

The old man was peering intently at the shelves. I'll have to admit that he's a very competent scholar. Isn't he just a librarian? Garion asked, somebody who looks after books? That's where all the rest of scholarship starts, Garion. All the books in the world won't help you if they're just piled up in a heap.

David Eddings, *King of the Murgos* (1989, pp. 89-90)

Peter Lyman and Hal Varian¹ estimated that about 5 exabytes of new information² [print, film, magnetic and optical storage media] were created in 2002 and that this had about doubled in the [previous] three years (2003). According to Lyman the purpose of the exercise was an attempt to “quantify people’s feelings of being overwhelmed by information”, so it isn’t surprising, then, that he reframed literacy in terms of knowing what to throw away (Joseph, 2013). This becomes even more pressing if, as David Culler³ continues, the last 50 years were not actually the Information Age, merely laying in its plumbing. It is this transition from what was a problem of quantity to what is now *in itself and also* a problem of quality that concerns us.

It is one thing to drown in information; it is another thing, I think, to drown in information that is toxic. Neil Postman, in *Bullshit and the Art of Crap-Detection*, said that “the best things schools can do for kids is to help them learn how to distinguish useful talk from bullshit (p. 1)...including their own (p. 3)”, and of the many varieties he listed pomposity, fanaticism (including bigotry and Eichmannism), inanity (ignorance cloaked in sincerity), superstition (ignorance cloaked in authority) and earthiness (the mirror image of pomposity). He said this in 1969, with particular reference to the emerging mass media that gave “a voice and an audience to many people whose opinions would otherwise not be solicited, and who, in fact, have little else but verbal excrement to contribute to public issues” (p. 2). Now that seemingly everyone has the means to publish to the masses, and seemingly does, it is not difficult to see how we get to mind-bogglingly large quantities of information and of questionable quality. As the Demos report *Truth, Lies and the Internet* highlights, the Internet is awash with “mistakes, half-truths, mistruths, propaganda, misinformation, disinformation and general nonsense”, and without high levels of crap detection “[young people] are vulnerable to the pitfalls and rabbit holes of ignorance, falsehoods, cons and scams” (Bartlett & Miller, 2011, p. 3). To this must be added the extent to which the masters of our internetworked technologies employ those very same technologies against us for their monetary gain. As Josh Klein puts it, when technologies that increasingly profile us online and offline in order to part us with the maximum amount of cash that it is possible to part us with combine with “insidious new advertising capabilities (such as combining the faces of your two best friends to make a face you'll trust, but not recognise – and then using that face in an ad), [then] commerce becomes something sinister” (2014, p. 54).

If education has anything to do with enabling children to thrive as human beings, then I would argue that it is not good enough that schools can teach crap detection – they must, and as a matter of urgency. I would argue further that in this the librarian has an indispensable role to play because the librarian is, or at least ought to be, fundamentally concerned with scholarship, or the “intellectual content of any culture...its totality of verified or accepted body of knowledge and belief, which includes not only science but also attitudes, value systems, mores, ethical and moral codes, superstitions, folklore, ‘revealed’ knowledge, religious dogma, and the human understanding of the life of the spirit, or the ‘Good Life’” (Shera, 1972, p. 74).

We have adopted as our working definition of information literacy “mastery of the processes of becoming informed” (Farmer & Henri, 2008), with informed being understood as “having sufficient and sufficiently reliable information or knowledge to be able to understand a subject or situation and make appropriate

¹ School of Information Management and Systems, UC Berkeley (Peter Lyman passed away in 2007 and Hal Varian is now Chief Economist at Google).

² “If digitized, the nineteen million books and other print collections in the Library of Congress would contain about ten terabytes of information; five exabytes of information is equivalent in size to the information contained in half a million new libraries the size of the Library of Congress print collections” (Lyman & Varian, 2003).

³ Professor and Chair of Electrical Engineering and Computer Sciences, College of Engineering, UC Berkeley.

judgements or decisions regarding it" (Encarta Dictionary, RIP). The reason why we have adopted this definition is because it is primarily and fundamentally concerned with what it takes to think well. But, how to manage this transition?

The *Empire State Information Fluency Continuum: Building understanding and creating new knowledge through inquiry* (New York City Department of Education: Office of Library Services, 2010) – being a “framework for the instructional aspects of a library program...based on [one of] three standards that form the basis for the skills and strategies that are essential for students to become independent readers and learners”⁴ – is a particularly helpful description of the systematic development of an inquiring mind from Kindergarten through Grade 12, which is based on Barbara Stripling’s model of inquiry (Library of Congress, 2009). While there is much that I do not yet fully understand about how this framework works in practice, and in the absence of something comparable in England, we have taken it as our starting point. Appendix A lists the skills that enable each stage in the enquiry process for the four exit years during a child’s education; i.e., those years that mark the transition from one phase of education to another. While this level of detail may seem quite daunting, particularly if all 13 years are taken together, as a description of a developing state of mind we find this level of clarity quite liberating.

Crucially, we have been working with Sequential Systems, developers of curriculum mapping software called Mondrian Wall (and didbook, software that facilitates formal reflection on emerging Education Identity) to integrate FOSIL with a dynamic map of our taught curriculum. The value of being able to map – and so plan – the taught curriculum is immense, with greater curricular coherence allowing us to build meaningful [cross]curricular connections resulting in true curricular synergy (Appendix B); the added value of then being able to establish dynamic links from this map to an underlying framework of information literacy skills is that immense again (Appendix C). A key collaborator in this pioneering work is Computer Science, and Appendix D represents our first stab at an assessment tool for projects aimed at *building understanding and creating new knowledge through inquiry*.

Embedding FOSIL into the curriculum is not without its challenges, foremost of which is the general lack of conviction that inquiry is a powerful way to learn content; consequently, the ‘need’ to teach content, particularly for GCSE and A-levels, tends to outweigh the ‘luxury’ of enabling students to master the processes of becoming informed. Linked to this is the difficulty of thinking, planning and working collaboratively within and between departments. The IB Diploma has always been a powerful counterargument to both, with its 4,000 word research essay providing the means, particularly if done properly, to raise the level of student research to something closely approximating what they will do at university, and its extended reflection on the nature of knowledge and the state of knowing in different disciplines (Theory of Knowledge). A recent development of great promise is an uncompromising commitment by the School to greater independence of learning, which, at heart, is what FOSIL is all about. This transition to greater independence of learning in school, within a framework that describes and supports it while at school, should lead to a seamless transition to university.

⁴ Bernard A. Margolis, State Librarian and Assistant Commissioner for New York State Libraries, in officially endorsing the framework, said that it “has already become the standard which defines information literacy and helps to define the inquiry skills essential for student success” (2013).

Bibliography

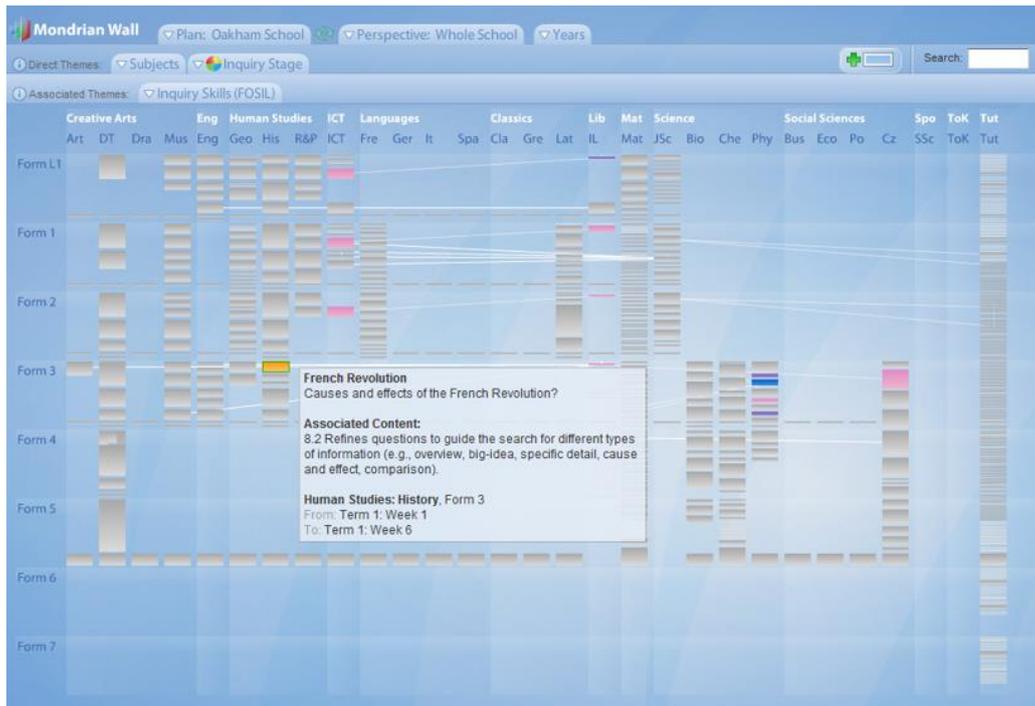
- Bartlett, J., & Miller, C. (2011). *Truth, Lies and the Internet: A Report into Young People's Digital Fluency*. London: Demos.
- Eddings, D. (1989). *King of the Murgos*. London: Corgi Books.
- Farmer, L. S., & Henri, J. (2008). *Information Literacy Assessment in K-12 Settings*. Lanham: Scarecrow Press, Inc.
- Joseph, P. (2013). *Riding the iBomb: Life in the age of exploding information*. Retrieved from California Magazine: <http://alumni.berkeley.edu/california-magazine/winter-2013-information-issue/riding-ibomb>
- Klein, J. (2014, March). We pay a high price when retailers micro-target us. *Wired*, p. 54.
- Library of Congress. (2009). *Teaching Inquiry with Primary Sources*. Retrieved from Teaching with Primary Sources Quarterly: http://www.loc.gov/teachers/tps/quarterly/inquiry_learning/article.html
- Lyman, P., & Varian, H. R. (2003, October 30). *How much information? 2003*. Retrieved from SIMS: School of Information Management & Systems, University of California, Berkeley: http://www2.sims.berkeley.edu/research/projects/how-much-info-2003/printable_report.pdf
- Margolis, B. A. (2013, January 24). *Empire State Information Fluency Continuum Endorsed by New York Library Association*. Retrieved from New York State Library: <http://www.nysl.nysed.gov/libdev/slssap/letter.htm>
- New York City Department of Education: Office of Library Services. (2010). *Empire State Information Fluency Continuum: Benchmark Skills for Grades K-12, Assessments and Common Core Alignment*. Retrieved from New York City Department of Education: Standards and Curriculum: <http://schools.nyc.gov/NR/ronlyres/1A931D4E-1620-4672-ABEF-460A273D0D5F/0/EmpireStateIFC.pdf>
- Postman, N. (1969, November 28). *Bullshit and the Art of Crap-Detection*. Retrieved from Aaditya Ramdas, School of Computer Science, Carnegie Mellon University: <http://www.cs.cmu.edu/~aramdas/tp/postman.pdf>
- Shera, J. (1972). *Foundations of Education for Librarianship*. New York: Wiley-Becker and Hayes.

Appendix A: FOSIL (Framework for Oakham School Information Literacy): New York City Department of Education Exit Years

| | Grade 2/Year 3 | Grade 5/Year 6 | Grade 8/Year 9 | Grade 12/Year 13 |
|--------------------|---|---|---|---|
| Connect | <ul style="list-style-type: none"> 2.1 Recognizes that questions can be answered by finding information. 2.a Identifies the overall "big picture" idea by stating it orally or drawing a picture. | <ul style="list-style-type: none"> 5.1 Use sources to acquire background information and brainstorm ideas for further inquiry. | <ul style="list-style-type: none"> 8.1 Revise the question or problem as needed to arrive at a manageable topic for inquiry. 8.a Express the big idea and the relation of own topics of interest to that idea through a mind map using pictures and words. | <ul style="list-style-type: none"> 12.1 Explores problems or questions for which there are multiple answers or no "best" answer. |
| Wonder | <ul style="list-style-type: none"> 2.2 Asks "I wonder" questions about the research topic. | <ul style="list-style-type: none"> 5.2 Assess questions to determine which can be answered by simple facts, which cannot be answered, and which would lead to an interesting inquiry. 5.a Forms tentative thesis about main idea with guidance. | <ul style="list-style-type: none"> 8.2 Refine questions to guide the search for different types of information (e.g., overview, big idea, specific detail, cause and effect, comparison). 8.b Plan inquiry to test hypothesis or validate thesis. | <ul style="list-style-type: none"> 12.a Uses prior knowledge, understanding of essential ideas and questions, and comprehensive background information to make predictions about specific information needed to answer questions and about the effectiveness of potential sources. |
| Investigate | <ul style="list-style-type: none"> 2.b Uses ABC arrangement of fiction books to locate materials. 2.3 Follows a modeled inquiry process during each visit to the library to do research. 2.c Uses online encyclopedias, magazines databases, and other technology resources with guidance. 2.d Selects and uses appropriate sources with guidance, including dictionaries, periodicals, maps, and globes, to answer questions. 2.4 Writes, draws, or verbalizes the main idea and supporting details. 2.e Uses simple note-taking strategies as demonstrated by librarian/teacher (e.g., copying words or phrases). | <ul style="list-style-type: none"> 5.3 Select and use multiple appropriate print, non-print, electronic, and human sources to answer questions. 5.4 Use navigation tools of a Website to find information. 5.b Uses prior knowledge and experiences to understand new facts and ideas. 5.c Interprets information taken from maps, graphs, charts and other visuals. 5.5 Evaluate print and electronic information for usefulness, relevance and accuracy. 5.d Determines important details 5.6 Use various note taking strategies. 5.e Uses software (e.g., word processing, graphic organizing) to record and organize information. 5.f Identifies and uses the organizational structures of a nonfiction book (preface, foreword and introduction) to locate information. | <ul style="list-style-type: none"> 8.3 Use different formats (e.g., books, Websites, subscription databases, multimedia, graphs, charts, maps and diagrams) as sources of information. 8.c Seek balanced view by using diverse sources to access appropriate material. 8.d Select information based on authority and point of view. 8.4 Recognize the effect of different perspectives and points of view on information. 8.5 Recognize that own point of view influences the interpretation of information. 8.e Identify misconceptions and revise ideas as new information is gained. | <ul style="list-style-type: none"> 12.b Seeks resources with diverse opinions and points of view and evaluates them carefully, particularly on controversial, historical or culturally based topics. 12.c Counters the effect of bias on the accuracy and reliability of information by actively pursuing a balanced perspective. 12.2 Challenges ideas in text and makes notes of questions to pursue in additional sources. 12.d Independently recognizes gaps in information (based on the complexity of the problem or question). 12.e Extends search beyond readily available sources to ensure accuracy and comprehensiveness. 12.f Maintains an open attitude about new areas of the subject that were previously unknown or overlooked. |
| Construct | <ul style="list-style-type: none"> 2.5 Compares new ideas with what was known at the beginning of the inquiry. | <ul style="list-style-type: none"> 5.g Makes inferences with guidance. 5.7 Form opinions and use evidence from text to back it up. 5.h Organizes notes and ideas and develops an outline or graphic organizer. 5.i Actively listens to and restates others ideas and contributes own ideas. | <ul style="list-style-type: none"> 8.f Analyse disparate points of view discovered in different sources. 8.6 Draw conclusions based on explicit and implied information. 8.g Compare information found to tentative thesis or hypothesis; revisit and revise thesis/hypothesis as appropriate. | <ul style="list-style-type: none"> 12.3 Builds a conceptual framework by synthesizing ideas gathered from multiple sources. 12.g Changes own ideas based on the ideas of others. 12.4 Develops own point of view and supports with evidence. |
| Express | <ul style="list-style-type: none"> 2.f Begins to understand concept of "audience". 2.6 Presents information in a variety of ways (e.g., art, music, poetry, movement, verbally, and/or written language). 2.g Identifies the names of sources used. 2.h Uses technology tools chosen by teacher or librarian to create written products. | <ul style="list-style-type: none"> 5.j Using writing process to develop expression of new understandings. 5.8 Cite all sources used according to model provided by teacher [or librarian]. 5.k Uses a variety of technology tools chosen by librarian or teacher to create products. 5.9 Modify and revise own work based on feedback from teachers and others. 5.l Checks for correctness and completeness. | <ul style="list-style-type: none"> 8.7 Create products for authentic reasons and audiences. 8.h Use two or three strategies to revise product based on self-assessment, teacher feedback, and peer feedback. 8.i Identify and use a variety of technology tools, including Web-based interactive tools, to organize information, create a product, and enhance communication. | <ul style="list-style-type: none"> 12.h Communicates new understandings through designing, inventing, composing, transplanting and constructing. 12.5 Evaluates own product and process throughout the work and uses self-assessment, teacher feedback, and peer feedback to make revisions when necessary. |
| Reflect | <ul style="list-style-type: none"> 2.i Uses authentic assessment rubrics modeled by librarian. 2.7 Identifies own strengths and sets goals for improvement. | <ul style="list-style-type: none"> 5.m Identify and evaluate the important features for a good product. 5.10 Assess and revise own work with guidance. 5.11 Identify own strengths and set goals for improvement. 5.n Relies on feedback to figure out how to improve product and process. | <ul style="list-style-type: none"> 8.8 Identify own strengths and set goals for improvement. | <ul style="list-style-type: none"> 12.i Asks, "What about this topic is personally interesting to me and important? What about this topic do I want to pursue when I have an opportunity? Does this topic have implications for future career or college choices?" |

Note: This table only shows exit years which mark the transition from one phase of schooling to the next (Kindergarten/Year 1, although marking a transition into formal education, is obviously not an exit year). Grade 2/Year 3 is greyed out because our main points of entry are Year 7 (although we have a small number of students in Year 6), Year 9 and Year 12. Skills in **bold** are priority benchmark skills; i.e., skills that are subject to assessment by exit years (as there are priority benchmark skills in the years that have been omitted, the number of priority benchmark skills in an exit year is greater than the number that appear in this table). Skills in **red** are skills that seem to me to be dependent on ICT, although in practice many more of the skills would make use of ICT.

Appendix B: Oakham School Mondrian Wall



Note: This is the extent to which the taught curriculum has been mapped for all subjects from Form Lower 1 (Year 6/Grade 5) to Form 7 (Year 13/Grade 12). Upper School (Form 6 and Form 7) presents an interesting challenge as we offer the IB Diploma alongside A-levels. Coloured units of work are units that have an explicit link to at least one underlying FOSIL skill. The Form 3 History unit on the French Revolution (see below), for example, has been linked to the second priority benchmark skill in the Wonder phase of the inquiry process, which has been coloured orange. As a unit may be linked to more than one skill in more than one phase, some thought needs to be given to which phase of the inquiry process the unit focuses on. At a glance, therefore, it is possible to tell which units have explicit links to skills, as well as which phase of the inquiry process they focus on, and hence which types of skills; pink, for example, has been assigned to the investigation stage of the inquiry process, so it is clear that the majority of 'FOSILised' units are focussed on skills that are largely concerned with information retrieval. Lines between units represent curricular links between subjects. The strength of these links vary according to the degree of collaboration they represent. Various mechanisms exist for interacting with the mapped curriculum, an example of which is the ability to search both the content of units and the FOSIL skills that they have been linked to at the same time.

The screenshot shows the detailed view of the 'French Revolution' unit in the Mondrian Wall interface. The unit is highlighted in orange. The following information is displayed:

French Revolution

Subject(s): Human Studies: History

Thematic Line(s) of Inquiry: Causes and effects of the French Revolution?

Learning Objectives: No text yet

Inquiry stage: Wonder

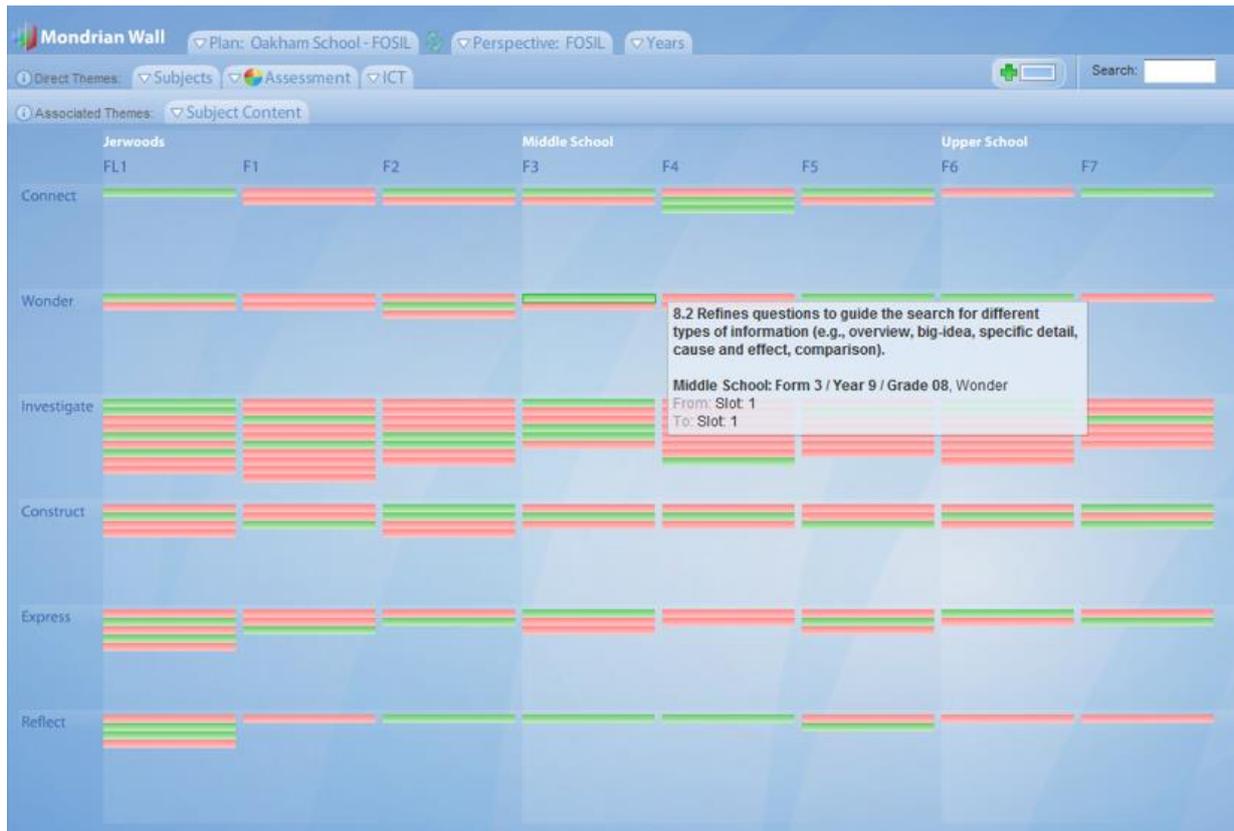
Scheme of Work

| Topic | Topic Detail | Activities, Skills, Assessment | Resources |
|--|--|---|--|
| Introduction (1 week) | 1. Course administration. 2. Ideas of rights and what rights we have, with an emphasis on political rights and how we are governed. 3. What responsibilities come with those rights - from us/government? 4. How would we go about change, with the idea that revolution brings about change. | Rights Revolution Responsibilities | |
| Long Term Causes of the French Revolution (1 week) | 1. State of France pre-1789 2. Economic Causes 3. Social: Three Estates 4. Political: Growing resentment towards the King and government. 5. The Enlightenment: events in America | The Enlightenment Privilege Absolute authority Feudalism Ancien regime Taxation Causation | Website: Causes of the French Revolution Chapter 1, <i>Citizens' Minds</i> (Textbook) |
| Short Term Causes of the | 1. Calling of the Estates | Democracy | 2. Chapter 2, <i>Citizens' Minds</i> |

Associated Content
Number of links: 1

Inquiry Skills (FOSIL)
Wonder
Middle School
Form 3 / Year 9 / Grade 08
- 8.2 Refines questions to guide the search for different types of information (e.g., overview, big-idea, specific detail, cause and effect, comparison).

Appendix C: FOSIL: Form Lower 1 (Year 6/Grade 5) to Form 7 (Year 13/Grade 12)



Note: FOSIL may be expanded to include Kindergarten (Year1) through Grade 4 (Year 5). Skills in green are the priority benchmark skills, and it is also possible to filter out the skills that ICT-dependent (or not). The ability to search at this level is particularly useful for tracking the development of skills (see below).

