Identifying Good Practices in Information Literacy Education; Creating a Multi-lingual, Multi-cultural MOOC

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Abstract. This presentation reports an analysis of good practices in information literacy (IL) education, with particular reference to practices which may be incorporated in the design on a Massive Open Online Course (MOOC). Based on an analysis of published literature and reports, analysis of existing IL MOOCs, and expert opinion, it presents good practice eleven area: IL definition and models; IL content and contexts; pedagogical frameworks; teaching and learning methods; interaction and collaboration by learners; structuring of learning materials; assessment methods; multi-lingual and multi-cultural aspects; IL outside higher education; MOOC management; and MOOCs in LIS and IL.

Keywords: Information literacy · MOOCs · Good practice · Multilingual Multicultural · Self-assessment

1 Introduction

This paper reports an analysis of good practices in information literacy (IL) education, with particular reference to practices which may be incorporated in the design on a Massive Open Online Course (MOOC). It is the first stage of an Erasmus+ project, Information Literacy Online (ILO), to create a MOOC for IL, with an emphasis on multi-lingual and multi-cultural aspects, and on continual participant self-assessment.

The project partners are: Barcelona, Graz, Frankfurt (DIPF), Hildesheim, London (City), Ljubljana, and Zadar. The MOOC will focus on students in higher education, while being accessible to high-school students and to adults in lifelong-learning. It will be multi-lingual (English, German, Spanish, Catalan, Slovenian and Croatian), and reflecting both culturally distinct and language-specific issues in IL, and will have a focus on technology-supported participant self-assessment.

This presentation reports the first stage of the project, carried out between January and May 2017. This is an analysis of current good practices in teaching and training for IL, to guide the structure, content, nature of interaction, and pedagogical practices of the MOOC. No attempt was made to identify 'best' practice; rather to identify good practice relevant to the context of the ILO MOOC. The aim was to identify approaches which had been reported to have successful application in several relevant contexts, without ignoring recent, and hence less widely-reported, promising examples. Because

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of the diversity of the approaches and issues, and the need to focus on perceived relevance to the ILO MOOC, the approach is necessarily less formal than that of a systematic review.

This is a work in progress, and will be kept updated to guide development of the ILO MOOC through the duration of the project.

Only a summary of this extensive review is given here, with limited indicative references, and with emphasis on the aspects of particular interest to ILO: multi-lingual and multicultural content, and participant self-assessment. The full report, with 17,000 words, 280 references, and numerous examples, will be deposited in the Humanities Commons repository.

2 Methods

Since the literature (published and unpublished) is extensive, and practice rapidly developing, the focus was on materials created in the last five years, with a date of 2012 or later, although particularly significant older material was also included where appropriate. The aim was not to produce a comprehensive bibliography, but rather a selective list of resources providing evidence of good practice: for MOOCs generally, with emphasis on multi-lingual and multicultural aspects; for IL learning, where it is relevant to the MOOC context; and for technology-supported self-assessment.

Sources used were: Internet search engines; Internet sources (specialist blogs, associations, curricula); bibliographic databases (Library and Information Science Abstracts (LISA), Library and Information Science and Technology Abstracts (LISTA), Web of Science, Educational Abstracts, British Education Index, Educational Resources Information Centre (ERIC), Applied Social Sciences Index and Abstracts (ASSIA); citation indexes to follow up relevant sources; library catalogues (City University of London, University College London, London University Senate House Library, British Library; contents lists of relevant journals (Journal of Information Literacy, Communications in Information Literacy, Nordic Journal of Information Literacy in Higher Education, British Journal of Educational Technology); contents of books series (European Conference on Information Literacy Proceedings) and multi-authored monographs.

A detailed analysis of the features of 21 existing IL MOOCs was also carried out, both to assess general good practice and to identify any which might be, in some respects, exemplars for the ILO MOOC.

Comments on aspects of the draft report were obtained from a small number of IL experts in the UK, Germany, Slovenia and Croatia, to assess the validity of the conclusions.

3 Summaries of Good Practice

Eleven aspects of good practice were examined; these emerged from the analysis as being the issues discussed in the literature, rather than being pre-defined, with the exception of topics in Sects. 3.7 and 3.8, which were included as being of importance for the design of the IL MOOC. The findings for each are summarised here.

3.1 IL Definition and Models

Not all reported IL educational initiatives state the definition or model of IL being used. However, it is good practice to state these explicitly, as they help in making rational and explicable decisions about the way the initiative is designed. An initial division can be made into the older style of linear, skills-based models, and the more recent, and more holistic models; though an over-simplification, this is in accord with the way the models are typically regarded, Walsh [1] describing them as 'competence' and 'relational' models respectively. While most IL provision is designed around one model, it is possible to 'pick and mix'. For example, an IL programme at the University of Maynooth combined elements from the ANCIL model and the ACRL Framework [2], while it appears feasible to combine the older ACRL Standards with their newer Framework [3, 4]. Nor are the models necessarily very different in practice; for example, one IL programme was mapped to ANCIL, but the originators noted that it could equally be mapped to the SCONUL 'Pillars' model [5].

For the ILO project, given the general trend towards broader conceptual definitions of IL rather than the older skills-based definitions, and the desirability of having an internationally recognised basis for a multi-cultural MOOC, the UNESCO definition of media and information literacy is the most suitable [6]. Models of this kind have criticised for offering little specific guidance for designing IL training; this may be countered by using a more specific model of IL within the general definition. The UK Open University model, which specifies detailed competencies at several levels in five areas, is a good example [7].

Therefore the definition of IL for ILO would be "a set of competencies that empowers citizens to access, retrieve, understand, evaluate and use, create, as well as share information and media content in all formats, using various tools, in a critical, ethical and effective way, in order to participate and engage in personal, professional and societal activities", with competencies specified in five areas: understand and engage in digital practices; find information; critically evaluate information, online interactions and online tools; manage and communicate information; collaborate and share digital content.

3.2 IL Content and Contexts

A very wide variety of individual topics have been included in IL educational programmes, including those described as digital literacy, media literacy, metaliteracy, etc. In order to try to define realistic, broad core, those topics appearing in two or more of the main IL models were identified. This leads to the following set of 16 core concepts, with the proviso that there is overlap between them, and that terminology is not used consistently in all models:

- understand the information environment (in the widest sense)
- use digital tools effectively
- recognise information needs, and how to address them
- know relevant information resources
- find and access information
- critically evaluate information and information sources

- critically evaluate online interactions and online tools
- manage information
- collaborate in information handling
- share digital content ethically
- become an independent and self-directed learner; and a lifelong learner
- learn to learn; develop metacognition
- understand ethical issues of information
- present and communicate information
- create information products
- synthesize information and create new knowledge

This set of topics is recommended as the basis for the development of the ILO MOOC, though not all will be included from the start.

A perennial issue has been the appropriate balance between generic and subject- or context- specific IL material [8]. In general, good practice has moved in the direction of greater specificity, with a recognition that IL provision is more meaningful to students the more it can be made contextual to their situation [9]. On the other hand, creation of generic teaching materials has been recommended, for economy and to encourage re-use. We conclude that good practice for ILO will be to create an initial set of generic models and materials in such a way that they can be readily modified, customised or extended for use in specific contexts.

3.3 Pedagogical Frameworks

Only a minority of reports of IL training programmes mention any explicit pedagogical framework, and there is no single pedagogical framework which has been widely used in the creation of IL learning materials. Rather, a variety of frameworks have been used, seemingly *ad hoc*, for both the creation and the application of IL materials, among them Biggs' constructive alignment pedagogy, Bloom's taxonomy of educational objectives, Honey Mumford learning styles, and Kolb's experiential learning style theory. Despite criticism of the uncritical use of learning styles, it seems that this kind of framework has value for IL instructional design, not least in reminding designers not to rely a limited repertoire of activities. Knowles' andragogy, the principles of learning by autonomous adults [10], has seemingly not been explicitly applied in IL education, though it seems apposite for use in the largely self-regulated learning environment of a MOOC, as does Schön's reflective practice, which has had some limited use in IL education [11].

3.4 Teaching and Learning Methods

A wide variety of methods have been used in the teaching of IL, and much has been written about them, though mainly in the context of face-to-face classes [12]. Even considering only online provision, "The variety of methods employed illustrates that there is no magic bullet approach to IL" [3]. Such studies as have been done find little demonstrable difference in effectiveness between particular instructional methods, on between face-to-face and online delivery, and between online instruction with different degrees of interaction.

In general, good practice for IL education has sought to combine learning approaches, including:

- didactic explanation (via text, video, animation, audio), with videos increasingly acceptable as an alternative to face-to-face presentation and text-based online instruction
- active learning exercises, individual or collaborative, short "one off" or longer duration
- resource evaluation, by checklist or by longer qualitative assessment
- information creation, reflective writing, creation of resource lists

These have been delivered face-to-face, by online instruction, or by self-directed independent learning.

The online tutorial has been a staple tool for teaching IL since the late 1990s, a general move away from static text-based tutorials to those with more interaction and audio/visual content; the latter is typically more appealing to students, but does not necessarily result in better assessed learning outcomes. A very common structure is a two-part tutorial, with an instructional component followed by an active learning component: quiz, exercises, etc.

IL tutorials have typically been followed by an individual student in isolation, but are increasingly including online communication and collaboration (synchronous and asynchronous) with instructor, or collaboration with fellow students. Self-paced learning units may be valuable for self-directed learning, and for the development of a habit of lifelong learning [13].

There is no standardisation, or agreed best practice, in what software to use in producing IL learning materials, although the increasing use of open source software is notable. Increasing provision of IL learning online has led to the creation and use of small, discrete 'bite sized' learning objects. These have the obvious advantages of being relatively quickly produced, modified and shared, and are convenient for learners to access and use. On the other hand, it is recognised that to be realistic, activities in distance education should take days, weeks or months rather than short discrete minutes of time, and allow for critical reflection and perhaps collaboration. 'Bite size' materials must therefore be carefully integrated into longer duration programmes to be effective.

Gamification, using games in learning situations and introducing game-like elements into instruction generally, has been found to be a good way of involving and enthusing students, and improving student engagement and learning, not least in MOOCs [14, 15]. It has been found to be useful for information literacy learning, initially in the form of physical in-class games, and more recently as digital games [1, 16]. There are few fully developed IL games, and these are very demanding of time and expertise to build, monitor and support. There has been considerable criticism of many IL instructional games, as having game elements artificially added on; a form of dressed-up assignment. Whatever form they take, IL games must be fully integrated into the rest of the course, and contribute in a useful way to the other things participants are doing; not a thing on their own, not a game for the sake of it. Further, as not all participants will like the game approach, it should be optional; there should be ways of using the instructional materials without the game elements.

3.5 Interaction and Collaboration by Learners

Good practice is now to include as much interaction, with the system, and collaboration, with other students, in online IL instruction, reflecting general pedagogical opinion on the value of active and social, collaborative, learning. Since online IL instruction was introduced in the late 1990s, the trend has been to provide more interaction for active learning, to supplement or replace passive didactic instruction [17, 18], although the definition of what counts as interaction varies considerably between writers [19]. Interactive exercises with real resources, rather than pre-set simulations, are much more realistic, and hence better for learning, but they need to be updated each time the course runs, because the digital resources used will change. In any event, provision of effective interaction is generally more time-consuming than providing simpler forms of tutorial.

The newer instantiations of IL instruction generally support collaboration between learners whenever possible. For example, the ANCIL model emphasises the value of collaborative learning, based on real needs, wherever possible [20]. There must, however, be some similarity of subject or context between learners, for collaboration to be meaningful.

3.6 Structuring of Learning Materials

Relatively little attention has been given to categorising and structuring learning materials for IL instruction, with the exception of the creation of IL learning objects to be as reusable as possible.

Designing materials for IL instruction, online tutorials in particular, in such a way that that that they can easily be re-used by others, and modified by their originators, has been seen as desirable ever since such materials were first created [21]. Initially these were intended for local re-use, and kept in an institutional repository, while the current trend is to treat them as Open Educational Resources (OERs) for general re-use, kept in an open access repository, such as GitHub and SoftChalk Cloud. To be effectively reusable, reusable learning objects (RLOs) for IL instruction should observe certain general conditions, some of the most significant being that they should:

- have clearly stated learning objectives and outcomes
- be generic, and focus on broad IL goals, rather than being course- or subject-specific; this increases shelf-life and applicability, but at the cost of losing the losing the benefits of contextualisation
- cover the smallest feasible amount of material, as this makes it more flexible and easier for other to reuse in different contexts
- address multiple learning styles and preferences, through inclusion of different activities in each object
- always include some check of knowledge, as this will be needed by some potential users
- be flexible, by, for example, providing multiple points of access, and giving the choice to take a concluding assessment
- be consistent in design with similar RLOs, so students do not have to learn a new process each time

- be intuitive to use; technical solutions should not get in the way of learning
- have appropriate licensing conditions, allowing wide re-use
- use generally accepted standards wherever applicable, including accessibility standards
- use only widely available, ideally open-access, software and resources, allowing wide re-use

Other than this concern for creating IL materials as RLOs, there has been some interest in using constructivist and/or connectionist principles in the design of IL instruction, but this is not universally accepted. Various instructional design frameworks have been applied, of which the most popular have been ADDIE and IDEA [22].

3.7 Assessment Methods

Assessment has always played a part in IL instruction, with a limited variety of methods used: as an initial pre-instruction assessment, to check student's prior knowledge; as a check of understanding after each session; and as a post-course assessment, which may also be a summative examination for credit, while frequent formative assessment fits with currently popular models of 'bite sized' instructional activities [23, 24]. There is, however little agreement on good practice for self-evaluation by participants, so this aspect of the ILO project will be genuinely innovative.

The well-tried multiple-choice quiz remains the predominant form of assessment, but this has limitations. There is a problem if static assessment questions are tied to online information sources that changes often, while questions of principle, which will be unchanging, run the risk of being either trivial, when the answer is self-evident or lacking context, or debatable, when there is no right answer. Alternatives to quizzes are reflection and portfolios, 'selfie' photographs illustrating understanding, search task completion, and critical incident questionnaires.

Assessment by an instructor remains the popular method, although peer assessment by other participants, though rarely used so far in IL instruction, can be effective. Self-assessment remains little tried, beyond a simple, and sometimes unrealistic self-assessment of overall capability before and after a course of instruction. Some IL tutorials and MOOCs offer brief self-assessment quizzes, though they may have the problem of not recording completion or performance [25].

3.8 Multi-lingual and Multi-cultural Aspects

Although there are many descriptions of IL training in particular countries or regions, they generally do not analyse national cultural variations. There have been very few examples of multi-lingual provision for IL education, nor of explicit and detailed consideration of such education might be adapted to students from different cultural backgrounds. There is, as Simon [26] puts it "a dearth of literature exploring how library instruction and information literacy instruction is conducted in colleges and universities in non-English speaking countries".

This is despite the fact that in an early paper addressing this topic, Johnson and Webber [27] wrote that "in terms of local and national culture, the information literature person is a self- and socially-conscious being, rather than a simple repository of skills and knowledge. This is underlined by cross-cultural difference, where issues of behaviour and acceptability of kinds of information become sensitive". Setting aside language issues, there are questions of different academic linguistic styles, unfamiliar cultural references and religious, historical and political allusions, different learning styles, and different patterns of engagement with various types of media. There may be particular problems in the expression of IL concepts, typically formulated in English, in other languages. Simon [26] notes the difficulties faced by Israeli students in converting Hebrew concepts into the kind of formalised keyword approach necessary for database searching, while Boolean searching itself may be problematic for non-English speakers [28].

There are relatively few examples of multi-lingual IL provision. Three typical examples of those which do exist include: the INFLOW IL model, developed within the EC 7th Framework Programme between 2010–2014, and mainly intended for younger students though with some applicability to university students, developed in English and translated into French and Spanish [11]; digital IL instructional games with a multilingual interface (English, Bulgarian, Italian and Swedish) being produced in the Erasmus+ project 'Transforming information literacy instruction in the university environment through the serious games approach (tiLIT)' [29]; and the UNESCO IL MOOC, to be instantiated in English, Arabic, Greek, Spanish, and Hindi, as well as in English [30].

Although there have been many descriptions of IL education in various countries and regions, there have been few accounts of what differences local culture may make. a number of writers, as noted below, have alluded to this, but few have given specific detailed recommendations. It may be difficult to distinguish issues due to culture from those due to language or previous educational curricula. Similarly, relatively few writers have used any recognised framework in analysing cultural differences. Where a formal framework has been used, it is invariably Hofstede's 'Five Dimensions of Culture' [31].

It has been argued that the older forms of IL models are poorly suited to deal with cultural aspects of IL, and that critical information literacy approaches, because of their support for multiple perspectives and support for societal as well as personal development, are superior, particularly in transitional and post-conflict societies [32, 33].

The most extensive set of studies of IL education in different cultural settings have been those of Dorner and Gorman, drawing on analyses of the contexts of Asia and Oceania, and summarised by Dorner [34]. They argue that IL education for this extensive region must be contextual and sensitive to local needs, and in favour of explicit consideration of cultural factors, using Hofstede's dimensions, in planning IL education in developing countries. Models using a critical form of IL are favoured over those based on the older skills-based frameworks, especially approaches based on Bloom's taxonomy, as these may not be suitable for all cultures. Applying these ideas to IL education in Laos, they suggest that student-centred learning may not appropriate, that collaborative group-working will be better accepted than individual work, and that learning activities should be particularly clearly defined and structured.

Given that there is very little agreement on good practice here, the LO project should be genuinely innovative.

3.9 IL Outside Higher Education

IL education has generally been developed for students in higher education, taking Bachelors and Masters degrees in universities and colleges. There has been some limited consideration of IL in three other contexts: younger students, typically in schools; in workplaces and professions; and for the general public [35–37]. There are a few examples of cross-sectoral applications, with IL materials developed for a university being used in a public library, or those developed for school pupils being offered to parents and alumni, but these are unusual.

To allow for materials developed for university students being applicable in other contexts, the key factors seem to be they be sufficiently broad in coverage, generic in subject, and in discrete bite-sized units; this will maximise the chance of their reuse in this way.

3.10 MOOC Issues: General and Management

MOOCs (massive open online courses), generally understood as online courses in any subject area with unlimited enrolment, first appeared in 2008. Increased usage, and many new providers, led to 2012 being described as the 'year of the MOOC'. Then disenchantment, due to very poor completion rates (usually well below 10%), concerns about quality, and problems of sustainability, with providers potentially putting in a lot of effort for little financial return. Subsequently, there has been a revision of ideas, and progress on a more realistic basis, as well as consideration of the wider place of MOOCS in lifelong learning; for overviews of MOOCs and their development, see [38–41]. This therefore an appropriate time for reconsidering the value of MOOCs for IL instruction.

From the beginning, a distinction was made between two main types of MOOC: cMOOCs, or connectivist MOOCs, based on a constructivist approach, with learning happening mainly through social interaction, and xMOOCs, or extended MOOCs [in the sense that they generally extend other forms of education or professional development for most learners], have a traditional course structure, with a linear syllabus, largely controlled by instructors, with limited interaction between learners. A variety of other categories of MOOCs have been suggested, for example LOOCs (little open online courses), SOOCs, (small open online courses), SPOCs (small private online courses), and SMOCs (synchronous massive open online courses), and the the 'mini-MOOC', a course with a narrow subject focus, based explicitly on pedagogical principles, using automated online assessment, created with the aim of helping large numbers of participants learn specific skills within the topic. There is no longer any sharp distinction between the forms of MOOCs, and it seems that IL MOOCs in the future, including the ILO MOOC, will share the characteristics of more than one kind.

Many factors have been identified as affecting student recruitment and retention in MOOCs, including student background and motivation, pedagogical design, the extent to which the MOOC can be tailored to the need of its users, ways of encouraging

student access, and the extent to which it is integrated into other learning [40, 42, 43]. Of course, many participants in a MOOC are not concerned about completion. They are auditing the material for interest, or as a 'taster' for the subject, and do not necessarily want to follow to the end. It seems therefore desirable for IL instruction MOOCs to be designed in such a way as to allow incorporation their materials into 'blended learning' within a university, while allowing independent learners to follow the whole MOOC course, and also encouraging auditing and 'drop ins'.

It may be noted, with respect to the multilingual intention of the ILO MOOC, that the English language predominates in MOOCs generally. A study carried out in early 2016, examining the 4950 MOOCs listed in the Class Central database, showed that, although MOOCs in 17 languages could be identified, English language courses accounted for 76%, and five languages (English, Spanish, French, Chinese and Arabic) accounted for 95% [44]. As a comparison, the MOOC-list website offered MOOCs in 30 different languages in March 2017, but with English still predominant.

3.11 MOOCs in LIS and IL

Although it seems that there is a natural synergy between the open and individual learning offered by MOOCs and the the ethos of library/information services, there have been very few examples of LIS involvement with MOOC development [39, 45].

A number of MOOCs have developed for the teaching of IL. 21 were identified in the preparation of this report, described in sufficient detail for their features to be analysed; this analysis appears in the full report. In summary, it has to be said that their natures are so varied, all having been developed for a particular context, need, or available expertise, that it is difficult to draw general lessons of good practice. They vary from a course aimed at teaching the basics of IL to new university students, to a course for young people on UNESCO's MIL ideas, to one of the concept of metaliteracy, to a short 'any time' course on plagiarism issues.

It may be said, however, that these examples suggest that offering the MOOC for an initial defined period with active instructor support, followed by availability for self-paced use at any time (perhaps within a defined time period after the instructor-led phase, to avoid the materials becoming obsolescent), is attractive in maximising use.

4 Conclusions

The analysis of good practice in IL education reported here will form the basis for the design and development of the ILO MOOC. The most salient factors are: balancing a broad and inclusive understanding of IL, with a more detailed and specific model; using a pedagogical framework to ensure a variety of appropriate interactions and activities; creating small RLOs to aid flexible reuse; and adopting innovative approaches to the multilingual and multicultural aspects, and to self-assessment.

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