to digital social networks. (Thomas et al.)

Used at the 2009 75th IFLA General Conference (23-27 August 2009, Milan, Italy) and again recently by Ipri (Ipri, 2010) it is intended to be a “broad term encompassing and transcending many existing concepts (...) Transliteracy is such a new concept that its definition is still evolving. (...) [it] is concerned with mapping meaning across different media and not with developing particular literacies about various media.” (Ipri, p. 532) Ipri seems to be using “media” in the sense of different formats, but not the wider concepts included within Metaliteracy. The author does not refer to the IFLA presentation. Ipri does hint at wider concepts, such as those related to social and political understandings and networks of experts, so further writings by this author may clarify his views of the meaning of the term. The extensive work by IFLA, especially in its Information Literacy group, and others provides considerable research and thinking in this important area. The inclusion of experts from the education, media, publishing and other communities could help expand our understanding even further.

The term, “Metaliteracy,” as described by Mackey and Jacobson (Mackey and Jacobson, 2011) is used to reframe information literacy and provide a more “comprehensive framework based on essential information proficiencies and knowledge (...) [that] promotes critical thinking and collaboration in a digital age, providing a comprehensive framework to effectively participate in social media and online communities.” (*Ibid.*, p. 62)

The use of “meta” – from the Greek meaning after, beyond and encompassing – seems appropriate, because it implies that first one must master the fundamentals and then move beyond them. Mackey and Jacobson bring extensive knowledge and experience from the education community, providing an important perspective

beyond libraries, publishing or media. Metaliteracy comes full circle to the concepts introduced originally by Zurkowski and in “Mediacy” in 1997 and expands the context into social media and the civil society.

6 Conclusions

This brief historical overview of evolving definitions and frameworks of information literacy, digital/computer literacy, and media literacy into broader concepts is intended to provoke thinking about whether a new paradigm has emerged. Instead of looking at the many differences among the various perspectives of disciplines and specializations (such as LIS, communications, media studies, computer science, etc.) and the perceived uniqueness of each technology, format or individual need, this author contends that we are experiencing a true paradigm shift.

As always, we must ask the questions: “What are we really trying to understand?” and “What assumptions are we making that we need to challenge?”. It seems that what we really want to know is: How can we understand the needs and wants of individuals from different cultures and backgrounds and with different ways of thinking and knowing and then identify and learn the competencies needed to harness the most appropriate technologies to meet these needs and wants in an ethical way. This question requires that we understand what Renee Hobbs refers to as “‘key unifying principles’ of media literacy, based on the idea that messages are socially constructed ‘representations of the world.’” (Hobbs, 2004). This also requires a “higher order thinking required to engage with multiple document types through various media formats in collaborative environments. (...) Metaliteracy provides an integrated and all-inclusive core for engaging with individuals and ideas in digital information environments.” (Mackey and Jacobson, Op. cit., p. 69)

This new paradigm, with its broader perspective integrating the many different forms of literacy, is one that should be explored in much more depth across cultures and nations. Yes, it will continue to be important to define competencies and to develop indicators, but we must be certain that we expand our views and continue to focus on why we are doing this. In part, we want to understand better what is needed to thrive in this increasingly international and cross-cultural society. Beyond this, our emphasis must continue to be on the long-term goals articulated in the original U.N. Declaration of Human Rights and the World Summit on the Information Society, as well as more recent UNESCO documents. In creating and maintaining a civil society, and in helping to give people the “ability to mold information to their needs,” as Zurkowski urged more than 40 years ago, we need to consider these questions in international contexts. This suggests an important role for UNESCO in bringing together both experts and other individuals from different cultures, age groups and disciplines to shape a true Metaliteracy program to improve the quality of life for all.

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Media and Information Literacy in Russia and the countries of the Commonwealth of Independent States (CIS)

A survey undertaken on behalf of UNESCO's
Communication and Information Sector

A paper for UNESCO

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Executive summary

The relevance of media education and information literacy to citizens living in information societies: The transition to an information society is characterised by the rapid development of telecommunication systems and Information Communication Technologies (ICTs), as well as the creation of a new, high-quality information environment. More and more people are interacting with information, not only as passive users but also as producers of information resources and services. An information society is strongly associated with ‘high technologies’. In such societies, as the demand for knowledge increases, people are required to be creative.

An information society, whose main characteristic is ICTs, gives rise to unprecedented opportunities for accessing information and knowledge, allowing every person to realise his/her potential and improve his/her quality of life. At the same time, the information society brings a number of risks and dangers. In situations where a large volume of information is available, navigating, receiving and processing the necessary information become increasingly difficult. The power of modern information technologies may trigger the danger of manipulating human consciousness and behaviour and may threaten to dehumanise their users. Therefore, the need to solve global problems, such as preparing individuals for the new conditions of life and professional endeavours in a highly automated information environment, by teaching them how to effectively use the opportunities that arise from this environment and how to protect themselves from its negative influences, is increasingly recognised.

Terminology and concepts: Such concepts as ‘information literacy’, and ‘working with information’ do not have clear definitions. They comprise a large spectrum of knowledge and know-how in the areas of information and technology that facilitate individual’s work in the same area. Thus, we can highlight two main fields:

1. Information skills training, whose definition comprises concepts such as library and bibliographic literacy, library- and bibliography-related knowledge, the culture of reading, information literacy, information culture, personal information culture, information competence, computer literacy, Internet literacy, ICT literacy and so on. The current survey refers to this field as information literacy;
2. Media education, whose essence reflects concepts such as screen culture, visual culture, video culture, cinema and video culture, visual literacy, audiovisual literacy, media literacy, media competence, media culture, culture of media perception, etc. The survey refers to this field as media education.

Survey timeframe: The survey analysed Russian publications on media education and information literacy issued between 1990 and 2010, as well as the most significant studies undertaken prior to 1990 and important analytical publications released in 2011.

Regional focus of the survey and sources of information: The survey was largely based on the analysis of Russian scientific publications. However, given the historic links between the cultures of the Commonwealth of Independent States (CIS), writers living and working in the different CIS countries publish their research findings and experiences in Russian scientific journals and document compilations from scientific conferences. In addition, some CIS countries, especially Ukraine and Belarus, issue publications in Russian. Therefore, this survey took into consideration and analysed works of Ukrainian scientists and researchers (Asherov & Bogdanova 2008, Vinarik & Schedrin 1999, Medvedeva 1997, Semenyuk 2009, Semenyuk 1994, Semenyuk 1998), Ukrainian library practitioners (Babich 1999, Bazilenko 2007, Bazilenko, Popova & Novizkaya 2007, Dzyuba 2001, Dzyuba & Kobzarenko 2001, Drigajlo 2011, Kostishin 1997, Sadova 2005, Seitosmanov 2010, Tarasova 2007, Timchenko 2003, Trachuk 2010, Shevchenko 2004, Schukina 2003, Schukina 2006), Belarusian experts (Akulich & Klimenkova 2009, Akulich, Mityuhina & Ushakova 2010, Strelkova 2009), as well as librarians from Kirgizstan (Yusupova 2010), Moldova (Bezhan 2005) and Uzbekistan (Rahmatullaev 2005).

As libraries in CIS maintain century-old professional ties among themselves, the survey looked at the active library associations operating in the region at the national level (<http://sng.rsl.ru/index.php?f=36>) and examined the journal 'Bulletin of Library Assembly in Eurasia' (<http://www.rsl.ru/ru/s3/s17/s232/d992/>). These sources provided insights into the role of libraries in ensuring citizen's information literacy.

An important source of information was the analytical review 'CIS on the way towards Open Education Resources' (UNESCO IITE 2011), published in 2011 by the UNESCO Institute for Information Technologies in Education. The review reflects the level of computerisation of education and the distinctive trends in the development of electronic resources for educational purposes in nine CIS countries, namely Azerbaijan, Armenia, Kyrgyzstan, Belarus, Kazakhstan, Uzbekistan, Moldova, Russia and Ukraine. This review also provides valuable information on the challenges to information literacy in these countries.

There are no rigorous studies summarising the state of media education in CIS countries undertaken in the Russian language. The only reference available is an article that compares media education in Russia and Ukraine (Fyodorov 2009).

In several of his publications, A.V. Fedorov (Fyodorov 2009) presents findings from his analysis of dissertations on media education covering the period between 1960 and 2008. These publications (i) identify models, theories and problems pertaining to media education dominating the Russian academic research, (ii) analyse the media material being used, (iii) state the correlation between types of media education (autonomous or integrated), (iv) examine the types of institutions used as an experimental base, (v) establish age groups of the media audience studied by dissertations, and (vi) define the geographical focus.

Unlike media education, no analysis or data synthesis of dissertations on information literacy has ever been conducted in Russia or other CIS countries. Similarly, no comparative analysis between dissertations on information literacy and media

education has been carried out. The findings from the comparative analysis are presented in the current survey for the first time.

Analysed Literature

- Reference books that contain definitions of basic concepts in the field of information literacy and media education;
- Abstracts of doctoral dissertations and master's thesis on media education and information literacy in Russia defended between 1990 and 2010;
- Scientific and academic publications (books) on information literacy and media education published in the Russian language between 1990 and 2010;
- Journal articles (library- and information-related, psycho-pedagogical, philosophical, cultural, sociological and other) and anthologies on information literacy and media education;
- Documentation from conferences on information literacy and media education;
- Electronic resources on information literacy and media education in the Russian language.

The Purpose of the current survey: The purpose of the survey is to analyse the state of information literacy and media education in Russia and CIS countries, highlighting their similarities and differences. The current survey was commissioned by UNESCO's Information and Communication Sector and is based on a research study undertaken for this purpose. During the review, it became clear that the analysis and synthesis of the numerous publications on information literacy pertinent to various knowledge fields such as library science, bibliography, computer science, pedagogy, psychology and others have not previously been conducted in either Russia or any other CIS country. It was thus undertaken for the first time.

In the field of media education on the other hand, the theory and practice in media education, and the history and experience of media education of the Russian and other CIS countries' citizens have been covered in several monographs and articles. The leading works in this field are those of the President of the Russian Association for Film and Media, Professor Alexander Fyodorov. The current survey makes use of the findings and conclusions from the overall research undertaken in the sphere of media education (Rahmatullaev 2005, Terminological Dictionary 1995, Fyodorov 2009, Fyodorov 2001).

1 Methodology and Survey Tools

A wide range of approaches have been used to analyse the status of information literacy and media education, including systematic and historical methods, structural and functional, technical (process-oriented), pragmatic, typological and cultural. The

integrated use of these methodological approaches aims at providing (a) a consolidated knowledge on information literacy and media education, which is widely dispersed throughout various scientific publications from different fields, and (b) a synthesis of segmental empirical data describing the work of academic institutions and libraries in Russia and the CIS countries in defining media and information literacy. The survey used the following approaches:

- Content analysis of publications titles – to identify the most commonly and frequently used terminology in the fields of information literacy and media education;
- Terminological analysis of definitions – to describe the conceptual and terminological framework in the field of information literacy and media education and to identify the essence of basic concepts such as ‘media literacy’, ‘information literacy’, ‘media culture’, ‘information culture’, ‘media competence’ and ‘information competence’;
- Quantitative analysis of publications in the Russian language on information literacy and media education issued between 1990 and 2010 – to determine the extent of available knowledge and the level of data integration; identify the leading research centres, the leading scholars and the major schools in Russia and the CIS countries; and to analyse the dynamics and trends of public interest in issues of media literacy and information literacy;
- Formal/aspect analysis of publications – to identify the most important aspects characterising the status of information literacy and media education, considering different groups such as students (whether preschool children, school children, students, professionals, blind users, etc.), the type of academic institution or library, teaching strategies (whether through discussions, tutorials, excursions, projects, etc.), conditions and training facilities (i.e. computer rooms, library reading rooms, Internet resources on a particular topic, clips from films or TV shows, etc.), the courses within which media and information literacy are taught and the subject matter of developed lessons (whether lectures, discussions, etc.);
- The semantic analysis of the publications – to identify similarities and differences between the concepts of ‘media literacy’ and ‘information literacy’; determine similarities and differences in the work of the academic institutions and libraries in Russia related to information literacy and media education; and to determine, with the aim to assess, the possibility or impossibility of merging the concepts of ‘media literacy’ and ‘information literacy’ into one;
- Expert evaluation – to identify and evaluate the leading research institutions and scholars in Russia and CIS countries in the fields of information literacy and media education.

2 Outcomes of the Survey

The main goal addressed by the researcher in the current survey was to observe the main trends in the development of information literacy and media education in Russia and CIS countries in the past 20 years. In order to achieve this it was necessary to find, analyse and synthesise the segmental information on information literacy with a view to, later on, compare it with the data on media education.

Table 1 presents the quantitative data on the vast array of analysed publications in the Russian language pertinent to media education and information literacy covering the period 1990-2010.

Table 1: Classification of Analysed Publications by Subject and Type

Subject Area	Type of Publication		
	Dissertations	Books	Articles
Information Literacy	319	130	366
Media Education	149	74	202
Total number of publications by type	468	204	568
GRAND TOTAL			1,240

The review gave due consideration to the analysis of professional periodicals. A total of 140 Russian periodicals related to library/information and pedagogy were analysed, of which 568 articles on information literacy and media education were selected.

A valuable source of information, outlining the contribution of libraries and academic institutions of CIS countries in the development of people's information literacy and media education, were the proceedings from the annual international conferences 'Crimea' for the period 1994-2011, which published 87 reports on this subject.

The results from the qualitative work undertaken during the review of publications related to information literacy and media education issued in the last 20 years (i.e. 1990 – 2010), are reflected in the numerous tables that have not been included in the current survey, given size constraints. Therefore, only a list of publications is provided below to indicate the extent of the review:

- A range of Russian periodicals comprising articles on information literacy and media education;
- An index of terminologies pertinent to information literacy and media education in Russian directories;

- A range of dissertations on topics related to information literacy and media education (sorted by academic disciplines);
- A list of Russian cities with research and education institutions undertaking studies related to information literacy and media education, sorted by the total number of dissertations produced;
- Doctoral dissertations on information literacy and media education undertaken in Russia between 1990 and 2010;
- Doctoral and master's level dissertations on information literacy and media education undertaken in Russia between 1990 and 2010;
- Books on information literacy and media education published in Russia between 1990 and 2010;
- Conference documents on information literacy and media education;
- Reports on information literacy and media education presented at the international conferences 'Crimea' (Sudak, The Autonomous Republic of Crimea, Ukraine, 1994-2011);
- Performance reviews of the Russian scientific academia regarding the 'formation of the personal information culture' and 'media education, media competence and media pedagogics'.

3 Interpretation of the Survey Results

3.1 The Evolution of Information Literacy and Media Education in Russia and CIS Countries through Terminological and Conceptual Lenses: A Historical Dimension

Between 1976 and 2010, the Soviet, and later Russian, reference guides recorded a substantially diverse terminology characterising information literacy: 'library and bibliographic literacy' (Gendina, 2002, p. 18), the 'culture of reading' (Kodzhaspirova, 2000, p. 70), 'advocacy of library- and bibliography-related knowledge and information knowledge' (Terminological Dictionary, 1995, p. 151), 'computer literacy' (Kodzhaspirova, 2005, p. 57).

The most widely used, all-inclusive terminologies in the domain of information literacy are 'information culture' and 'personal information culture', which are closely linked to the fostering of the information society.

Information Culture, a component of common culture, which comprises knowledge, skills and norms established in the field of information management, enabling consumers to freely navigate the information space, and to find and use the necessary data (documents) regardless of their location. The newfound public awareness built on the individual consumption and production of data as a distinct and relatively independent aspect of culture became possible as a result of an

information approach to the knowledge of reality and the development of ideas about the information society (Encyclopedia of Library Science, 2007, p. 417).

‘Personal Information Culture, an integral part of collective human culture, and refers to the totality of information outlooks as well as knowledge and know-how systems, which provide, through the use of both traditional and new technologies, motivated self-employed individuals with the optimal satisfaction of their individual information needs. Personal information culture is a critical factor in the success of both professional and non-professional activities, as well as the social protection of the individual in the information society’ (Gendina, 2003; Gendina, 2008; Gendina, 2006).

The survey shows that such terminology as ‘information culture’ and its derivatives (‘personal information culture’, ‘people’s information culture’), are widely used and are part of the vocabulary of librarianship and library science, information and computer science, economics, culture studies and pedagogy, including social pedagogy.

The limited use of the term ‘information literacy’ in the Russian-language literature is mainly due to the psycholinguistic factors. In the Russian language the term ‘literacy’, which refers to the ability to read and write, is only associated with the most simple, basic level of education. Therefore, the term ‘information literacy’ unintentionally simplifies and reduces the complex phenomenon of human interaction with information. In the Russian language publications, this phenomenon is often referred to as ‘information culture’.

The term ‘information culture’ is frequently utilised in the Russian language literature that is published in the CIS countries. This is evident from the content analysis of titles of publications and reports prepared in the CIS and presented by their respective writers at the international conference ‘Crimea’ (Sudak, The Autonomous Republic of Crimea, Ukraine, 1994-2011). The results of the analysis are presented in Table 2.

Table 2: Distribution of publications and reports based on keywords used in titles

Keywords	Dissertations		Books		Articles		Reports from the 'Crimea' Conference	
	No.	%	No.	%	No.	%	No.	%
Information culture	184	57.7	102	78.5	178	48.7	48	78.7
Information competence	121	38.0	20	15.4	20	5.5		
Information skills training	10	3.1	5	3.8				
Information literacy	4	1.2	3	2.3	28	7.6	13	21.3
Library and bibliography –related expertise					28	7.6		
ICT and Internet					37	10.1		
Culture of reading					26	7.1		
Other (synonymous terms)					49	13.4		
TOTAL	319	100	130	100	366	100	61	100

Thus, the term that is more widely utilised in the Russian language literature is 'information culture' rather than 'information literacy', which has become more common in the Anglophone literature. Moreover, while outside the region the concept of personal information literacy is more widely spread, in Russia and CIS countries it is the concept of the formation of the personal information culture.

Similar to the differentiation in terminology within the framework of information literacy and the various related fields (such as library- and bibliography-related literacy, the culture of reading, computer literacy and so on), there is a differentiation in terminology use in the sphere of media culture. The Dictionary on Audiovisual Culture (Hilko, 2000) defines concepts such as video culture, audiovisual literacy, visual culture, the culture of sign media, photographic culture, screen culture (the culture of cinema and video), media culture and others.

The Dictionary on Media Education, Media Pedagogy, Media Literacy and Media Competence (Fyodorov, 2010), defines the main concepts in the sphere of media

education and includes terminology of general nature. The most important are as follows:

Media Literacy refers to the ability to analyse and synthesise the spatial-temporal reality and the ability to 'read' media texts, which result from media education (Fyodorov, 2010, p. 24).

Media text or media construct refers to the information, presented in any form or genre of media, (newspaper articles, TV shows, video clips, films, etc.) (Fyodorov, 2010, p. 28).

Personal Media competence refers to the aggregate of a person's motives, knowledge, skills, and abilities (the indicators being motivation, impact, information, perception, interpretation/evaluation, practice/operation/pragmatism, creativity) facilitating the selection, use, critical analysis, assessment, creation and transfer of media texts presented in a variety of forms and genres as well as the analysis of complex processes of media's role in the society (Fyodorov, 2010, p. 24).

Media culture refers to the aggregate material and intellectual values in the field of media, as well as to the historically determined system of how these values reproduce and function in the society. With regards to the audience, 'media culture' can be understood as a system of stages of personal development, and the ability to perceive, analyse, assess a media text, as well as engage in media arts, and learn new skills in the field of media (Fyodorov, 2010, p. 25).

The terminology describing media education (such as visual literacy, screen culture, media literacy and media competence) is primarily used in the sphere of pedagogy and education, and partly in communication studies.

The change in terminology in the field of information literacy is linked to the evolution of the very elements of information literacy observed at the end of the 20th – beginning of the 21st centuries, which shifted from mastering the techniques of working with books, learning the use of library catalogues and card files, developing orientation skills in information resources and rules for using information retrieval systems, to the mastering of the PC, information retrieval algorithms on the Internet, and the ability to create one's own multimedia information products.

The conceptual and terminological framework in the personal information literacy reflects the evolution of the information sources and data carriers, the development of information technology, as well as the change in educational paradigm that occurred in the process of the formation of an information society.

Terminology in the field of information literacy is developed from the derivatives of terms such as 'culture', 'literacy', 'media', and 'competence'. The terms derived from the word 'literacy' (library- and bibliography-related, computer, network, media, etc.) have a specific characteristic, represent a fairly clear set of knowledge and skills, and convey a clear, practical meaning. The terms that derive from the word 'culture' (information, library, bibliographic, computer, network, media, etc.) are related to the field of culture and people's spirituality. They do not have a pronounced utilitarian nature, and their meaning cannot be reduced to or exhausted by a listing of knowledge and skills. In the past ten years, the term 'competence' has been

frequently used within the conceptual and terminological apparatus of information literacy and media education. The reason for this is the modernization, in the context of the Bologna process, of education in the CIS countries and the wide use of the competence-based approach. The terms such as ‘information competence’ and ‘media competence’ are action oriented and reflect the active nature of information knowledge and skills acquired by individuals, as well as the willingness and ability to actually and promptly use and apply them.

3.2 The Theoretical Framework of Information Literacy and Media Education

Information literacy and media education have a fairly strong theoretical base in the Russian Federation. In many Russian cities, research is conducted in these fields, a number of specialised books and periodicals (both in traditional and electronic formats) are published, dissertations are defended and a number of scientific conferences are held.

Table 3 gives a general overview on the number of information literacy and media education dissertations defended in Russia between 1990 and 2010.

Table 3: Distribution of Dissertations on Information Literacy and Media Education, by Subject area and Degree level (1990-2010)

Subject Area	Number of dissertations		
	Doctoral	Master’s	Total
Information literacy	15	304	319
Media education	29	120	149
Total	44	424	468

In Russia overall, it is the field of pedagogy that focuses on the development of the fields of information literacy and media education. In the last 20 years more dissertations related to information literacy (68.2%) have been defended compared to the number of dissertations focusing on media education (31.8%).

The significant number of scientific conferences devoted specifically to information literacy and media education is proof that scientists and experts give attention to these issues.

Between 1993 and 2011 more than 30 international, national and regional conferences on information literacy were held in Russia and CIS countries, producing compilations of reports (articles). These conferences were hosted in Krasnodar, Sudak, Moscow, Kemerovo, Novokuznetsk, Samara, St. Petersburg, Perm, Omsk and Novosibirsk.

In the area of media education, more than 20 international, national and regional conferences were held in Russia between 2002 and 2011. These were hosted in

Moscow, Belgorod, Tomsk, Yekaterinburg, Taganrog, Magnitogorsk, Kemerovo and Omsk. Moscow hosted the greatest number of conferences on media education, amounting to 7 events.

The survey analysis indicated that unfortunately, issues related to information literacy and media education have been generally examined in isolation, independently of each other at the national, regional and international fora in Russia and the CIS countries. The analysis further indicated that only a few attempts were made to jointly address information literacy and media education, mainly at the regional and city levels.

Between 1990 and 2010 some 322 articles were published on information literacy in 111 periodicals in Russia. The most prolific were library periodicals, such as 'The Library in the School' newspaper and the magazines 'Bibliography', 'Scientific and Technical Libraries', 'Library', 'School Library', 'Library Science', 'The Bibliography World'. 50.6% of the articles were published in the above mentioned periodicals. Overall, issues related to information literacy are more widely covered by library- and information-related periodicals, rather than pedagogical magazines. In contrast to information literacy, which has 'scattered' coverage throughout a large number of periodicals, topics related to media education are covered by three specialised magazines. These are 'Media Education' (printable and electronic versions can be found at <http://www.mediagram.ru/mediaed/journal/>), 'Mediatheque and the World' (<http://edu.of.ru/medialibrary>), and 'Education, Media and Society: The Space for Cooperation' (<http://www.omo-ps.ru/>). Of the 20 periodicals published between 1990 and 2010, some 202 articles were on media education. 67.3% of these were published in one of the three specialised periodicals.

The review of defended doctoral theses, the analysis of the stability and productivity of the theoretical and experimental work of various researches as reflected in the examined publications, the use of peer review approach as presented in the reviews on information literacy and media education provided the basis for identifying two academic centres in Russia making a significant contribution to the development of information literacy and media education. These are the 'Media education and Media competence' school, led by the President of the Russian Association for Film and Media Education, Professor A. V. Fyodorov, of the Anton Chekov Taganrog State Pedagogical Institute, and the 'Formation of personal information culture' school, headed by Professor N. I. Gendina, of the Science Research Institute for Information Technologies in the Social Spheres at the Kemerovo State University of Culture and Arts.

Overall, the analysis of information literacy and media education theories developed in Russia over the past 20 years, indicates a pronounced trend toward integrating and synthesising the scattered studies undertaken in each field. Thus, to overcome the fragmentation and the knowledge silos in the field of information, presented both in its traditional and electronic forms, finding a coherent and complete picture about effective ways of solving information-related problems became possible with the development of a new, integrated approach to prepare citizens for a life in the information society. This is known as the information culture. At the same time, information culture is a wider concept comprising all of the above notions, as its

integral parts, and forming in essence a new, integrated field rather than representing the sum total of its components (Gendina, 2006).

A similar trend is observed in the field of media education. ‘... Over many years academicians from different fields carried out research on national media education in a nonintegrated manner. Media education specialists cultivated various trends in their field, including film education, integrated media education, media education on the press material, photography, radio, television and video, advertising, music and computer systems. Between 1990 and 2000 due to the activities of the Russian Association for Film and Media Education, scientific research in the field of media education intensified, and the efforts of theoreticians and practitioners of media education became more organised and focused’ (Fyodorov, 2009, p. 4).

3.3 The Practice of Information Literacy and Media Education in Russia and CIS countries

As established from the documents adopted at the national level, despite the significant heterogeneity in ICT infrastructure, and the uneven development of information technologies and telecommunication coverage, all CIS countries are aware of the role of informatisation and ICTs for the innovation driven development of the economy and the society as a whole (UNESCO IITE, 2011). Serious consideration is being given to the informatisation of the society as a whole and the education systems in CIS countries; however, no normative legal acts specifically addressing citizens’ information literacy and media education have been adopted by governments.

A detailed analysis of the report on the informatisation of the education system and the open education resources in the CIS countries (UNESCO IITE, 2011) showed that computer literacy is a prerequisite for the introduction of ICTs in the education system in all CIS countries. Terms such as ‘information culture’ and ‘information literacy’ are not utilised. The only exception in the report is the section on Armenia, in which it identifies the ‘low level of development of the information culture and the informatization of the education system’ as one of the factors impeding the effective informatisation of education as well as dissemination of the open education resources.

Therefore, a technocratic approach to information literacy is observed in the education system of the CIS countries, and is limited to only having computer skills and ICT basics.

In practice, however, the information literacy of the citizens in CIS is much richer and does not come down only to the notion of eliminating computer illiteracy. This is clearly demonstrated by the experience of not only Russia, but also countries such as Kyrgyzstan (Yusupova, 2010), Belarus (Akulich & Klimenkova 2009, Akulich, Mityuhina & Ushakova 2010, Strelkova 2009), Ukraine (Asherov & Bogdanova 2008, Babich 1999, Bazilenko 2007, Vinarik & Schedrin 1999, Dzyuba & Kobzarenko 2001, Drigajlo 2011, Kostishin 1997, Medvedeva 1997, Sadova 2005, Seitosmanov 2010, Semenyuk 2009, Semenyuk 1994, Semenyuk 1998, Tarasova 2007,

Timchenko 2003, Trachuk 2010, Shevchenko 2004, Schukina 2003, Schukina 2006), Moldova (Bezhan 2005) and Uzbekistan (Rahmatullaev 2005).

For historical reasons, the CIS countries have some commonality, i.e. similar education systems and similar pedagogical traditions, as well as common library operation principles due to the single education and library systems that existed in the USSR. This is manifested in the fact that information literacy and media education in Russia and other CIS countries fall under the responsibilities of two social institutions, i.e. academic institutions and libraries. Nonetheless, while information literacy is pursued by both the academic institutions and the libraries, media education is mainly undertaken by academic institutions.

Academic institutions in Russia and the CIS countries ensure that the citizens receive information skills trainings. Comprehensive schools offer courses such as the 'Fundamentals of Informatics and Computer Science'. Specialised secondary and higher education institutions, through courses such as the 'Fundamentals of Computer Science' and a number of similar training courses such as 'Information Technology', 'Computer Technology', 'Programming', 'New Information Technologies and Computer Engineering', etc., are designed to eliminate computer illiteracy and teach about the use of a personal computer. However, these disciplines do not aim at building the skills and experiences of the prospective experts in the information array, or equipping them with analytic-synthetic abilities to process information and with the know-how to independently prepare information products within their fields of study.

Contrary to information literacy, media education is not compulsory, but optional, in the education system. Media education programmes are offered as extended activities, in addition to being available in comprehensive schools. At the levels of tertiary education, in 2002 Russia introduced 'Media Education' departments in tertiary institutions from which experts in media education have been graduating.

It can be observed that the education system in the CIS countries has a mainly technocratic approach and that information-related education is largely focused on teaching computer science at the expense of more complex intellectual (cognitive) skills associated with searching, processing, understanding and critically analysing information. In practice however, the level of information literacy of people in the CIS countries is much higher and does not only address the elimination of computer illiteracy. The libraries play a significant role in raising information awareness through library classes, library excursions, book exhibitions, 'Information Days', publications of bibliographic indexes, etc. Following the introduction of courses such as 'The Fundamentals of Personal Information Culture', 'The School of Information Culture', etc., in recent years, the libraries have adopted a systematic approach to information training.

A significant contribution to the promotion of ideas of information literacy and information culture in Russia and CIS countries is the work conducted by the Russian Committee of UNESCO 'Information for All' Programme, chaired by E. I. Kuzmin. Mr. Kuzmin coordinates the activities of the Russian academic, library – and information-related institutions, research teams and individual researchers in the

field of information literacy, by thus (a) promoting one of the most important priorities of 'Information for All' Programme, i.e. information literacy, and (b) developing national traditions in the formation of the personal information culture. The major focal areas of his contribution in this field are managerial, information – and publishing-related and educational.

3.4 A Comparative Analysis of Information Literacy and Media Education

The comparative analysis of information literacy and media education identified similarities and differences between the two. Common elements between information literacy and media education are – the notions of the information society and the great variety of the existing information resources, the acquisition of algorithms for information retrieval, the mastering of the methods of analytic-synthetic processing of information sources, and mastering technology for the preparation of various information products.

The differences between information literacy and media education lie in the specific nature of learning materials. In fact, information literacy is predominantly linked to the various types of documentary information resources in both traditional and electronic form, as well as the peculiarities of their search mechanism, and analytical and synthetic processing, based on which, information products are prepared. Media education is based on specific materials, i.e. media texts (such as movies, TV shows, etc) that require specific methods of analysis – content analysis, structural, plot, autobiographical, iconographic, semiotic, identification, ideological, philosophical, aesthetic, ethical, motivation, cultivation, hermeneutic analysis, analysis of media stereotypes, story characters and others (Fyodorov, 2010).

Instruction in both information skill training and media education can only be provided by trained personnel, such as instructors or librarians.

A common element characterising the information competence of a modern individual, including media competence, is computer literacy and ICT skills.

Further development of both information and media education in Russia and the CIS countries requires addressing the issue of teachers' training so as to enable instructors to teach, on a professional basis, different groups of people.

4 Problems and Prospects for Information Literacy and Media Education in Russia and the CIS

The review of the numerous publications, reflecting on the current situation of information education in Russia and the CIS countries, with the aim to learn and consolidate the experience of academic institutions and libraries in information literacy and media education, identified an array of the most severe problems.

- (1) The lack of an overarching integrated public concept of information and media education for all educational levels in the CIS countries. As a result, information literacy is mainly linked to the eradication of information illiteracy and the mastering of computer skills and abilities to work with a PC. More

- integrated courses such as 'The Basics of Personal Information Culture', 'The Basics of Expert's Information Culture', and the 'Fundamentals of Media Culture' are not compulsory in primary, secondary and higher vocational education.
- (II) Duplication and lack of coordination in the work of libraries and academic institutions in information literacy and media education at the national level. Each of these social institutions operates in isolation, i.e. the libraries do not take into account the demands for knowledge and skills to work with information, as contained in the curriculum of the academic institutions; and the academic institutions do not rely on the capacities of the libraries. As a result, due to the violation of integrity, continuity and of the principle of differentiated approach to learning, in addition to its duplication, the quality of information literacy amongst students is affected.
 - (III) A shortage of qualified instructors and library/information specialists in the area of information and media education.
 - (IV) Unequal levels of infrastructure development in the different regions of Russia and the CIS countries, including the variations in availability of PCs and high-speed Internet connections in libraries and academic institutions, as well as the lack of adequate information resources for information and media education.

Barriers hampering the development of information literacy and media education are:

- The lack of a unified approach to the understanding of information literacy and media education. Information literacy in the CIS is associated with computer and ICT literacy not only at the public level but also at the level of the ministries of education. There is ambiguity in the interpretation of the concept 'personal information culture', a wide terminological disagreement that reduces the effectiveness of the work of the representatives of the various academic fields of information literacy;
- The spontaneous, facultative, nonmandatory nature of information literacy and media education undertaken by libraries;
- The lack of centers coordinating the efforts of a number of field experts seeking to develop information literacy and media education in CIS countries;
- The shortage of modern educational publications, including electronic textbooks, necessary for information and media education.

The major concerns in the development of information literacy and media education in the CIS are:

- The need to develop national and regional priority programs in information literacy and media education;

- The need to develop national standards for information and media literacy (information culture).

5 Conclusion

The survey undertaken suggests that the challenges related to people's information literacy and media education are part of the large-scale social problems associated with the countries' shift towards information societies.

Both information literacy and media education are based on a fairly strong theoretical framework: in many cities in Russia and the CIS countries research is conducted, specialised periodicals (both traditional and electronic) are published, dissertations defended, and scientific conferences held.

Information literacy and media education in Russia and the CIS lie within the responsibilities of two social institutions, i.e. academic institutions and libraries. Nevertheless, while both the academic institutions and the libraries pursue information literacy, media education is mainly pursued by the academic institutions. Unlike information literacy, media education is not mandatory in the basic education system, and is thus optional. In addition to it being offered by the comprehensive schools, media education programs are undertaken as extended activities. At the tertiary level in Russia, experts in media education are being formed nationally since 2002 due to the introduction of the specialisation on 'Media education' in universities.

Historically, one of the first social institutions raising people's information literacy is the library. With a diverse array of information sources at their disposal, traditionally, libraries taught people how to search and work with different kinds of information, mainly documents. In recent years, the 'promotion of library-related, bibliographic and information knowledge' was replaced by the 'formation of personal information culture', yet the terminology 'information literacy', which is widely used in the English literature, is rarely used in Russia and the CIS countries. The alternative to this terminology is 'personal information culture'. The approaches to information literacy, both in theory and practice that are observed in Russia and the CIS countries are fully compatible with the international ones. The differences between the concept of the formation of personal information culture developed in Russia and CIS and the international concept of information literacy are not of a fundamental nature. They merely reflect the aspiration of the researchers and practitioners from CIS to marry the international theory and practice with traditional and national culture, education, and the experiences gained from libraries and academic institutions.

The comparison between the subject matter of information literacy and media education made it possible to identify similarities and differences between them. The common aspects of information literacy and media education, which are understood as an integrated body of knowledge, skills and experiences and as the willingness to use them in real life, are (a) the understanding about the information society and the variety of the existing information resources; (b) the acquisition of algorithms for

information retrieval; (c) the mastering of analytic-synthetic methods for the processing of information sources; (d) the mastering of technology for developing various information products. A fundamental trait that characterises the information competence of a modern individual, including media competence, is computer literacy and ICT skills.

The differences between information literacy and media education are based on the specificity of the subjects in which training takes place. In fact, information literacy is primarily related to various types of documental information resources, both in traditional as well as electronic forms. Media education is based on specific subject matter, i.e. media texts that require special analysis techniques in order to work with them.

The survey shows that in Russia and the CIS countries information literacy and media education develop in silos, hardly interacting with one another. This is proven by the analysis of a number of theses, monographs, articles and conference papers reflecting the theory and practice of information and media literacy. Therefore, the possibility of convergence between information and media literacy in the near future is rather low in Russia and CIS countries.

The analysis conducted suggests that the understanding of information literacy at the level of the ministries of education in the CIS countries is rather narrow. It is believed that it can be attained primarily through the elimination of computer illiteracy and the mastering of ICT basics. The concepts and principles of information literacy and media education are still not widely known, and the potential of activities in fields such as the development of information and media literacy, and the formation of personal information culture remain undervalued and underused.

The development of information literacy and media education is constrained by the following factors in Russia and CIS countries:

- Lack of a legal framework regulating and monitoring the development of information literacy and media education;
- Low awareness amongst the public, leaders of education line ministries (officials), leaders of academic institutions, teachers and instructors on the benefits and opportunities of information literacy in its broadest sense, which cannot be limited only to computer literacy, in order to improve knowledge and quality of education;
- Lack of specific programmes (projects) directed at developing information literacy and media education. National ICT programmes are primarily oriented towards developing technical infrastructure, without usually taking into account the human and intellectual (cognitive) aspects in the field of information literacy and media education;
- Lack of instructors and library staff possessing the technical skills to train in information and media literacy and personal information culture and capable of training on professional basis various groups of citizens in information literacy and media education;

- Lack of motivation and encouragement mechanisms for teachers, instructors and librarians who develop and introduce into the academic system teaching materials on information and media literacy and formation of personal information culture, which require a lot of time and intellectual investment.

The development of information literacy and media education requires addressing the problems associated with the need to coordinate the education on information at national level and to transition from spontaneous work of individual enthusiasts (teachers and librarians) to focused and systematic activities. The creation and development of the electronic information resources in Russian on information and media literacy and the formation of personal information culture in the CIS countries as well as the distribution of these resources on CD-ROMs or in a form of digital libraries accessible to a wide range of users through the Internet can contribute to solving this problem. The building of such an electronic information resource is very important for all the members of the Commonwealth who are sharing common education and library traditions.

To ensure the development of information literacy and media education in the CIS countries, efforts are needed not only from the governments but also from the professional associations of educators and librarians. These include taking strategic decisions at national level, as well as supporting administratively academic institutions and proactive instructors and librarians.

The development of information and media literacy and the formation of the personal information culture can play an important role in the education systems of the CIS countries, which have undergone significant changes in the past years due to the informatisation and introduction of ICTs as well as the development of an integrated electronic informational and educational space. The intensive development of ICTs, as one of the priorities of government policy of the CIS countries in the field of education, can positively assess the prospects of information literacy and media education. Information literacy is a basic skill in the contemporary world. Therefore, the development of information and education literacy and the formation of the personal information culture are essential elements of the modern electronic learning environment that provides fundamentally new conditions of access to quality education and equal rights to lifetime education for all, regardless of the distance and place of residence.

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