Preparing Librarians to be Campus Leaders through Mapping and Integrating Information Literacy into curriculum

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The University of Auckland NZ

Purdue University USA
Who we are, what we do, where we do it...

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Curriculum mapping & integration of IL

The University of Auckland

- About 40,000 students, UDGs – PhDs
- 8 schools cross 4 campuses
- Over 240 Libraries & Learning Services staff
  - 40 Subject Librarians (=Liaison Librarians)
  - 5 Learning Support Services Librarians
  - 20 Learning Advisors

- Learning Support Services Manager
  - Lead IL integration projects: working with subject librarians on curriculum mapping and integration
  - Various IL related projects
  - Staff development in IL & IT
Purdue University

• 40,000 students, 2500 faculty
• 50% students STEM; #4 in STEM degrees conferred
• 160 libraries staff
  – 40 Libraries faculty, around 20 partial IL
  – IL Coordinator
• Booker Chair
  – Advocate for IL campus, national, intl
  – IL resource; research and scholarship
  – Lib leadership
Outline

• Introduction
  – Challenges
  – Why librarians
  – Definitions

• Curriculum mapping—why and how

• Two approaches
  – Librarian-led approach at UoA
  – Institution-led approach at Purdue

• Curriculum mapping for institutional assessment
Challenges

• IL integration highly desirable, but challenging
• doesn’t "belong" to any single discipline, applicable to all
• is a way of thinking combined with a set of skills
• these hamper its inclusion in a methodical way in curricula
Why librarians?

- Work with faculty across the campus in all of the disciplines

- In an optimal position to be campus leaders in integrating IL into curricula

- Will discuss what to learn to accomplish this
Curriculum Mapping

A process of methodically examining a curriculum to determine where information literacy (IL) capabilities should be integrated.

Source: http://www.edoctrina.org/lp/curriculum-mapping
Curriculum

An educational **plan** to engage students to obtain knowledge and skills leading to a degree or certificate.

It **not only** refers to the official **list of courses** and their content offered by a university, **but also** refers to its **purposes, organisation, delivery, activities** and **assessment**, and **evaluation** program developed in an institution.
Curriculum in HE

- **Intended** curriculum
  - the institution’s expectation of what is to be taught or learned

- **Offered** curriculum
  - what teachers teach or plan to teach

- **Received** curriculum
  - knowledge and skills that are actually learned by students via the courses
# Example of intended curriculum @ UoA

<table>
<thead>
<tr>
<th>IPENZ Graduate Requirements</th>
<th>University Graduate Profiles / IL Guidelines</th>
<th>ANZIIL IL Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4 Recognise when further information is needed and be able to find it by identifying, evaluating and drawing conclusions from all pertinent sources of information, and by designing and carrying out experiments.</td>
<td>II 5. An ability to recognise when information is needed and a capacity to locate, evaluate and use this information effectively.</td>
<td>1 and 2 and 3. The information literate person recognises the need for information and determines the nature and extent of the information needed; accesses needed information effectively and efficiently. Critically evaluates information and the information seeking process.</td>
</tr>
<tr>
<td>1.7 Communicate effectively, comprehending and writing effective reports and design documentation, summarising information, making effective oral presentations and giving and receiving clear oral instructions.</td>
<td>II 7. Ability to access, identify, organise and communicate knowledge effectively in both written and spoken English and/or Maori. / Integrate IL into academic courses</td>
<td>5. The information literate person applies prior and new information to construct new concepts or create new understandings. Communicates knowledge and new understandings effectively.</td>
</tr>
</tbody>
</table>
Offered curriculum
## Year 2 Semester I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil 201</td>
<td>Land information Sys</td>
<td>Larkin/St George</td>
<td>Aspects of elementary engineering surveying as used for gathering site information for the design and setting out of works. Land information systems, modern methods of gathering, processing and presenting information for engineering purposes. Potential GIS db</td>
</tr>
<tr>
<td>Civil 210</td>
<td>Introduction to Structures</td>
<td>Omenzetter/Butterworth</td>
<td>Structural forms and systems. Analysis of determinate systems, engineering beam theory, composite beams, elasticity, failure theories. Restriction: ENVENG 210, RESOURCE 210 Opportunity, small design</td>
</tr>
<tr>
<td>Civil 220</td>
<td>Introductory Engineering Geology</td>
<td>Prebble</td>
<td>Principles of physical and structural geology. Elementary stratigraphy. Applied geomorphology. Geologic surveying and mapping. Elementary seismology; microzoning and seismotectonic hazard evaluation. Engineering properties, description and identification of geologic materials. General applications of geology to engineering. Suggestion: research on rocks, list of common rocks, its property, how it is extracted, how it is used. Research on landslides: an example of landslide, investigating the case and report your finding, engineering solution of preventing such disaster won’t happened again. Qualitative explanation.</td>
</tr>
<tr>
<td>ENGSCI 211</td>
<td>Math Modeling II</td>
<td></td>
<td>Compulsory for all engineering students</td>
</tr>
</tbody>
</table>

## Year 3 Semester I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGGEN 303</td>
<td>Management for Engineers</td>
<td>S1, Des</td>
<td>Compulsory for all engineering students. Suggestion: research on technology transition e.g VCR to DVD the cause of the change - an assignment on business planning, at least 8 references from journals</td>
</tr>
<tr>
<td>Civil 322</td>
<td>Geomechanics 2</td>
<td>Larkin</td>
<td>Stability analysis in geotechnical engineering; slope stability, soil pressures on retaining structures, bearing capacity. Consolidation and settlement. Always opportunity, design and report</td>
</tr>
<tr>
<td>Civil360</td>
<td>Transportation Engineering I</td>
<td>Henning</td>
<td>Highway alignment geometrics, aesthetics and location impact considerations. Basis of mechanistic pavement design techniques, pavement materials and bituminous surfacing. 1 test + 1 exam. Suggestion: research on famous road design e.g. spaghetti junction, why it happened, is that good for traffic; centralized motorways, advantages and disadvantages</td>
</tr>
<tr>
<td>ENVENG 341</td>
<td>Environmental Engineering 2</td>
<td>Anther &amp; Takis</td>
<td>Examines natural environmental processes and their relevance to engineering. Soil and water chemistry, equilibrium and organic chemistry, microbiology, biochemistry and biological processes will be examined, focusing on the application of these in engineering design, practice and management. Restriction: RESOURCE 341</td>
</tr>
</tbody>
</table>
Curriculum mapping example

Analyzes the **offered** curriculum
- the program curriculum
- the course curriculum
- the class curriculum

Maps it against the **intended** curriculum
- e.g., university graduate attributes;
- institutional or national teaching and learning policies and guidelines;
- accrediting organizations’ requirements;
- & IL standards or frameworks.
Curriculum mapping & integration of IL

Why curriculum mapping?

• We can identify the gaps of IL capabilities in the curriculum

• We can systematically integrate IL in the curriculum in collaboration with faculty
Curriculum Integration

The process of intentionally integrating IL capabilities at the points in course work when students need to master those capabilities.

- Assignment
- Class activities
- Lab activities
- Assessment
- Online activities
- ....
### Application of Bloom’s taxonomy

<table>
<thead>
<tr>
<th>Examples of IL learning outcomes</th>
<th>Levels of thinking (Bloom’s taxonomy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students are able to list three Boolean operators.</td>
<td>Memory / recall</td>
</tr>
<tr>
<td>When given a research topic, the students are able to identify the search terms and write a search strategy using Boolean operators.</td>
<td>Comprehension</td>
</tr>
<tr>
<td>The students are able to apply search strategy using Boolean operators to conduct the searches in different databases.</td>
<td>Application</td>
</tr>
<tr>
<td>The students are able to analyse the search results and refine their search by using Boolean operators.</td>
<td>Analysis</td>
</tr>
<tr>
<td>The students are able to synthesise different search results and to evaluate search strategies and reconstruct their search by using Boolean operators.</td>
<td>Synthesis and evaluation</td>
</tr>
</tbody>
</table>
## Bloom’s taxonomy

<table>
<thead>
<tr>
<th>Bloom’s taxonomy</th>
<th>Year 1</th>
<th>Year 1</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge</strong> remembering or recognising something without necessarily understanding.</td>
<td>Know how to interpret references in course reading list or bibliographies.</td>
<td>Know how to cite resources in a preferred reference style and understand that different types of literature require different forms of citation.</td>
<td>Know when to give credit to information and ideas from others and how to cite resources using different reference styles.</td>
<td>Acknowledge cultural, ethical, and socioeconomic issues related to access to, and use of information.</td>
</tr>
<tr>
<td><strong>Comprehension</strong> understanding the material being communicated.</td>
<td>Understand basic methods of obtaining information, e.g. keyword or author search.</td>
<td>Understand the difference between keyword and exact searching techniques (title, author, journal, subject).</td>
<td>Understand the differences between books, journals, conference papers, reports or patents.</td>
<td>Develop a research proposal.</td>
</tr>
<tr>
<td><strong>Application</strong> using general concept to solve a particular problem.</td>
<td>Construct basic search e.g. title and author search in library catalogue, database and Internet.</td>
<td>Construct and implement effective keyword searches using appropriate synonyms.</td>
<td>Use the advanced search functions e.g. field search, set limits, and save searches.</td>
<td>Conduct a literature review.</td>
</tr>
<tr>
<td><strong>Analysis</strong> breaking something down into parts.</td>
<td>Sort search results by title, author, publication date etc.</td>
<td>Analyse the number and relevance of information retrieved and refine search strategy as required.</td>
<td>Critically assess number and relevance of information retrieved and refine search strategy as required.</td>
<td>Recognise inaccuracies in information retrieved.</td>
</tr>
<tr>
<td><strong>Synthesis</strong> creating something new by combining different ideas.</td>
<td>Write a short report or essay by summarising information obtained.</td>
<td>Summarize the main ideas from information obtained.</td>
<td>Recognises interrelationships between concepts and draws conclusions based on information gathered.</td>
<td>Compare ‘knowledge gained’ with prior knowledge to determine the value added.</td>
</tr>
<tr>
<td><strong>Evaluation</strong> judging the value of materials or methods</td>
<td>Evaluate web resources by using basic evaluation criteria such as authority, currency, audience, etc.</td>
<td>Analyse and evaluate information on its reliability, accuracy, authority and timeliness.</td>
<td>Distinguish facts, opinion, and bias of information retrieved.</td>
<td>Analyse and evaluate information by a variety of criteria such as reliability, validity, accuracy, authority, timeliness, and point of view or bias.</td>
</tr>
</tbody>
</table>
## Example of IL learning outcomes

### Graduate Attributes (GA)
- 5(a) Respect for the ethics of research and scholarly activity.

### Accrediting professional requirements (APR)
- II 4. Intellectual integrity, respect for truth and for the ethics of research and scholarly activity.

### ANZIIL IL standards
- 1.8 Understand the role of engineers and their responsibility to society by demonstrating an understanding of the general responsibilities of a professional engineer.
- 1.2 Understand the purpose, scope and a variety of information sources; 4.2 Organise information; 6. Use information with understanding and acknowledging cultural, ethical, economic, legal, and social issues surrounding the use of information.

<table>
<thead>
<tr>
<th>Bloom's Taxonomy of Cognitive Processes</th>
<th>Examples of IL learning outcomes in Year 1</th>
<th>Examples of IL learning outcomes in Year 2</th>
<th>Examples of IL learning outcomes in Year 3</th>
<th>Examples of IL learning outcomes in Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>• Know about library services e.g. Reference and Lending services, how to get course material, where to get help; • Be aware of the different types of literature (journal article, reference book, textbook); • Remember that the Internet does not contain everything and quality of Internet resources varies;</td>
<td>• Know how to use document delivery services; • Email/download / print/export information in a variety of formats from various sources; • Understand the www leads to some excellent resources but evaluation skills are required; • View and save records in various formats; • Recognise important elements within a record and understand the significance of the citation information;</td>
<td>• Recognise other types of information in additional to books and journals; • Be able to name major reference books, academic journals and databases in their subject field of study; • Record all pertinent citation information;</td>
<td>• Know of the core journals in studied subject; • Recognise when further information is needed and be able to find it by drawing conclusions from all pertinent sources of information; • Manage information by using a citation management system; • Record all search strategies, sources used, locations of sources;</td>
</tr>
<tr>
<td>Related terms:</td>
<td>Knowledge Remember previously-learned materials by recalling facts, terms, basic concepts and answers, e.g. recall data or information.</td>
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### Knowledge
- Remember previously-learned materials by recalling facts, terms, basic concepts and answers, e.g. recall data or information. D7

### Related terms:
- Define, name, memorise, list, duplicate, label, order, arrange, repeat, recognise.
Integrating IL across curricula

Year IV
- Sem II: Core course 1, Research project, Elective 1
- Sem I: Core course 1, Elective 1

Year III
- Sem II: Core course 1, Core course 2, Core course 3, Elective 1
- Sem I: Core course 1, Core course 2, Core course 3, Core course 4, Elective 1

Year II
- Sem II: Core course 1, Core course 2, Core course 3, Core course 4, Elective 1
- Sem I: Core course 1, Core course 2, Core course 3, Core course 4, Elective 1

Year I
- Sem II: Core course 1, Core course 2, Core course 3, Core course 4, Elective 1
- Sem I: Core course 1, Core course 2, Core course 3, Core course 4, Elective 1

Curriculum mapping & integration of IL
Two approaches

Librarian-led

Institutional-led
Librarian-led

Librarians are proactively involved in IL education

- IL training for librarians
- Approaching faculty
- Collaborating with faculty to **redesign** curriculum
- Involving in Uni institutional L&T **committees**
- Involving in Uni institutional L&T **projects**
- Involving in faculty **L&T activities**
Curriculum mapping & integration of IL

Librarian-led: IL training

Module 1. What is IL & why is it important to us?
Module 2. Establishing relationships with faculty
Module 3. Understanding the faculty curriculum
Module 4. The integration of IL into curriculum and designing IL curricula
Module 5. IL assessment and evaluation
Librarian-led: IL training

The program has been running for 2 years and 15 Subject Librarians have completed.

As the result, librarian-led curriculum mapping & integration of IL has been initiated in different disciplines:

- Arts
- Engineering
- Medical & Health Science
- Planning
- Science, ......
IL integration into the engineering curriculum

- Subject librarians + Learning Support Services Librarian + IT support + Learning advisor + course coordinator
- Collect all course information
- Interview over 20 faculty staff to understand the major issues with students
- Work with lecturers to support student learning
- Redesign course by integrating IL into course assignments, assessment or class activities from Year 1-4 (see print)
This tutorial focuses on finding information on management theory, company reports and accounts, statistics, standards and patents for ENGGEN 303 Management for Engineers.

Techniques learnt here can be applied to any research topic.

Case study

You are a student working at Criterion Furniture, reporting to the Business Innovation Manager.

Criterion is carrying out a life cycle inventory analysis on their products and processes.

They use polystyrene for packaging their products. This ends up in landfills and has an impact on the environment.

It is your job now to find out if is this really a problem and if there are viable alternatives to its use as packaging.
Librarian-led: Approaching faculty

- Establishing relationship
- Understanding faculty needs
- Understanding students needs
- Collaborating with faculty & other services providers
Librarian-led: redesign curriculum

- Redesign assignment
- Redesign assessment
- Redesign class/lab activities
- ....
Librarian-led: Uni L&T committees

Involved in:
- Institutional L&T strategy development
- Institutional Teaching Learning Quality Committee (TLQC)
- Faculty L&T committees
Librarian-led: Institutional L&T projects

Involved in:
• Graduate Attributes redevelopment
• Curriculum mapping
• Mobile and Learning
• Learning Management review
• FYE online modules
Curriculum mapping & integration of IL

Librarian-led: faculty L&T activities

Involved in:
- Faculty curriculum review
- Faculty new program development
- Program/course curriculum review
- New program/course development
- ……
Two approaches: Institution-led
Two approaches: Institution-led

With librarian collaboration and influence

- Library must be “at the table” with institution leaders early in decision-making

- Must lay groundwork well in advance

- Must be a strategic library priority so resources are allocated and there are incentives/rewards for librarians

- Need librarians who are highly skilled at collaborating with faculty and influencing them
Intended Curriculum at Purdue

- Much recent change—improve graduation rate, retention rate, persistence
- Student Success initiatives
- Curriculum changes led by Provost’s office
Intended Curriculum at Purdue

- Created undergrad outcomes-based core curriculum

- Transform large foundational courses and core curriculum outcomes courses (IMPACT)

- Strong librarian involvement and leadership in each
Intended curriculum at Purdue

• Outcomes based on AAC&U LEAP outcomes

• Two levels of outcomes:
  – Foundational
  – Embedded

• IL in both!
Intended curriculum at Purdue

• Assessment of foundational IL outcome
  – University Curriculum Council evaluates faculty nominations for courses that meet the outcome
  – IL Specialist on UCC

• Assessment of embedded IL outcome
  – Program directors will examine curriculum and explain how the program meets the outcome
Curriculum mapping and institutional assessment

• Curriculum mapping provides an institution-wide assessment of the degree to which IL is integrated in the curriculum

• Once you have curriculum maps, you can prepare an objective, evidence-based report explaining where the strengths and gaps are
Curriculum mapping & institutional assessment

- Useful to program planners and internal assessment personnel

- Useful for accreditation documentation

- Useful for comparison with multiple institutions
Campus leaders in IL education

- Mapping the offered curriculum against the intended curriculum
- Identify gaps and potential courses
- Integrating Information Literacy into curriculum to support student learning
- Approaches: bottom up or top down
Thank you!

Questions?

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