ILG research Bursary Proforma

April 2015.

(NB all boxes expand) (See pages 3 & 4 for instructions)

1. Project Title (maximum 10 words)

Investigating the Information Literacy of Scotland's Teenagers to Inform Teaching Practice

2. Principal Investigator

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3. Co-Investigator(s)

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4. Partner(s)

Scottish Information Literacy Community of Practice

Edinburgh City Libraries and Schools

5. Summary of the project – If the project is funded, ILG will use this in any publicity material or announcements. (Maximum 300 words)

With the ever-increasing importance of the Internet for many information needs, the ability to search for, understand, evaluate and synthesise information represents a critical contemporary skill. Many governments and local authorities increasingly offer their services, sometimes exclusively, through online means. While this may lead to a number of benefits, there is concern about the expectation this places on people's Information Literacy. Although many will benefit from this, others will struggle to find and use the services they need and may feel increasingly disconnected from society. While such skills are clearly important in all aspects of life, this is particularly so in education as many school tasks necessitate use of these skills.
Although existing research has given us insights into the information behaviour of young people, these insights generally come from only a small sample of participants and come from asking people

to evaluate their own skills, rather than actually measuring them. We therefore propose that a more thorough understanding of secondary school-aged children's information behaviour, including how they feel when performing tasks, would help to develop better teaching practice. We will ask participants (in this case a large sample of around 100 secondary school pupils from schools in Edinburgh, Scotland) to perform a number of pre-defined search tasks, for which the correct answers (relevant documents) are known. Students will use a basic search system to collect a small set of relevant documents for a chosen topic over a time-constrained period of between 15 minutes and half an hour. All interactions with the system will be recorded, yielding large volumes of precise data about the participants' information behaviour and performance. This data will then be used to evaluate where difficulties arise and which groups are most likely to make poor decisions, leading to concrete recommendations for teaching IL.

6. **Risk assessment – Please state any risks you envisage on a scale of 1 to 5 with 1 being low and 5 being a high risk**

- Inability to obtain necessary number of participants and/or participants from sufficiently diverse backgrounds to ensure generalisability of results.
  Expected risk: 3
  Mitigation strategies: Contacts within Edinburgh City Libraries and Schools, including school librarians, are supporting this project and have identified already-timetabled periods in their students' schedules during which the user studies could take place. We would conduct the studies in schools with wide-ranging demographic profiles with intakes from various socio-economic backgrounds.

- Inability to carry our necessary research and analyses.
  Expected risk: 1
  Mitigation strategies: Both the PI and the 2 CO-Is have considerable experience conducting research of this nature. Dr Morgan Harvey has published over 35 peer-reviewed works in the fields of Information Retrieval and Information Behaviour; Dr Geoff Walton has over 50 publications, many of which have been published in key Information Literacy venues including the European Conference on Information Literacy and the Journal of Information Literacy; David Brazier is currently in the second year of a PhD on the information behavior of, and the impact of eGovernance on, second-language speakers of English. The RA will be selected from candidates with an existing understanding of research principles and data analysis and will be supervised throughout by the PI.

- Possibility of research not been accepted for publication.
  Expected risk: 2
  Although there is always a risk in academia of research work not being accepted for publication, the main researchers involved have a strong track record of gaining acceptance of their work in major publications. The PI has in the past two years, for example, published 6 papers in conferences with acceptance rates of < 25% and has published 2 articles in journals with impact factors > 1.5. In addition to this, an extensive literature review has outlined that a significant gap exists which the results of this work will serve to fill.

7. **Stakeholders**

- National Library of Scotland

- Edinburgh City Libraries and Schools

- Scottish Information Literary Community of Practice

8. Aims and Objectives

- Conduct a large-scale user study with secondary school pupils using established methodologies from the field of Information retrieval.

- Analyse the quantitative and qualitative data generated to gain an in-depth and triangulated understanding of the students' performance in the task as well as how they go about searching for, using and assessing information.

- From the above, develop an understanding of the school students' information behaviours.

- Extract insights from the aforementioned analyses to generate evidence-based recommendations for teaching and supporting IL at the crucial secondary-school level.

These aims and objectives fulfill the SMART criteria in the following manner:

Specific – Analysis of performance and data gathered in two different, but complimentary, ways with a well-defined and rigorous evaluation methodology.

Measurable – The data gathered will be quantified using standard, well-understood metrics from the field of Information Retrieval.

Attainable – The data will be gathered using a specific methodology.

Realistic – Ensured by the chosen methodology, which is reliable and proven in other contexts.

Timely/tangible – Objectives are set out clearly in the project timeline and there will be a tangible output in the form of analysed data from participants.

9. Milestones

- Initial study design and development of user interface

- Pilot study and evaluation of research operationalisation

- Conduct main study over several sessions

- Analyse generated data and develop findings

- Turn findings into a set of evidence-based recommendations

Gantt Chart:

Task	Start date	Duration	End date				
Interview RA candidates	01/03/2017	14	15/03/2017				
Design initial study	01/03/2017	40	10/04/2017				
First team meeting	03/04/2017	1	04/04/2017				
Develop study user interface	15/03/2017	21	05/04/2017				
Pilot study	10/04/2017	28	08/05/2017				
Evaluate pilot study	08/05/2017	4	12/05/2017				
Second team meeting	15/05/2017	1	16/05/2017				
Conduct main study	16/05/2017	52	07/07/2017				
Analyse study results	08/07/2017	21	29/07/2017				
Third team meeting	31/07/2017	1	01/08/2017				
Develop recommendations	31/07/2017	5	05/08/2017				
Work on publication(s)	31/07/2017	60	29/09/2017				
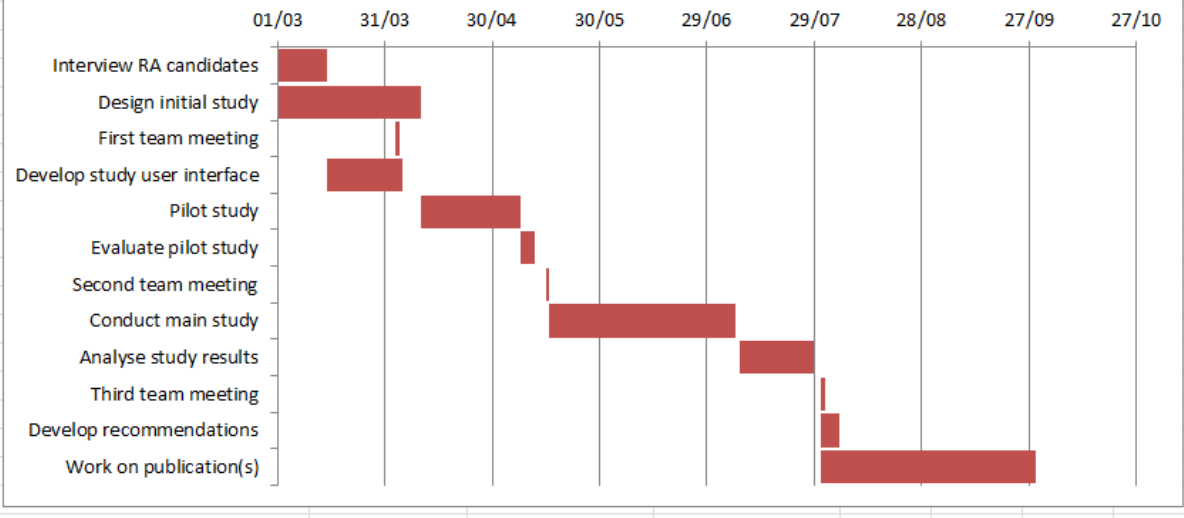
10. Description (Maximum 1,000 words)

Introduction and background

Given the increasing importance of the Internet for most of our information needs in education, governance and everyday life, the ability to search for, understand, evaluate and synthesize information represents a critical skill in modern daily life. These abilities (Information Literacy or IL) are so crucial that many governmental organisations and politicians claim that it is essential to be able to participate effectively in our modern information society. The Prague and Alexandra UNESCO proclamations even suggest that access to information should be viewed as a basic human right (Sturges, 2010).

Such skills are necessary for many fundamental tasks, from booking a holiday and paying your taxes to choosing a mortgage, the right information needs to be sought, understood and used to inform decision making. Many governments and local authorities now offer their services, sometimes exclusively, through online means (Helbig, 2009). While there are a number of potential benefits to using technology in this way, there is also concern about the expectation this places on people's ability to access and use the Internet.

Within education such skills are perhaps even more crucial, as pupils are often given tasks that necessitate these abilities and are first introduced to these concepts in school. To write a report one must identify the information required, use effective search strategies to locate relevant documents, evaluate the quality and veracity of these and, finally, synthesise the information converting it into a coherent narrative (Eisenberg, 1990). Making information available to people is not enough; education systems should ensure that today's students are empowered to learn and to take their

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place in the learning society (Yu, 2006).

Unfortunately much evidence exists suggesting that "millenials" are not as information literate as one might expect and that the steps taken in education systems are not ensuring school leavers are equipped with these valuable skills. Many pre-university students are unable to construct effective search queries (Harrop, 2012) and rarely employ effective search strategies or systemically plan how to find the information they need (Coiro, 2007). They use very short queries and are often frustrated by their inability to refine search topics, tending to give up a search rather than modify their strategy. They are easily discouraged when a search engine does not immediately return useful results and feel swamped by non-relevant and poor-quality material, leading them often to simply cite/copy top-ranked resources without assessing their quality (Smith, 2007).

This is a problem that needs to be countered early on in a child's development as recent research questions whether student information behaviours can be changed once they enter Higher Education (Rowlands, 2008). Therefore it crucial that pupils be taught these skills early in their educational lives and be encouraged to apply them throughout. While this is something education systems strive to achieve, it is clear from evidence presented in the literature that the approaches taken are not as effective as they could be.

Proposed work

We propose that a more thorough understanding of secondary school-aged (more specifically, those between the ages of 12 and 14) children's information behaviour, including their affective responses to information gathering tasks, is necessary to develop more efficacious interventions and educational resources. Although research exists into the information behaviour of young people, this work generally suffers from a lack of scale (and therefore generalisability) and a focus on purely qualitative data collection methods. We will undertake a quantitative analysis of secondary school-aged children's information gathering behaviour through analysis of a series of short information retrieval tasks, triangulating this with qualitative assessments of the participants' own assessment.

We intend to follow Vakkari's 3-stage model, so that data can be collected throughout the entire process of new knowledge acquisition (Vakkari, 2001). To better motivate pupils, we will situate the study as a simulated work task in which participants will be asked to choose a research topic to write a report on, although in reality they will not be required to write the report. They will then use a bespoke search system to collect a small set of relevant documents for their chosen topic over a time-constrained period of between 15 minutes and half an hour. This task has been chosen as it is similar to an Added Value Unit (AVU), an element of the revised National Qualifications framework, which all Scottish secondary school pupils must take.

Participants will fill in pre- and post-task questionnaires to self-assess various elements related to search. Pre-task questions will include those related to familiarity with and interest in the chosen topics and the expected difficulty in completing the tasks. Post-task questions will focus on perceived learning and search success.

The search system will be based on the TREC AQUAINT collection, a large set of over a million documents from three large news agencies collected between 1996 and 2000. This is a complete IR evaluation collection, meaning that there are pre-defined search topics associated with it together with relevance judgements for each of these topics. Relevance judgements are per-topic evaluations indicating which documents in the collection are relevant meaning that we can evaluate the performance of a new retrieval system and, crucially in this case, the search performance of users.

The user study will be piloted with a small number of participants before proceeding with the full experiment during which all interactions with the system will be recorded, yielding large volumes of quantitative data about the participants' information behavior and performance. This data, in concert with the pupils' own perceptions, would then be used to evaluate where difficulties are arising and which groups are most likely to make poor decisions, leading to recommendations for teaching IL at a pre-university level. The findings will be used to prepare: Guidelines for teaching IL to pupils at this key stage of their education; and pamphlets for pupils to help them in developing their own IL skills.

11. Dissemination strategy (maximum 500 words)

The potential outputs for such a large, scientific study as that proposed are significant. From an academic standpoint, it is expected that this work will generate a number of academic publications in the form of journal articles and conference items and will be of interest to a number of academics and practitioners in the fields of information literacy (as well as the broader field of information science), information retrieval and education and pedagogy. Information Retrieval has, particularly in recent years, seen an increased interest in work that addresses the information needs and behaviours of users in contexts such as education, as well as the impact that (a lack of) information literacy has on how people interact with information retrieval systems and how they go about assessing, and learning from, the sources they find.

In order to disseminate early findings whilst the project is ongoing, we intend to make use of social media technology (in particular, Twitter), where a project-specific account will be created and regular posts made. In addition to this, a blog will be set up for longer posts on the progress of the project. The researchers will attend regular meetings with the IL Community of Practice in Edinburgh to keep them informed of progress and allow them input into the study and its findings. We also intend to draft a short pamphlet for pupils based on our initial findings, allowing them to reflect on their own information literacy skills and to receive general feedback on their participation. Longer-term, it is intended that publications will be written on the basis of the work which will be submitted initially to relevant conferences and then, in a more finalised state, to appropriate journals. The PI and COs already have experience publishing and presenting work at venues such as the ACM's annual SIGIR conference (Special Interest Group for Information Retrieval) and the European Conference on Information Literacy (ECIL) and in top-tier journals such as the Journal of the Association for Information Science and Technology (JASIST), the Journal of Information Literacy, the Journal of Documentation and Journal of Librarianship and Information Science.

12. Outputs

- Several peer-review publications, including conference papers and journal articles. These will serve to disseminate the findings to a wider audience of researchers and practitioners in the information literacy and greater information behavior field. Publication in journals with high impact factors increases the likelihood that the research will be read, cited and build upon by other academics.

- Short pamphlet to help pupils to improve their information literacy skills based on results of the research and insights from the CoP made during the project.

- Recommendations and guidelines for the teaching of IL skills to early-stage secondary school pupils, with particular reference to the Scottish Government's Framework for Excellence.
  It is envisaged that this output will inform the professional practice of teachers and librarians and may even contribute to the wider debate around IL in the Scottish Parliament.

13. Evaluation strategy

The project, and the progress towards set objectives, will be assessed regularly by the project team via face-to-face and Skype-based meetings. Budget has been allocated within the financial plan to enable visits between Northumbria, Manchester and Edinburgh throughout the project.

In addition to this, a steering group will be assembled comprising the research team, members of the Scottish Information Literary Community of Practice and an independent researcher from the field of information behavior/retrieval. The financial plan also includes budget to meet with the CoP in Edinburgh and discuss the project during some of their regular meetings.

We will measure the uptake and impact of outputs 2 and 3 by conducting questionnaires asking school leaders whether the outputs have been used by the school and whether any concrete changes have been made to IL teaching in reaction to the guidelines.

14. Financial breakdown

PI time buy-out 40 hours (data analysis, project coordination)	£ 1,322.00
RA 150 hours (experiments and data analysis)	£ 3,101.00
RA trips to Edinburgh to conduct experiments (x4)	£ 206.00
RA and PI trips to Edinburgh to meet with CoP (x2)	£ 206.00
Trips for Geoff Walton to Northumbria (x3)	£ 160.00
Conference fees, travel and accommodation (x3)	£ 1,800.00
Miscellaneous travel and other expenses (including pamphlet printing)	£ 400.00
Total	**£ 7,195.00**

ILG research bursary proforma - instructions

General comments

When writing your text, please be as concise and clear as possible. Write your bid for intelligent non-expert, avoid jargon, acronyms and abbreviations. Make sure that your bid addresses as many criteria as possible as specified in the call document. All word limits are to be strictly observed – exceeding the limit specified will automatically disqualify the application.

Where sections do not apply e.g., Co-Investigator please insert 'N/A'.

1. Project Title

Short and imaginative titles are preferred that capture the imagination and convey the essence of the project.

2. Principal Investigator

Please insert your full name, job title, affiliation, postal address, telephone number and email address. **The Principal investigator must be a member of the ILG**.

3. Co-Investigator(s)

These will be colleague(s) who will share the doing of the research and will incur their own costs. Please insert full name, job title, affiliation, postal address, telephone number and email address of all co-investigators

4. Partners

These will be individuals or organisation involved in the research but not actually carrying it out and therefore do not incur a cost. These could be 'research buddies' (academics or researchers you have enlisted to help with the methodology, etc.). Please insert full name, job title, affiliation, postal address, telephone number and email address of all co-investigators

5. Summary of the project

If the project is funded ILG will use this in any publicity material or announcements. (Maximum 300 words)

This is to be written in an informal style to communicate the project to the wider community and media.

6. Risk assessment

Please state any risks you envisage on a scale of 1 to 5 with 1 being low and 5 being a high risk

7. Stakeholders

This is anyone who might have a direct interest or who may benefit from the project – for example school children, teachers or business owners etc.

8. Aims and Objectives

These should be SMART (specific, measurable, achievable, relevant and timely) objectives that meet funders' criteria

9. Milestones

This is the detail of the project plan and can be in the form of a simple Gantt chart.

10. Description (Maximum 1,000 words)

This is the candidates opportunity to explain the project in more detail and could address issues such

as why this project and why now? Also how the project will be carried out.

11. Dissemination strategy (maximum 500 words)

How will you make sure that your work and its findings reaches the widest possible audience? This might include all or some of the following: seminars, blogs, webinars, conference papers, press releases, YouTube etc.

12. Outputs

These are tangible artefacts such as webpages, blogs, a learning and teaching resource, peer reviewed journal articles, books, book chapters and so on.

13. Evaluation strategy (maximum 500 words)

The evaluation strategy should seek to answer the following questions:

How will progress of the project be monitored?

To what extent were the project objectives met?

What was the impact of the project?

What is the added value of the project?

14. Financial breakdown

This will include:

Amount requested and why for example, salary costs, travel and subsistence and conference fees.

This should be in the form of an itemised list of each separate cost. Maximum allowed £10,000, in practice we anticipate bids for smaller amounts than this.

If you have further queries about this form please contact:

Dr Geoff Walton: geoff.walton@northumbria.ac.uk

Andrew Walsh: a.p.walsh@hud.ac.uk

Please return this form to: cilipilg@gmail.com

Deadline for bids: 1st July 2015 and 1st December 2015

Successful candidates will be notified during August 2015 and January 2016

It is envisaged that projects will start between August 2015 and March 2016