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Организация  
Объединенных Наций по  
вопросам образования,  
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联合国教育、  
科学及文化组织

## **UNESCO Information Literacy Indicators: Validation Report**

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February 2010

## SUMMARY

This report examines the potential for identifying indicators of information literacy by the secondary analysis of existing household surveys and provides advice for consideration by UNESCO on options for the development of indicators of information literacy. This study was proposed by Catts and Lau (2008) to investigate whether secondary analysis of existing survey data was a cost effective means of developing Information Literacy indicators. An expert panel was convened by the UNESCO Institute of Statistics (UIS) in November 2009 to consider the content validity of selected questions that were identified as potentially indicating information literacy from representative household surveys. The unanimous view of the panel members was that while some elements of information literacy were evident in available survey items, essential elements of information literacy are not addressed by existing surveys which were not designed to encompass information literacy. The expert panel has also recommended options for the development of information literacy indicators.

The workshop was conducted at UIS Montreal over two days in November 2009 and the analysis was made by a panel of four experts in adult education and information literacy. The activities were facilitated by UIS staff and coordinated by Saied Lafiti. During the workshop the experts focused on three forms of household survey namely background questionnaires (using the example of LAMP); self-report of behaviours (using the OECD ICT access survey, and also the Indonesian version of DHS) and pencil and a paper test of competence in problem solving (using part of the Canadian version of the OECD ALL survey).

The conclusion from the workshop is that while these various forms of household survey contain items that imply information literacy, important aspects of information literacy were not addressed and there were insufficient items that were valid indicators of information literacy. In the case of both the background survey and the self-reported surveys those items that indicated elements of information literacy were not adequately specified for this purpose. In the case of the pencil and paper competency survey the items do not encompass most of the information literacy construct. It is important to note that the surveys reviewed were designed to identify other adult competencies and, while it was hoped that they would provide sufficient data for a secondary analysis to reveal information literacy indicators, the finding that this was not feasible in no way reflects on the suitability of these surveys for their primary purposes.

The experts also considered other means of developing indicators of information literacy and identified four options for further consideration namely the construction of a separate information literacy survey; the development of an information literacy indicator module for inclusion within existing household surveys; the embedding of information literacy indicators in the LAMP survey; or the expansion of the ICT access survey to encompass information literacy. Comments on the feasibility of each of these options are offered for consideration. A recommendation will depend upon consideration of these options by UIS officers.

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11 February 2010

## INTRODUCTION

UNESCO has indicated its intention to collaborate with other organizations currently engaged in international measurement of adult competencies in order to develop and implement the use of a coherent set of Information Literacy (IL) indicators (Khan, in Catts & Lau, 2008, 4). As part of this project UNESCO assigned the University of Stirling the task to investigate whether the secondary analysis of household surveys could lead to the identification of a set of indicators of information literacy in knowledge societies. This document outlines investigative research which had the goal of considering whether existing items in other surveys have content validity for secondary analysis as indicators of Information Literacy. Items were selected from international and regional household surveys to establish whether they have content validity if used to indicate information skills.

## INFORMATION LITERACY THEORY

Information literacy (IL) was described in the Alexandria Proclamation of 2005, as essential for individuals to achieve personal, social, occupational and educational goals (IFLA, 2005). IL skills are necessary for people to be effective lifelong learners and to contribute in knowledge societies. This is why IL was endorsed by UNESCO's Information for All Programme (IFAP) as a basic human right. IL is essential to the development of a knowledge society because it empowers people to:

- recognize the potential of existing information to inform their life decisions in work, community, health, and in civil participation;
- create knowledge appropriate to their context; and
- function as an autonomous adult

In 2008 UNESCO adopted for the purposes of the Information for All Programme (IFAP) a definition by Catts and Lau (2008) that proposed that an information literate person could:

- Recognise their information needs;
- Locate and evaluate the quality of information;
- Store and retrieve information;
- Make effective and ethical use of information, and
- Apply information to create and communicate knowledge.

These five elements should not be viewed as a linear process. Rather these are five inter-related elements. For example, a person may receive information and then recognise the potential utility for their situation, make use of the information and find it wanting, before evaluating the source and then recognising their need for reliable information. They may subsequently store information for later use. Therefore while presenting five elements of information literacy, it is important that we understand that they are indeed inter-related elements of a single construct. This has been confirmed by factor analysis of responses by university students (Catts, 2005b) who also established that for the information literacy practices of university students, five sub-scales could be distinguished by congeneric factor analysis (Catts, 2005a). However, additional evidence needs to be generated to establish the construct validity of information literacy indicators developed for work contexts, for lifelong learning, for well-being practices, and for civil participation, because validity is necessarily context specific.

Information Literacy is in part dependent upon context specific knowledge. A person with highly developed information literacy skills in one context may, given time to acquire the context

knowledge specific to a different situation, become proficient in information use within the new setting. However it is unlikely that a person could transfer generic skills to a new context until knowledge that is specific to that situation is acquired. Hence the primary advantage of developing information skills is the capacity to operate effectively in a knowledge economy within the domain in which the skills are acquired. However, once a metacognitive level of information literacy is developed in one domain, this understanding of how to use information to create new knowledge can be applied in a new context.

## **INFORMATION LITERACY AND ADULT LIFE SKILLS**

Adult competencies are normally considered to include literacy, numeracy, the capacity to work with others, communication skills, problem solving (sometimes called critical thinking) and information skills. Scientific literacy (or the use of technology) is also often considered an element of adult life skills. Examples of each of these capacities can be delineated that are fairly distinct but nonetheless none of these capacities is independent of the others. For instance, working with others requires communication. Solving problems requires information and in many instances performance depends upon prose, document and numerical literacy. This means that Information Literacy is likely to be correlated with attainment of other adult competencies and it also means that some indicators of other adult competencies may provide evidence of information literacy. These twin issues raise challenges and opportunities for the development of indicators of Information Literacy.

Information Literacy is a higher order adult competence that depends on literacy, use of technology, and skills in planning and organizing. This hierarchical model of adult competencies has been postulated by Catts and Lau (2008) and is based on evidence of hierarchical factor analysis of information literacy data sets collected by Catts in university settings.

It was suggested by one of the experts appointed by UNESCO to evaluate the relevance of items from other surveys that the place of information literacy within the collection of adult competencies can be thought of by using the metaphor of primary and secondary colours<sup>1</sup>. When the primary colours such as literacy, ICT skills, and planning and organising competencies are blended we can create a secondary colour which is distinct from these 'primary colours' and adds its own value to the overall capacity of adults. This notion can also help to illustrate the overlap between adult competencies because as the colours are blended elements of each component of adult competency can overlap thus explaining the fuzzy boundaries. However, it is important to recognise the implications of this metaphor because just as the secondary colour does not emerge except at the boundaries unless the primary colours are thoroughly mixed, likewise information literacy requires additional training and experience— it does not emerge as an automatic consequence of creating the primary capacities.

Generic adult competencies are an inter-related set of capacities that are normally utilised in conjunction with each other and with reference to context specific knowledge. Nonetheless it is possible to differentiate various adult life skills and to identify these as separate constructs. The following section explores the relationship between information literacy and selected other adult life skills. The relationship between each of these adult skills and information literacy is outlined below. The overlap in adult skills makes it possible that indicators designed to identify these various life skills will also indicate aspects of information literacy, thus making a secondary analysis of existing surveys of adult skills a possible source of information literacy indicators. Therefore, consideration of

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<sup>1</sup> Thanks to Prof. Catherine Hoppers for suggesting this metaphor.

the relevance for information literacy of literacy, ICT skills, problem solving and scientific literacy is considered in the following section.

### ***Differentiating Literacy and Information Literacy.***

Adult literacy includes the requirement that people comprehend and use information conveyed using written materials. This may result in the creation of new knowledge but knowledge creation is not an essential component of demonstrating literacy. For example a literate worker can follow instructions and read safety signs (literacy) but need not access new information to create new signs (information literacy).

The creation of new knowledge is an essential element in demonstrating information literacy and this capacity is required in order to become a knowledge worker. The expectation that most workers in all occupations can demonstrate this information literacy capacity is what distinguishes work in the 21<sup>st</sup> Century from at least some forms of work in previous generations. Of course there have always been knowledge workers but in the past this was thought of (rightly or wrongly) as the preserve of a small minority of occupations. These people stood out for their initiative and perception and identified new ways of working or solved problems in processes. However in the knowledge economy this capacity is a requirement for most workers in most occupations and hence information literacy has become an important competency for economic success.

An indication of why literacy skills are not a sufficient basis for describing Information Literacy skills is provided by the analysis of literacy skills by occupation undertaken by ETS (Barton, 1999). Based on the Position Analysis Questionnaire (PAQ) Barton provides an analysis of the changes in literacy requirements from 1986 with projections to 2006 and concluded that for 522 occupations (Barton, 1999, 5) there have been no significant changes in literacy skills for these occupations over the twenty year period of the digital revolution. However, the highest levels of literacy are required for the occupations where job growth is greatest (Barton, 1999, 37). While changes have occurred in how information is accessed as data storage has moved from paper, to microfiche and then to digital records, Barton concludes that the capacity to comprehend information has not changed for each occupation. This analysis misses the substantive change in the nature of work in the past twenty years. Processes in most occupations have changed so that workers are now part of a culture of continuous improvement through knowledge creation and this is not addressed in surveys that are based on literacy skills, but exclude information literacy skills. Nonetheless, as literacy skills are a prerequisite for IL skills there may be some elements of information literacy within literacy surveys and for this reason selected items from IALS were included for consideration in the validation workshop of Information Literacy Indicators.

### ***Differentiating ICT skills from Information Literacy.***

Catts and Lau (2008, 14) identify the essential element that differentiates Information Literacy from ICT skills as the transformation of the information received into new knowledge and the use or transmission of this knowledge created by the individual. This is why the search for IL indicators takes us beyond the established indicators of ICT skills. However, the capacity to access and to use ICT may include some elements of information literacy and for this reason selected items from the OECD ICT access survey were considered.

### ***The common elements between problem solving and Information Literacy.***

In the adult literacy and life skills survey reported by OECD and Statistics Canada (Murray et al, 2005)

five elements of problems solving were identified which, like information literacy were considered to be inter-related elements that people utilise in a non-linear manner. These elements were described (OECD, 2005, 303) as follows:

- Search for information, and structuring and integrating it into a mental representation of the problem;
- Reasoning based on the situational model;
- Planning actions and other solution steps;
- Executing and evaluating solution steps; and
- Continuous processing of external information and feedback.

This definition of problem solving overlaps with some elements of information literacy and hence this construct was considered as a possible source of information literacy items. Therefore items from ALL were included in the validation set of Information Literacy Indicators.

### ***Scientific Literacy and Information Literacy.***

There does not appear to be an adult skills indicator of scientific skills or use of technology apart from the indicators of access to ICT. However, in the PISA project OECD has introduced a system for assessment of what they term scientific literacy for school students. The OECD definition of scientific literacy overlaps with that of Information Literacy. In the PISA Report (OECD, 2006) *scientific literacy* is defined in terms of four dimensions as follows:

*‘Scientific knowledge and use of that knowledge to identify questions, to acquire new knowledge, to explain scientific phenomena, and to draw evidence-based conclusions about science-related issues.’*

As an example of the overlap with IL, when individuals read about a health-related issue, can they separate scientific from non-scientific aspects of the text, and can they apply knowledge and justify personal decisions? This seems to involve evaluating information. Of course, the PISA definitions are intended to relate to the life experiences of adolescents and hence we should not expect the PISA definitions to precisely model adult life skills. For this reason PISA scientific literacy items were not included in the content validation task.

### ***The Scope of the Application of Information Literacy***

For the purposes of this validation project the scope of Information Literacy identified in the Alexandria Report (IFLA, 2005) was adopted. However, in relation to education it was noted that as outlined in Catts and Lau (2008) several instruments have been developed to identify Information Literacy skills in schools and in Higher Education. These provide well established methods of monitoring outcomes of formal education. However, it may be appropriate to consider including indicators of information literacy use in adult and especially in non-formal education in the development of information literacy indicators.

The application of information literacy at work, for health and well-being, for lifelong learning, and for participation in civil society represent a substantial challenge for the development of robust indicators.

This is why it was recommended that an investigation be undertaken to determine whether existing household surveys contained items suitable for the assessment of information literacy. The alternative of creating universal indicators of Information Literacy skills at work, for health, for lifelong learning, and for civic participation would require substantial resources.

### ***Information Literacy and Work***

The use of information at work is seen to be central to the notion of a knowledge economy. As Catts and Lau (2008, 11) pointed out

*IL is central to both the notion of a learning organisation and to the development of a competitive advantage for firms and for nations within the global knowledge economy. Too often the concept of knowledge management in firms and governments has not been connected with IL (Cheuk, 2002) with results that have limited the competitiveness of firms. To understand the importance of information literacy to economic growth it is necessary to distinguish between the routine distribution of information, and the use of information to create knowledge. The distribution of information to people depends upon infrastructure, and once that is in place information can often be distributed at marginal additional cost. However, when information is used to innovate and create new products or processes that are privately owned and protected by patents, then new knowledge can be costly to replicate by competitors.*

While the economic value of an information literate workforce is universally supported, the corollary is that workers may question and strive to enhance not only the effectiveness of production processes, but also the ethics of practices at works including effects on the health of workers and consumers, the environmental impact of production processes and the integrity of product claims (Field, 2001).

### ***Information Literacy for Health and Well-being.***

In the previous report to UNESCO Catts and Lau (2008) noted that there are two distinct areas where the use of information in health provision is of importance. The first is among health professionals where access to current research and best practice is of importance to the delivery of quality services. The development of the Cochrane Library (Cochrane Collaboration, 2007), which is a global independent source of evidenced-based health information, is an example of this provision for health professionals. There is also an academic publishing tradition that aims to ensure the quality of information shared among health professionals and researchers. At the level of professional practice the use of on-line access to patient records in much of the developed world enables the development of informed team work. Therefore, in a similar vein to the judgement about the availability of other evidence about information skills in formal education, the information skills of health professionals was not included in the ambit of the survey of indicators. Rather evidence of community information literacy applied to health and well-being was the focus of the search.

The other crucial use of information for health and welfare information is the right of individuals to access information about health and well-being and the capacity to evaluate information from various sources to determine its accuracy and relevance. This is a concern especially in poorer nations where basic literacy remains a challenge, and where access to information may be restricted in rural communities and especially among women. Grant (2002) has defined health information literacy in this context as ‘the capacity of an individual to obtain, interpret, and understand basic health information and services and the competence to use such information and services in ways which are health enhancing’. This capacity includes the ability to distinguish between information

from credible sources such as World Health Organization (WHO) and information from individuals and firms with a vested interest in making claims for services and products. This capacity is also applicable in communities with access to the internet because individuals can use the internet to obtain information about their own health and well-being.

### ***Information Literacy and Civil Participation***

The London School of Economics (LSE) Centre for Civil Society defines 'civil society' as follows:

*Civil society refers to the arena of uncoerced collective action around shared interests, purposes and values. In theory, its institutional forms are distinct from those of the state, family and market, though in practice, the boundaries between state, civil society, family and market are often complex, blurred and negotiated. Civil society commonly embraces a diversity of spaces, actors and institutional forms, varying in their degree of formality, autonomy and power. Civil societies are often populated by organisations such as registered charities, non-governmental organisations, community groups, women's organisations, faith-based organisations, professional associations, trades unions, self-help groups, social movements, business associations, coalitions and advocacy group. (LSE, 2009)*

Support for the notion of civil society by government is based in part on the assumption that participation by people in their community is central to both social and economic well being. An informed public is deemed to be a strong defence against the influence of extreme groups. The ability to evaluate the sources of information is essential to protect against propaganda.

A second reason for the interest in civil society is as a response to the new realities of international markets. In recent decades the world economy has become a dominant factor in domestic economies. The power of the transnational economy has been demonstrated in the 2009 credit crunch where large nations (USA, Germany) and small (Iceland), developed nations (Britain and France) and developing nations have all been caught up in an economic maelstrom. To address this potent force countries are striving to achieve international economic regulation of financial institutions against the dual opposition of those who appeal to national autonomy and the transnational financial institutions. Consequently, participation in society is a core political issue in both developed and developing economies. This reality brings a certain synergy between information skills for work and for participation in society.

### ***Information Literacy and Lifelong Informal Education***

In the Alexandria Proclamation on Information Literacy there was a direct link made between lifelong learning and information literacy. The statement called for '*all governments and intergovernmental organizations to pursue policies and programs to promote information literacy and lifelong learning*'. Central to the notion of lifelong learning is the concept of an autonomous adult learner. As Usher et al (2002, 79) point out three adult education traditions, namely humanist, andragogy, and critical pedagogy all identify aspects of experience as legitimate elements of adult learning. However, for learning to be transformative, experience needs to be combined with new information acquired either from a facilitator or through the capacity of the individual to access, evaluate and transform information into new knowledge. This can be done by an IL individual at work by accessing information from other workers, or in community by participation with others in civic activities. New information can also be accessed from web based sources. In all these cases adults need IL skills to be able to independently access, evaluate, store and apply new information.

## **Information Literacy and the Media.**

Media literacy is also being addressed by UNESCO as a component of the IFAP. Work is underway to develop media and information literacy modules for initial teacher education (ITE). A coordinated approach to media and information literacy training and assessment could be combined with a joint approach to developing indicators of media and information literacy for teachers and students in elementary education. These initiatives could be complemented by a media and information literacy indicators project that applies these related adult competencies to work, participation in society, and health and well being contexts.

Media literacy is defined in a European media literacy report (Celot, 2009) as:

*'the capacity of individuals to interpret, analyse, process and contextualise media messages in general ... media literacy implies a broadening ... of the elemental function by which literacy is defined .... It is not a simple technical skill ... but rather a critical understanding and analytic reading of numerous simultaneous sources of information, reasoning, social injunction, symbolic and cultural codes and conventions'*.

There is a significant overlap between this conception of 'media literacy' and information literacy. The authors' place an emphasis on individual capacity to use media in the process of engagement in civil society and the authors recommend that in the further development of indicators of media literacy there should be cooperation with UNESCO.

The role of information in enabling people to participate in society is complex and also potentially controversial as was pointed out in Catts & Lau (2008, 10). When people apply information literacy they not only access information but also evaluate the quality and accuracy of the information they seek to use. This inevitably means that individuals need to be able to assess all sources of information for reliability, relevance, currency and bias, and this includes information from Government and from large corporations. Evaluating the quality of governmental information can be part of civil participation while evaluating corporate-produced information can be seen as an extension of work related IL. Hence there is a substantial overlap between media literacy and IL.

## **Levels of Information Literacy**

Both in the domain of adult literacy and in other areas of adult competencies the notion of levels of capacity for assessment has been employed to differentiate between capacities to perform tasks at a basic or more advanced level. This approach recognises that various tasks require varying levels of competence in different contexts. In the area of problem solving Scott et al (2005) postulated four levels of problem solving ability for the OECD PIAAC survey.

In Catts & Lau (2008, 17) four levels of information literacy were suggested and these were linked loosely to six levels of education and incorporated six skill elements. For the content validation task it was not necessary to definitively determine levels of capacity signified by items because this would be done as part of the statistical analysis of pilot studies to confirm construct validity. However it was important to establish that the level of complexity of items is discernible, and that items which cover a range of capacity levels are available for use in any subsequent pilot studies. Hence, a preliminary definition of levels of information literacy capacity was developed for application in the workshop on content validation. If the validation exercise indicated that there were no items at any particular level, or alternatively identified that items were ambiguous in terms of level of IL capacity,

then this would suggest that further item development was necessary before UIS undertook pilot statistical studies.

As it was possible that PIAAC could provide items that were content valid as indicators of information literacy an attempt was made to adapt the four levels that are proposed for the PIAAC problem solving items to fit the definition of information literacy. Accordingly the following definition of information capacity levels was adopted for use in the content validation workshop. The four levels of information literacy were described as follows:

**Level 1:** At a very elementary level, concrete, limited application of information can be demonstrated by using specific schemata to assess the accuracy and relevance of information and to interpret the information in a specific context.

**Level 2:** The second level requires rudimentary systematic reasoning to access, evaluate, store and integrate information with prior knowledge. Information use at this level is characterized by well-defined, one dimensional applications. At this level, people apply information to concrete situations.

**Level 3:** At the third level of information literacy proficiency people will be able to identify, evaluate, store and integrate multiple and potentially conflicting information sources and to apply information where there are non-transparent or multiple dependent constraints.

**Level 4:** At the final and highest level of competency, people are capable of locating, evaluating, storing and applying information in situations that require sequences of actions and other “meta-features” in a systematic manner. Also, at this stage people are able to explain how and why they arrived at a certain conclusions. This level of information literacy requires critical thinking and a certain amount of meta-cognition.

### **The Concept of Content Validity.**

Validity is a concept that must always be determined within context and hence indicators that are valid in one setting are not necessarily valid when used in a different context. For example, within higher education there are two well validated and reliable standardised measures of information literacy. One developed in the USA and known as SAILS is a test of information literacy knowledge (Rumble and Noe, 2009). The other developed in Australia is a self report survey which asks students what skills they use (Catts, 2003, 2005) and was found to correlate with librarian assessments of student information literacy skills.

These survey instruments use items that are relevant to the context of information skills in higher education. However, they are not suitable for use to determine information literacy at work or for participation in civil society and if used would not be valid. This should be self evident when one considers that the items concern the use of information when undertaking assignments and searching for academic sources. Nonetheless if applied to a wider public population individuals are likely to respond in a consistent manner and hence produce results that are internally consistent (and hence reliable). This example illustrates why ensuring that the indicators identified are valid is an essential first step to the development of indicators of information literacy that will be ‘fit for purpose’.

### ***Dependability of Indicators of Information Literacy.***

The dependability or reliability of indicators is determined statistically only once content valid items are identified. This was not the purpose of the current study and demonstrating reliability would require a pilot administration of content valid items. However, the potential ambiguity in meaning of items would affect the dependability of responses. If items are open to different interpretations they are not likely to produce reliable responses either across a population or when administered to the same people at different times. This emerged as an issue especially when the notion of levels of information literacy was addressed in the content validation exercise (see below).

### ***Gender, Culture and bias in Information Literacy Indicators.***

In validating indicators of information literacy the experts were conscious of the potential for bias in items based on gender and other cultural factors. Bias in terms of content validity is concerned with discrimination between groups of people by the selection of items that favour one culture or gender by the nature of the question. For example, a question about child birth is likely to be more readily answered correctly by those women who have experience the process than by men who do not have direct experience of the process. Hence the question may be biased in favour of one gender.

Some differences in responses due to cultural differences are not caused by test bias but may be because some categories of people are more likely to have the opportunity to acquire skills. For example, various writers have suggested that especially in rural and remote communities men are more likely to have had some schooling and hence are more likely to be literate than women (e.g. Gibson, 2000). This is not a case of item bias, although it may indicate cultural discrimination.

### ***Forms of Household Surveys.***

There are three main types of household survey. One approach requires self-report by respondents that is validated by evidence gathered by an interviewer. A second approach involves testing what people know which involves a pencil and paper test. This is primarily a test of what people know rather than a test of what people do in practice. A third approach involves assessment of problem solving tasks on the basis of exercises that are considered to simulate common situations. This later approach was favoured by the ALL project and is used also in PIAAC and LAMP.

The self-report approach has been used in a number of household surveys including national census data collection. Critics argue that in reporting capacity self-report is prone to error based on the different states of knowledge individuals have about their capacities. Put simply, the more one knows about a topic, the more one knows about what one does not know. Hence a more advanced information user may rate themselves at a lower level than a person who operates at a less complex level, but who does not know other modes or capacities for information use. This is why it is important to have an interviewer validate the evidence behind self report – and to have the respondent report their primary behaviour which the interviewer then interprets in accordance with a protocol guidance manual.

The second and third assessment approaches use problem solving tasks. These assessment tasks require answers to unfamiliar situations and may appear to be like intelligence tests. Disadvantaged adults with low levels or prior education, especially associated with negative experiences of prior formal education, may be alienated and threatened by such 'tests'. This was reported in a study of re-entry education for disadvantaged adults by Gelade et al (2003). Problem solving involving

realistic situations assumes that the experience of such tasks is common to all respondents. This assumption may need to be tested across populations of interest. The approach is prone to cultural bias but has the potential to be a powerful instrument for assessing information skills in household settings especially if tasks are perceived as relevant for adults in both their public and their private life. Furthermore this approach has been successfully implemented in the ALL procedures, and it can be realized as either a paper-and-pencil-instrument or performed directly using a lap top, which is of importance for contemporary large scale surveys. The item construction and analysis allows for various proficiency levels to be determined statistically using item response theory.

## ***THE WORKSHOP PROCESS AND OUTCOMES***

The objectives of the contracted project were to:

- a) Conduct a comprehensive search and extensive review of relevant international, regional and national surveys in order to identify or develop a wider pool potential set of information literacy items suitable for inclusion in existing household surveys;
- b) Examine the conditions of administration of the identified household surveys to determine the implications for validity and reliability of IL indicators to be derived from the proposed pool of items;
- c) Prepare and lead a 2 days session to examine the content validity of the proposed pool of items in order to select those of the items that can be consistently identified as associated with a particular component of an Information Literacy (IL) standard. The session will involve the use of a set of three independent Information Literacy specialists to be identified jointly with UIS and the CI Sector.
- d) Prepare a report with recommendations on the choice of IL Indicators to be piloted by UNESCO in 2011 to determine the operational validity of the set of indicators as well as their utility for policy interests.

## ***METHODOLOGY***

The following is an outline of the procedures employed to prepare for and undertake the content validation workshop. An extensive range of national and regional household surveys were identified and these were classified into three groups; namely background information surveys; self reported behaviour; and pencil and paper (or computer-based) cognitive tests.

Publically available household surveys were identified from UNESCO, OECD, DHS and ILO. In addition national surveys were considered especially those used in the UK as a representative advanced economy with a wide range of household surveys. The full range of surveys considered is presented in an Appendix One. Items were selected from these household surveys that in addition to their primary purpose (of surveying literacy or ICT skills etc) also appeared to indicate information literacy. The workshop task was to consider the content validity of each item as an information literacy indicator, and to then determine for such items at what level and for which of the five elements of information literacy each item was an indicator. It was expected that some items would not be accepted by the expert panel as information literacy items, and that other items would not be consistently classified in terms of element of information literacy and / or level. The question to be decided by the analysis was whether there were sufficient valid items to enable one or more existing surveys to be used for secondary analysis to indicate information literacy.

### **Content Validity**

The items subjected to this analysis are all items that were developed for related adult competencies

including literacy, problem solving and ICT skills. The research was not a review of the content validity of items for the purpose for which they were designed. Consequently in the event that any items are not found to be content valid for information literacy, this finding would not invalidate the use of the item for its primary purpose. It would mean only that the item is not valid for secondary analysis as an indicator of information literacy.

The protocol adopted to demonstrate information literacy content validity is one that is recommended for test development by the American Psychological Association (APA, 1999). It involves experts in adult education and information literacy, being asked to identify both the element and level of information literacy conveyed in selected items. This method has been applied in other test development procedures including the development of information literacy indicators in higher education (Catts, 2005). After an initial period of training on the validation procedure, and some practice on trial indicators, each expert was asked to rate a selected set of items. Rating involved determining whether an item reflects information literacy and then assigning each identified item to an element of information literacy, and to a level of difficulty of the information literacy task identified where this was appropriate.

After an initial training session experts rated an initial set of items. They then reviewed the outcomes. Differences in the ratings between experts were discussed and resolved. This process consolidated a shared understanding of the interpretation of the elements and levels of information literacy. As will be reported below, it was quickly identified that there were problems with the use of the items for secondary analysis of information literacy. The participants were reminded that there were three different types of items to be considered and as a consequence the failure of one type to provide valid indicators would not necessarily mean that success would not be achieved with another form of item. The experts therefore were encouraged to look for possible indicators of information literacy afresh with each set of selected items to avoid initial negative outcomes impacting on expectations about the success of the analysis overall.

### **Validation Workshop**

The workshop was conducted at UIS headquarters in Montreal on November 12 and 13 2009 with the support and assistance of staff of UIS led by Claude Akpabie and Saied Lafiti, and utilising the guidance of Cesar Guadalupe. Aziz Abid from UNESCO joined the workshop on Friday and contributed to the discussions and recommendations. Experts who participated came from Canada, South Africa, New Zealand and the United Kingdom. Unfortunately an unforeseen difficulty meant that Dr Jesus Lau from Mexico was unable to join the workshop. The participants' input is acknowledged and their details are reported in Appendix Three. The analysis and discussion below draw on the outcomes of the workshop and the ideas proposed by the experts.

The various potential indicators were assembled and a protocol for the validation exercise was presented in the first workshop session. In the available time four sets of survey items were subjected to review. These surveys were selected because they provided examples of the three types of household survey formats identified above, and because they were considered to be the surveys most likely to yield items suitable for secondary analysis. Two of these surveys were reviewed by two expert teams, and the other two were reviewed by a composite team after one information literacy specialist had to leave for a prior commitment.

## **ANALYSIS**

### **Review of Conditions of Administration**

High standards for the administration of all the reviewed household surveys have been established especially for the UIS LAMP survey, and also the OECD ALL survey and these have been documented in publications (see for example, Kutner et al 2007). For surveys in which information literacy indicators are to be identified and analysed by secondary analysis of existing data, the conditions of administration are necessarily those of the original survey. Should it be determined as a consequence of the findings of this study that new items need to be developed to be used in conjunction with one or more existing surveys, the protocols for administration must be those used for the selected survey. Hence, the implication for the administration of a survey module of information literacy indicators is that the protocols and procedures must be compatible with the procedures and outcomes of the relevant household survey. It follows also that the validity and reliability of information literacy items must meet the same criteria as applies to the parent survey.

A significant issue for indicators of information literacy is the recognition that many countries have several language groupings and include people who are multi-lingual. There is therefore a challenge to achieve appropriate indicators that have application across languages within a nation.

Furthermore in most countries economic and social conditions and access to infrastructure vary considerably in different regions. Indicators must therefore be robust for use across a wide diversity of conditions. These challenges have been addressed in the design of each of the household surveys considered. There may however be an additional element to consider in an Information Literacy household survey namely how to identify information search strategies, as these will differ depending upon access to ITC, media and telephones including mobile phones.

### **Preliminary Document Analysis.**

As indicated above, prior to the workshop a wide range of household surveys were examined by the consultant including national census collections, the various survey iterations of OECD Adult Competencies, the UIS LAMP background survey, the Demographic and Health Surveys (DHS), and various national surveys with a focus on the wide range of such household surveys utilised in Britain as an exemplar of the scope of data to be considered. Issues and practices for administration of each survey were noted.

### **Census Information**

Every country conducts a census of its population at regular intervals and many utilise common or similar elements to enable international benchmarking. Hence census questions may provide a source of data for information literacy indicators. Typically such data is self-report and normally questions seek descriptions of personal and social circumstances. As such this information is likely to provide only indirect indicators of Information Literacy such as might be inferred from such indicators as level of education, occupational category and level of income. However, within such broad descriptions there are a wide range of specific competencies. For instance, Barton (1999, 21) has reported that there are substantial differences in 'document literacy' at all levels of educational attainment and also at different levels of salary. Therefore census data is likely at best to provide indirect evidence of information literacy levels in a population and in particular will not detect the effects of policy changes aimed at enhancing IL, such as a change in initial elementary (primary) teacher education and elementary school curriculum.

## **The OECD PIAAC Survey**

Over the past 15 years OECD has developed the assessment of adult literacies starting with the OECD International Adult Literacy Survey (IALS), which was developed in the late nineties from the USA National Adult Literacy Survey (NALS). These instruments survey what was termed prose, document and quantitative literacy within the cultural context of an industrialised but socially diverse nation. The IALS survey was expanded and renamed Adult and Lifelong Learning (ALL) survey and applied across twenty-two countries in 2002 – 2006. There has been a further expansion of this survey with what is termed the Programme for International Assessment of Adult Competencies (PIAAC) to be implemented in 2011 across twenty-seven countries with results reported by 2013. PIAAC has added ICT skills use in problem solving (OECD, 2008, 5). The PIAAC form of survey was considered in the workshop both in relation to work based IL skills and also for indicators of information use for the purpose of participation in civil society. Of particular interest was the new element in PIAAC to assess problem-solving in technology rich environments. In the words of OECD (2008, 7):

*This refers to the ability to use technology to solve problems and accomplish complex tasks. It is not a measurement of “computer literacy”, but rather of the cognitive skills required in the information age – an age in which the accessibility of boundless information has made it essential for us to be able to work out what information we need, to evaluate it critically and to use it to solve problems. To assess this competency it is particularly important not just to measure basic proficiency but also to identify higher-order skills – a particular goal of PIAAC overall.*

There is a significant overlap between the definition of problem solving adopted by PIAAC and the UNESCO definition of Information Literacy which made it important to consider the items in the problem-solving domain as a possible source of indicators of IL.

## **LAMP**

The UIS Literacy Assessment Monitoring Programme (LAMP) survey is based on a development of the OECD IALS survey and the OECD ALL survey (UIS, 2009). LAMP aims to provide an approach that allows for literacy assessment in countries with widely different levels of economic development. It is also a survey within the control of UNESCO and for these reasons it was most relevant to examine its potential as a source of indicators of information literacy. Only the LAMP background survey was included in this review. However, given the relationship between LAMP current survey items and the OECD ALL survey, the utility of the available OECD items was sufficient to enable a decision on the potential use of LAMP survey items as well as the items in the LAMP background survey.

## **Demographic and Health Surveys**

The Demographic and Health Surveys is a project that has earned a worldwide reputation for collecting and disseminating accurate, nationally representative data on health and population in developing countries/regions. The project is implemented by Macro International, Inc. and is funded by the United States Agency for International Development (USAID) with contributions from other donors such as UNICEF, UNFPA, WHO, and UNAIDS. An example is the Indonesian DHS Survey (Statistics Indonesia, 2008). A feature of the DHS is that it is designed so that items can be adapted to suit the conditions of use in each country while the quality of the measurement is maintained by reliance on a standard administrative protocol. Some of the items relate to the use of information for health related decisions. Therefore these items were selected for consideration as a possible

source of evidence of information literacy especially in relation to health and well being.

### Other National Statistical Collections

In many countries national statistics offices conduct a wide range of social and economic surveys and provide reports on topics such as health, housing, labour markets and economic activity. A wide range of such surveys conducted in Britain were reviewed and it was confirmed that similar surveys are undertaken in other countries. Unfortunately, at best the data collected allows inferences to be drawn about information literacy. For example in Britain the ONS provides a report called 'Social Trends' which includes the frequencies of fourteen uses of the internet (ONS, 2008, 180) but whether these involve ICT skills in receiving and transmitting information, as opposed to information literacy skills is open to question with the possible exception of 'doing an on-line course'. A few items were presented from these sources for validation but were not subjected to formal procedures for the reasons outlined above.

### Household Survey-Based Literacy Module (UNESCO Bangkok, 2008)

The AIMS Unit in collaboration with the UIS Headquarters in Montreal, and the UNESCO Bangkok Education Sector, with support from the Japanese Funds-in-Trust (JFIT) has also developed a Household Survey-Based Literacy Module for measuring some aspects of literacy (mostly related to the literate environment). The module, which contains a set of questions, collects information on language background, access to facilities, stock of reading materials, and use of literacy skills of household members. It was developed to respond to the need of countries for literacy statistics for policy formulation and to assess and monitor the progress towards national and international literacy-related goals. The relevance of this approach emerged as a result of the validation exercise and is discussed in the conclusion to this report.

### Workshop Outcomes.

A total of one hundred and four items or sections of items were examined. The experts considered that information literacy was not evidenced in forty-three of these items. For the remaining sixty-one items, the experts agreed that twenty-nine items conveyed explicit indicators of information literacy and that twenty-three items conveyed an implicit indication of information literacy. For the other nine items the experts agreed that information literacy was indicated but could not agree whether the construct was implicit or explicitly identified. However when the sixty-one items were classified in terms of element and level only twenty-six were identified as content valid items of information literacy. In other cases there was no agreement on the element or the level of information literacy.

**Table 1:**  
**Level and Element of Information Literacy in items identified as indicators of Information Literacy**

Level <sup>2</sup> /	Element				
	Awareness	Locate and Evaluate	Store/retrieve	Use information	Create communicate knowledge
1		18			
2		1		3	
3				1	3
4					

<sup>2</sup> The levels are as defined on pages 12 and 13 of this report.

As outlined in Table 1 there was agreement among the experts that twenty-six of these items could be used as indicators of information literacy in their present form. Unfortunately the items as a group offered insufficient coverage of the information literacy construct for a secondary analysis to produce indicators that addressed the full definition of the construct of information literacy. Eighteen of the twenty-six items identified as indicators of Information Literacy addressed one element of information literacy at a basic level which experts described as a preliminary level for information literacy. All of these eighteen items were drawn from the OECD ICT access survey. All the items were indicators that people could locate information in concrete situations at a basic level using an explicit protocol. The ICT survey also yielded three items that addressed the effective and ethical use of Information literacy at the second level (namely rudimentary systematic reasoning to access, evaluate, store and integrate information with prior knowledge in concrete situations). Hence there were items that addressed two of the five elements of information literacy each at one specific level of complexity.

While the ICT access survey, demonstrated the best potential for identifying information literacy, it does not offer sufficient coverage of the construct in its current form. To use the item pool in its existing form would be an insufficient base from which to generate a valid set of indicators of the whole of the information literacy construct.

The OECD ALLS problem solving items from the Canadian version were reviewed by the composite review team. The analysis is summarised as survey one in Appendix 2. The Canadian version of the OECD Adult Literacy (ALL) household survey demonstrated that for the identification of information literacy skills a pencil and paper test has limitations because it does not require respondents to seek and evaluate new information. This format requires people to make inferences beyond the information provided, but information literacy requires the person to go further and recognise the need to locate and evaluate additional information. Therefore important elements of information literacy include awareness of the need for information, capacity to locate information, to evaluate the quality of the information and its sources, and the capacity to store and retrieve information were not included. A pencil and paper format can be appropriate for problem solving and may indicate the capacity of a person to use and interpret information which is one element of information literacy, but without requiring evidence that the person can access, evaluate and select additional information this represents a limited use of information that does not incorporate the full meaning of information literacy. Although the items have potential utility, they address only a very narrow aspect of information literacy. This is because the respondent is not given the opportunity to decide what type of information they need, These items appear to be similar to a traditional logic component of a general intelligence survey. As the items stand they provide a passive process of receiving and analysing specified information rather than an active process of seeking information.

Although six of the ALLS items reviewed provided an explicit indication of an aspect of Information Literacy, the panel concluded that ALLS problem solving items could not provide a sufficient set of indicators of Information Literacy which is understandable since ALLS is focused on literacy and problem solving and not on Information Literacy. The elements of IL not addressed by ALLS were the abilities of respondents to identify information needs by searching for information, evaluating the information, and the storage and retrieval of information.

A further source of items was the LAMP background survey. The background survey used for LAMP appears to be a good quality example of the types of questions posed as background questions in many household surveys. Consequently the analysis of these items provided an indication of the suitability of background questions in other household surveys. As outlined under the heading of

survey 2 in Appendix 2 forty-six elements of the background survey were considered by two teams of reviewers. It is noted that many of these items contain multiple components so the total number of discrete items is far greater. Of the forty-six items seven were identified as possible indicators of information literacy but in four cases the item was considered not suitable because the level of the performance in this self-report format could not be assumed. Consequently just three items in the background survey were considered to be suitable indicators of Information Literacy and this was an insufficient number to use to establish a reliable scale for secondary analysis. A summary of the results of the analysis item by item are presented in an Appendix 2.

## **DISCUSSION**

The academic approach to information literacy has progressed our understanding of the construct but the information literacy skills required for use within academic practices of research and of teaching are situated in the context of the formal setting of academic practices. The use of information in many practical contexts is less systematic and more pragmatic. 'Fit for purpose' or 'good enough for the task' is the order of the day and people will necessarily take risks about the quality of the information they use based on their assessment of the cost of errors. This is distinct from the priorities for verification of information required in professional and academic situations. Consequently information skills appropriate for work and for everyday decisions involve different ways of using information. In many contexts reliance is placed on the respected authority of a person such as a medical practitioner, or of a government agency. Therefore information literacy practices at work and in everyday life involve different approaches to the collection and use of information. The experts therefore agreed to recommend that there should be an attempt to integrate the levels and the elements of Information Literacy identified by Catts and Lau (2008) to create a model of information literacy practice that encompasses a continuum of levels of complexity of information use.

The concept of information literacy is situated in the context of the UNESCO Declaration of Human Rights, including the freedom of expression for all and was considered by the panel of experts in the terms described in the Alexandria proclamation on Information Literacy. This statement recognised the relevance of the construct for work, for health and well-being, for education and for participation in civil society including in political and community affairs. In this broad context of human activity Information Literacy is an essential capacity to allow people to formulate their own views. The purpose of attempting to locate items that are indicators of information literacy in household surveys designed to identify other adult competencies was to determine whether countries can gather information of relevance to build knowledge societies without the need to construct a new survey.

It is recognised that information literacy is a situated capacity and that therefore it is necessary to delineate the scope of information literacy indicators. The aspects of human existence that are deemed crucial need to be specified. The challenge is to make clear what components of human practices are the focus of the exercise and why. It is essential also to recognise that information exists in various forms and can be accessed from a wide range of sources, not just as data available through the internet. The issue is whether a person can use information for employment, to participate in society, make informed choices about their well being, and to use information to support learning throughout the life course.

The household surveys examined were all designed to measure other aspects of adult competencies and for the purposes for which they were designed all have strong evidence of validity and reliability. The opportunity to also identify Information Literacy from the secondary analysis of these surveys

was worth the effort as it would have avoided the need to develop new survey items and to either extend existing surveys or create a new household survey. The conclusion that there are limitations in the validity of the items for the purpose of identifying indicators of information literacy is not a criticism of the items, but a demonstration that an adequate set of information literacy indicators cannot be identified by secondary analysis.

## ***THE WAY FORWARD***

As noted above, an operational definition of Information Literacy allows one to explore how elements co-relate and hence allow a clarification of the operational specification of the elements. Having used the definition proposed by Catts and Lau (2008) the experts proposed adjustments to the operational definition that better reflect the way elements of information literacy co-locate in practical settings. The adjustments proposed do not change the specification of Information Literacy, they only link parts of the elements that occur together naturally in observed human behaviour. The adjustments therefore make it easier to identify component parts of information literacy for policy and practice implications.

Accordingly, for the purpose of developing and disseminating Information Literacy Indicators, the following re-specification of the elements of Information Literacy is proposed.

### ***Proposed Revised Operational Definition of Information Literacy***

Information literate people can:

- Recognise their information needs and locate information;
- Evaluate the quality of information and/or the information source;
- Store and/or retrieve information;
- Make effective use of information to create and communicate knowledge; and
- Use information in an ethical and lawful manner.

### ***Incorporating levels of Information Literacy with elements of Information Literacy***

As noted above, the analysis exercise sought to utilise a conception of levels of complexity of information literacy that parallel the levels identified in the problem solving construct developed for the OECD ALLS survey. The experts concluded this was not a satisfactory model for application to information literacy for two reasons. First from a theoretical perspective, the two way classification system created an atomised approach to the information literacy construct that created difficulties since a complex task might incorporate different levels of information literacy for different elements of the construct. It was felt therefore that a holistic assessment of the nature of Information literacy tasks was more appropriate. A second rationale for recommending this approach was that the construction of indicators for each of five elements by four levels framework would demand far too many individual indicators. Even if indicators could be developed for each of the twenty cells, for reliability to be demonstrated one would need at least three items per cell which amounts to sixty items. Once reliability was established a subset of items might normally be employed but nonetheless this approach is considered unrealistic.

The expert panel therefore suggested that levels and elements be integrated into a small set of descriptors of information literacy for which indicators could then be developed across the three contexts of work, civil participation and health/well being. Although there are existing surveys that provide indicators of information literacy in formal educational settings including schools and higher

education, further consideration might be given to the need for indicators of information literacy in adult and in non-formal education.

The task of developing information literacy indicators is further complicated by the need to consider the different domains of human activity (work, civil participation, continuing education and well being). Especially if one is to consider the situated nature of information literacy, it is unlikely that it would be feasible to identify the application of the competency across the myriad of distinct occupations and other aspects of human practice. It is noted however that in other household surveys involving self-report this has been addressed by exploring common scenarios which the respondent can apply to their personal circumstance. It is noted also that this has been the approach adopted in many countries to the specification of so called generic (sometimes called key or core) competencies. For instance in Australia the 'key competencies' were described in terms of skills required for entry to employment at three levels, namely basic entry level, skilled occupations and graduate employment (Mayer, 1992).

### ***Information Literacy Household Survey Options***

Having established that a secondary analysis of existing items in household surveys will not generate information literacy indicators, the expert panel explored four options for developing information literacy indicators. These options are:

- a) A new household survey aimed at providing indicators of Information Literacy;
- b) A series of sector specific Information Literacy modules suitable for inclusion within existing household surveys of the domains of health, work, lifelong learning or civil participation;
- c) A purposeful construction of items for potential inclusion within literacy assessment instruments like LAMP, if expanding the scope is feasible, or
- d) The expansion of the ICT access survey to achieve a pool of items that remain appropriate for the primary purpose, but also provide for indicators of Information Literacy.

The first two options will require the development of a distinct information literacy item pool while the third and fourth will involve collaboration between an Information Literacy specialist and either literacy assessment experts (especially those in charge of LAMP at the UIS), or ICT awareness survey experts as appropriate. The relative merits of these options depend on factors that include the purposes for which the information literacy indicators are to be utilised.

#### **Option 1: A new household survey to provide indicators of Media and Information Literacy**

If a country seeks to identify the progress toward information literacy across all its communities and across all or most of the information literacy applications of work, continuing education, health, and civil participation then a new household survey will be necessary which would need to be designed and administered along lines similar to the processes involved in the UNESCO LAMP and in the OECD PIAAC surveys. The main limitations to this approach are the costs of development and administration. If the costs of development can be addressed there is still the impact of administration costs which are likely to limit the frequency of administration.

A possible collaboration that may help to justify such a development is the combination of a survey of Information Literacy with a survey of media literacy. If a distinct item pool is required then these items will need to be developed in a manner such that the information and media literacy assessment can accommodate different stages of economic and social development between regions including differences within countries. This will mean parallel forms of items that utilise

technologies appropriate to different levels of economic development. For instance depending upon economic and technical capacities in different regions, using bus timetables might involve selecting information that is paper based or web based. Different item forms and technology platforms would accommodate differences in the access to ICT. In a similar manner items will need to have regard also for cultural differences between communities.

A recent development is a European initiative to develop a national media literacy survey (Celot, 2009). It is not a household survey and relies on national statistics to infer individual 'media literacy'. This approach is not valid because it conflates access and use of ITC with the capacity to evaluate, interpret and transform information into personal knowledge. While the rhetoric is about assessment of individual capacities the indicators proposed are based on national statistics of access to media. However, there is a recommendation that further development of indicators of media literacy be undertaken in conjunction with UNESCO. Hence there may be an opportunity for a collaborative development between the EU and UNESCO, especially if there is an interest in Europe in moving beyond national descriptive statistics to accurate indicators of media and information literacy for participation in civil society.

### **Option 2. An Information Literacy module within existing household surveys**

The second option parallels the direction proposed by UNESCO Bangkok and outlined earlier in this report of a literacy module within other household surveys. In a similar vein, it is technically feasible to develop information literacy items relevant to applications with health and well-being surveys, work skills surveys and potentially for wider literacy surveys.

In support of distinct modules for sector specific surveys it is noted that various countries have used country specific forms of other household surveys. For instance the Demographics and Health Surveys (DHS) are modified for use in each host country as is the case in the example the Indonesian version of DHS (Statistics Indonesia, 2008). Likewise different versions of the OECD ALL survey have been developed (see for example the Canadian version of ALL). Again, surveys of employees aimed at establishing workplace generic skills could also be supported by a work specific information literacy module with items that describe workplace applications of information literacy. Some of the items considered in the LAMP background survey have potential for use in this manner.

There are several international and national household surveys that interface with the topic of information literacy, or have the potential to use an information literacy module aimed specifically at the sector of interest.

#### **a) Health Surveys**

These include surveys about health and well being, especially the DHS (demographic and health surveys) conducted by Macro International, Inc. A health specific information literacy module may be of value in DHS surveys because health and well being is one of the contexts in which information literacy is crucial. It is to be noted that indicators of 'health literacy' have been developed from the ALL household survey but that these do not provide content valid indicators of information literacy skills required for health and well-being. The ALL items confirm whether a person has the passive skill to access and receive information, not the capacity to locate, evaluate, interpret and apply the information in their own situation.

#### **b) Workforce Surveys**

There are in many countries specialist surveys of the skills required for work and some have attempted to monitor change over time. These surveys do not specifically attempt to measure information literacy skills. Interestingly, this is the area of work skills most likely to have changed

over the past twenty to thirty years. As noted earlier in this report, the fact that there has been no reported change in the level of literacy work skills over time (Barton, 1999) can at least in part be explained by the omission of IL from the scope of the skills surveyed. Surveys of literacy that do not acknowledge the importance of information literacy as a generic work skill cannot identify the increasing demand for information skills as organisations embrace the 'knowledge economy'. It is to be noted as well that the ALL survey has been used to attempt to generate indicators of work place skills, but that these reports did not demonstrate evidence of information literacy.

There may be reservations about adding an information literacy module to the already wide scope of many surveys. The feasibility may need to be considered for several reasons including the impact on survey costs of additional items, and the risk that an additional module of indicators could result in survey exhaustion for participants leading to invalid or incomplete data.

Once the scope of information literacy indicators is decided, the first stage in implementing any of the above options will be to develop a new item pool that can be adapted to different contexts while maintaining the integrity of the content validity of the items. Once developed it is feasible that the item pool could be used for any or all of the options outlined above.

### **Option 3. Construction of items for inclusion within literacy assessment instruments.**

The third option of embedding information literacy into items designed for literacy assessments (like LAMP) is a solution which involves technical challenges. It implies decisions about the desirability/feasibility of extending the scope of those literacy assessments. A few of the items examined in the ALL survey and in the LAMP background questionnaire were indicators of elements of information literacy, and other items had the potential to be useful indicators if the information literacy component had been more explicitly identified. The potential is not realised at present because the items are designed for a different purpose and a consideration of information literacy was not part of the design.

The Literacy Assessment Monitoring Program (LAMP) is under development by the UNESCO Institute of Statistics. As noted previously LAMP aims to provide an approach that allows for literacy assessment in countries with widely different levels of economic development. It also has the advantage that the development of items is under the control of a UNESCO agency. If in the further development of LAMP consideration were given to embedding information literacy items, or to the commissioning of an information literacy module, this could give LAMP a substantial advantage over previous surveys of adult competency because it would be the first survey to include IL competency needed for participation in the knowledge economy and more widely in the knowledge society.

### **Option 4. Expansion of the ICT Access Survey to include Information literacy.**

It was noted in the report of the results of the content validity study that the OECD ICT access survey demonstrated potential for identifying information literacy. In its present form it does not offer sufficient coverage of the information literacy construct which is to be expected given the different purpose of the survey. However the item pool in its existing form provides a basis on which additional items might be developed to address the full information literacy construct both in terms of coverage and levels of capacity. It would however, limit the development of Information Literacy to ICT applications. As Catts and Lau (2008) noted information literacy can be demonstrated without the use of ICT. This may therefore be an insufficient base from which to generate a valid set of indicators of information literacy for some communities within many countries.

## **Demonstration of Content Validity of Information Literacy**

In the discussion of information literacy theory earlier in this report reference was made to the context specific nature of validity and to evidence about the information literacy construct published by Catts (2005a, 2005b). While the evidence from the workshop suggests that there are prospects for developing indicators of information literacy, statistical evidence would have to be established and demonstrated in trials of indicators across a variety of cultural, economic and technological contexts. Hence the process of confirming content valid information literacy indicators will necessarily have to be followed by a series of pilot studies.

## **CONCLUSIONS**

The search for a cost-efficient set of indicators of information literacy by the secondary analysis of items available in existing household surveys has proven that this is not feasible with existing household surveys. It is however important to have given this option full and careful consideration before contemplating more demanding alternatives.

It is for UNESCO to consider the options suggested having regard for the goals of the IFAP, the WSIS and the resource and practical implications of each alternative suggested. Of the options, the most challenging technically would be to embed information literacy indicators within literacy assessments such as LAMP. This would break new ground but there are reasons to be optimistic that this outcome could be achieved. There were items in each household survey considered that identified some elements of information literacy. This finding suggests that if there was a deliberate attempt to embed information literacy items then the limitations of coverage and specification of Information Literacy items in such a survey could be addressed. A pilot study should be able to demonstrate whether it is technically feasible to embed information literacy indicators in an existing survey. Embedding IL indicators is also theoretically justified because, as a second order adult competency, information literacy depends on primary or basic adult competencies including literacy, numeracy, planning and organising and use of technology.

Irrespective of the option to be selected, it is imperative for UNESCO and UIS to concur on a clear conceptualization of the purpose, and the scope of the definition of Information Literacy to be adopted. This will be necessary in any event no matter which option is followed up. To this effect, a Concept Paper could be prepared by UNESCO/UIS that delineates the nature of the priority policy question(s) and the strategic niche that IL indicators will fulfill to ensure the usability of the project outcomes to leverage policies for information literacy skills development in UNESCO Member States. Once the above clarifications are addressed, a pilot project to draft suitable items could be considered within a reasonable timeframe. This might well be supported by a host of credible and responsible international bodies including IFLA (international Federation of Library Associations) and international adult education bodies such as the International Council of Adult Education (ICAE). The priorities of these bodies would need to be considered such as the current bid from IFLA for UNESCO support for an information literacy development project.

A second option for UNESCO to consider is the creation of an information literacy module suitable for inclusion in other household surveys. The experts noted that for adult literacy UNESCO Bangkok has advocated a single module for use in other household surveys and this seems to be the appropriate strategy for literacy which is a basic adult competency. While a parallel approach is feasible for information literacy, the situated nature of information literacy may require indicators to be described separately for work, for health and well-being and for civil participation. The experts therefore recommended that UNESCO consider the development of specific modules for each of

these three areas of adult life in conjunction with the parties responsible for household surveys in these various domains of human activity. For example in relation to work and information literacy, an approach might be considered that identifies a level of information literacy competence that would be required for possibly three levels of employment namely basic job skills, skilled work, and highly skilled graduate entry. A similar range of levels might be considered in other areas of human endeavor. This approach should enable small modules of information literacy indicators to be produced that will be valued by those responsible for achieving the primary purpose of the survey, be it to identify health practices, lifelong learning, work skills, or civil participation.

For which ever strategy UNESCO adopts, Information literacy Items need to be developed based on human experiences across several nations with different cultures, media platforms and economic contexts. These items would then need to be content validated by experts against an agreed definition of 'every day' information literacy such as is provided in the revised definition presented in the discussion section of this report. The items would then need to be piloted to establish empirically the construct validity.

The experts recommended that to achieve the adoption and use of information literacy indicators these must be straight forward and clearly relevant to the capacity of people to participate in work and civil society, and to care for themselves and their family. No one will use indicators if they are too complex. We note however that there is substantial recognition and support for information literacy among members of UNESCO. The October 2009 proclamation by the President of the United States of America of 'Information Literacy Month' was a current manifestation of this support when the workshop was convened.

To explore these and other options the expert group recommended that UNESCO form a standing advisory group for information literacy indicators. It would be important to select people for such a body who can add value – not symbolic people – but people and organisations who will stay the distance. Information literacy can empower people in the emerging knowledge society. It is a concept whose time has come and it deserves to be a central component of a new generation of household surveys of adult competencies.

Finally, while UNESCO will have to consider the funding of the development of Information Literacy Indicators within the overall priorities of the organisation, the expert group noted the potential for such a project to attract financial support for product development from large international trusts and foundations.

## **REFERENCES**

- American Psychological Association (APA) (1999). The Standards for Educational and Psychological Testing. AERA, Washington DC.
- Bloom, B (Editor) (1956) Taxonomy of educational objectives: the classification of educational goals. Handbook 1. Cognitive domain. London, Longmans.
- Barton, P. (1999) What Jobs Require: Literacy, Education and Training 1940 – 2006. New Jersey, Education Testing Service.
- Catts, R. and Lau, J. (2008) Towards Information Literacy Indicators. Paris, UNESCO. Located October 2009 at [http://www.ifla.org/files/information-literacy/publications/towards-information-literacy\\_2008-en.pdf](http://www.ifla.org/files/information-literacy/publications/towards-information-literacy_2008-en.pdf)

- Catts, R. (2005a) Confirming the Relational Model of Information Literacy, The International Information and Library Review 37 (1) 19 – 24
- Catts, R. (2005b) Information Skills Survey. Technical Manual, Canberra, Council of Australian University Librarians.
- Celot, P. (Ed) (2009) Study on Assessment Criteria for Media Literacy Levels. Brussels, European Association for Viewers Interests. Located Dec 17 2009 at <http://www.eavi.eu/>
- Centers for Disease Control and Prevention. *Improving Health Literacy for Older Adults: Expert Panel Report 2009*. Atlanta: U.S. Department of Health and Human Services; 2009.
- Chobanyan, A. and Emblemvag, J. (2005) Drucker on government, politics, economics and society. *Foresight* 7 (5) 42-55.
- Gelade, S., Catts, R., Gerber, R. (2003) *Securing Success*. Canberra, AGPS.
- Gibson, John (2001) Literacy and Intrahousehold Externalities. *World Development* 29, (1) 155 -66,
- IFLA (2005) The Alexandria Proclamation on Information Literacy and Lifelong Learning. IFLA. Located November 2009 at <http://archive.ifla.org/III/wsis/BeaconInfSoc.html>
- Khan, Abdul Waheed (2008) Forward in Ralph Catts and Jesus Lau, (2008) *Towards Information Literacy Indicators*, Paris UNESCO
- Kutner, M., Greenberg, E., Jin, Y., Boyle, B., Hsu, Y., and Dunleavy, E. (2007) *Literacy in Everyday Life*. Washington D.C. National Center for Educational Statistics.
- LSE (2009) What is Civil Society? Located October 2009, at [http://www.lse.ac.uk/collections/CCS/introduction/what is civil society.htm](http://www.lse.ac.uk/collections/CCS/introduction/what%20is%20civil%20society.htm)
- Mayer Committee (1992) *Employment Related Key Competencies: A Proposal for Consultation*. Mayer Committee, Melbourne.
- Murray, T.,; Clermont Y., and Binkley, M. (2005) *Measuring Adult Literacy and Life Skills: New Frameworks for Assessment*. Statistics Canada, Catalogue no. 89-552-MIE, no. 13
- OECD (2005) *Learning a Living: First Results of the Adult Literacy and Life Skills Survey*, Paris, OECD.
- OECD (2008) *The OECD Programme for the International Assessment of Adult Competencies (PIAAC)* Paris, OECD. Located October 2009 at [http://www.kooperation-international.de/index.php?eID=tx\\_nawsecured1&u=0&file=fileadmin/redaktion/doc/OECD\\_PIAAC\\_Brochure\\_08.pdf&t=1257420378&hash=284351993e86d6daa0a64caf727fd401&PHPSESSID=c332](http://www.kooperation-international.de/index.php?eID=tx_nawsecured1&u=0&file=fileadmin/redaktion/doc/OECD_PIAAC_Brochure_08.pdf&t=1257420378&hash=284351993e86d6daa0a64caf727fd401&PHPSESSID=c332)
- Rumble, J. and Noe, N. (2009) Project SAILS: Launching Information Literacy Assessment Across University Waters. *Technical Services Quarterly*, 1555-3337, 26, (4), Pages 287 – 298
- Statistics Indonesia (2008) *Indonesia Demographic and Health Survey 2007*, Jakarta, Statistics Indonesia. Located October 2009 at [http://www.measuredhs.com/pubs/pdf/FR218/FR218\[April-09-2009\].pdf](http://www.measuredhs.com/pubs/pdf/FR218/FR218[April-09-2009].pdf)
- UIS (2009) *The Next Generation of Literacy Statistics: Implementing the Literacy Assessment Monitoring Programme (LAMP)* Montreal, UIS Located November 2009 at [http://www.uis.unesco.org/template/pdf/LAMP/LAMP\\_Rpt\\_2009\\_EN.pdf](http://www.uis.unesco.org/template/pdf/LAMP/LAMP_Rpt_2009_EN.pdf)
- UNESCO Bangkok (2008) *UIS-AIMS and Literacy Assessment*. Located October 2009, at <http://www.unescobkk.org/special-programmes/aims/uis-aims-activities/uis-aims-and-literacy-assessment/?type=98>

Usher, R., Bryant, I., & Johnston, R. (2002) Self and Experience in Adult Learning. Chapter 5 in Harrison, R., Reeve, F., Hanson, A., & Clarke, J. (2002) Supporting Lifelong Learning. Volume 1. Perspectives on Learning. Routledge, London.

## **APPENDIX ONE**

### LIST OF INTERNATIONAL REGIONAL AND NATIONAL HOUSEHOLD SURVEYS EXAMINED FOR INFORMATION LITERACY INDICATORS

LITERACY ASSESSMENT MONITORING PROGRAMME (LAMP) UNDER DEVELOPMENT BY UIS (Background Questionnaire).

OECD PROGRAMME FOR THE ASSESSMENT OF ADULT COMPETENCIES (PIAAC) SURVEY (Sample items only available)

OECD (ALLS) (Canadian Version used)

OECD (IALS) (UK version considered)

WHO DEMOGRAPHIC AND HEALTH (DHS) SURVEYS (Indonesian national version used)

NATIONAL CENSUS SURVEYS (Considered UK and Australian surveys)

In addition, to consider the full gambit of surveys many countries conduct at National level the following UK surveys were examined.

#### OTHER BRITISH NATIONAL SURVEYS

- British Crime Survey
- British Election Survey
- British Household Panel Survey
- British Social Attitudes Survey
- Citizen Audit Questionnaire
- Communal Establishments Survey (pilot)
- English Longitudinal Study of Ageing
- English Household Condition Survey
- Health Education Monitoring Survey
- Health and Lifestyles Survey
- Home Office Citizenship Survey 2001
- National Adult Learning Survey
- Survey of English Housing
- Poverty and Social Exclusion Survey
- UK Time Use Survey
- Families and Children Survey
- Northern Ireland Health and Wellbeing Survey
- Youth Lifestyles Survey
- General Household Survey 2000-01
- Scottish Household Survey
- Health Survey for England 2000
- European Adult Literacy Survey (British Component of IALS) 2005

## APPENDIX TWO SUMMARY OF ANALYSIS OF SELECTED ITEMS

### Survey 1: OECD ALL Items Canadian Version Level 8

Item Identifier	Is this IL? <sup>3</sup>	Level <sup>4</sup>	Element <sup>5</sup>	<sup>6</sup>	Comments
8A1	Explicit	2	Lies between B and D		The first question involves categorising the information before use. This probably requires a clarification of the definitions for evaluate information which needs to include categorising information. (see categorical knowledge).
8A2	Explicit	3	E1		
8A3.1	Explicit	3	E1		
8A3.2	Explicit	4, ?	E1		If 3.1 and 3.2 are taken together it could be level 4 but it is only a mechanical process – do not explain why.
8.A4	Explicit	2 knowledge	B2		Also involves locating within given information. Is it really just a functional literacy question? IL should involve identifying sources – this information is given.
8B1	Implicit				Primarily a simple problem solving task that uses skills that would be useful in IL because they are identifying criteria for evaluating information at a basic level.
8B2	Implicit				Similar to 8B1. Probably would not use for IL indicator.
8B3	Explicit	D1	3		Dealing with conflicting information
8B4	Implicit				Dealing with recent prior knowledge. Question 4 is useful but not giving opportunity to decide type of information they need. If this were phrased differently the question could be what do you need to find out? In other words what are your information needs? This is a passive process of locating and evaluating information.

<sup>3</sup> E=explicit IL; I= Implicit IL; void = No

<sup>4</sup> Levels 1 to 4 as defined in body of report

<sup>5</sup> IL elements A to E with subcategories as defined in the body of the report

<sup>6</sup> Only one team validated these items

## Survey 2. Review of LAMP Household Survey Background Items

### Section A

Item Identifier	Is this IL? <sup>7</sup>	Level <sup>8</sup>	Element <sup>9</sup>	Agreement <sup>10</sup>	Comments
A6	E/I	1	B1/D1	No	
A7	E/I	1 or 2	E1/E	No	
A8	E	1 or 2	B2/D1	No	
A9	E	3	D1/E1	Yes/No	OK for general IL indicator
A 10 – 11	No				
A 12 -13	No /I			No	
A14	No				
A 15	E	1 or 2	B1/D	Yes/No	Assumes reading –could agree B1.
A16	E	1/3	B1/D	No	
<b>Section B</b>					
B 1 - 5	E/No			No	
B6	E/I	1/?	B1/D1	No	
B7 – B12	No				
B13	I		A	?	
B14	I/ No			No	
B 15 - 19	No				
B20	E/I	1/?	A/?	No	One return incomplete
B21	No				
B22	E/I		B1/?	No	
B23	I/No	1	B1	No	
B24	E/I	1/?	B1/A	No	
B25 - 30	No				

<sup>7</sup> E=explicit IL; I= Implicit IL; void = No

<sup>8</sup> Levels 1 to 4 as defined in body of report

<sup>9</sup> IL elements A to E with subcategories as defined in the body of the report

<sup>10</sup> Yes indicates agreement on explicit IL and element (level not essential). If agreement as explicit IL and level is agreed or within one category item is likely to be suitable for a general scale

### Section C

Item Identifier	Is this IL? <sup>11</sup>	Level <sup>12</sup>	Element <sup>13</sup>	Agreement <sup>14</sup>	Comments
C1	E/I	1/?		No	Identified as important for IL in civic society if reframed.
C2	E	1 to 4	E/?	Yes but	Level depends on context
C3	E/I	1/?	D1/B1	No	Activities lack definition so level indeterminate
C4	I		D1/B1	No	Answer never is not IL
C5	I	1/?	B1	No	Lacks specificity needed to determine level
C6	E	1 – 4	B1/ ?	Yes but	Context determines level
C7	E	1 -4	B	Yes but	Context determines level
E1-6	No				
E7	E	1 – 4	D1	Yes but	Context determines level
E8	E		D1		
E9	E		D1		
E11 – 16	No				

### Survey 3. OECD Model Questionnaire for ICT Access and Use

Item identifier	Is this IL? Explicitly Implicitly No	If this is IL – at what level? 1 to 4	If this is IL – Which element predominates Select 1 to 5	Comments
1	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
2	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
3	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
4	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
5	Explicit	1	B	“A” is implicit in that recognition of needs would inform the answer.
6	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
7	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
8	Explicit	-	C	Levels don't relate to storage and retrieval activities – therefore not possible to rate this item

<sup>11</sup> E=explicit IL; I= Implicit IL; void = No

<sup>12</sup> Levels 1 to 4 as defined in body of report

<sup>13</sup> IL elements A to E with subcategories as defined in the body of the report

<sup>14</sup> Yes indicates agreement on explicit IL and element (level not essential). If agreement as explicit IL and level is agreed or within one category item is likely to be suitable for a general scale

9	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
10	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
11	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
12	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
13	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
14	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
15	No			
16	No			
17	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
18	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
19	Explicit	2	D	It's understood that A and B activities would have also occurred
20	Explicit	2	D	It's understood that A and B activities would have also occurred
21	Explicit	2	D	It's understood that A and B activities would have also occurred
22	Implicit	1	B2	This is relevant to IL if adding the total value of goods leads to an assessment or evaluation/comparisons of other transactions/places of shopping
23	Explicit	2	B2	Evaluation of quality of the information source
24	Implicit	1	B1	Access to ICT is a potential means towards IL, but not a direct indicator.
25	Explicit	1	B1	

**OECD ICT Access question 19**

Item identifier	Is this IL? Explicitly Implicitly No	If this is IL – at what level? 1 to 4	If this is IL – Which element predominates Select A to E	Agreement	Comments
Getting information	Explicit	2 / ?	D/B1	No	
Communicating	Explicit	2/?	E/ E2	Yes	
Selling goods or services	E/I	2/?	E/E2	No	
Internet banking	Explicit	2/3	D/E	No	
Applying for jobs	Explicit	3	E	Yes	
Formal education or training activities	Explicit	?/3	?/E	Yes	
Dealing with government organisations	Explicit	½	B1/ various	Yes	
Leisure activities	Explicit	1	B1 and A	Yes	
Downloading software, patches or upgrades	E/?	1	B1	N/a	

## ***Appendix Three Acknowledgement of Experts***

The work on which this report is based is informed by the expert input of the following workshop participants. Their enthusiasm and expertise is gratefully acknowledged. The project was also supported by the staff of UIS who provided guidance, assistance and organised the workshop efficiently and effectively. Those most immediately involved are listed below.

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