An IL integration model and its application in curriculum integration & staff development in higher education

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LIBRARIES AND LEARNING SERVICES

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The University of Auckland

New Zealand’s largest residential university

Highest ranked research university in New Zealand

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The UoA Libraries & Learning Services

- 4 campuses
- 245 LLS staff
  - 50 Subject Librarians
  - 6 Learning support Services Librarians
- 17 Learning Advisors

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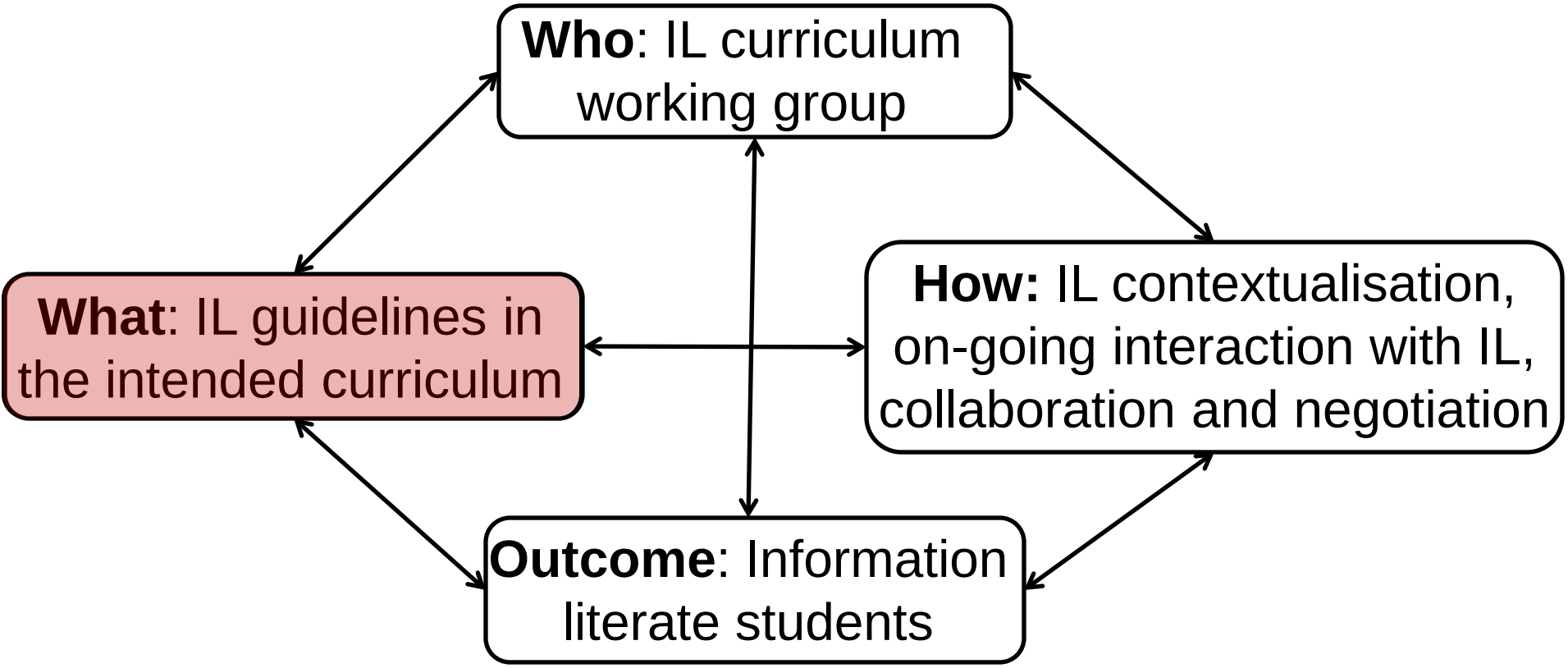
An IL integration model



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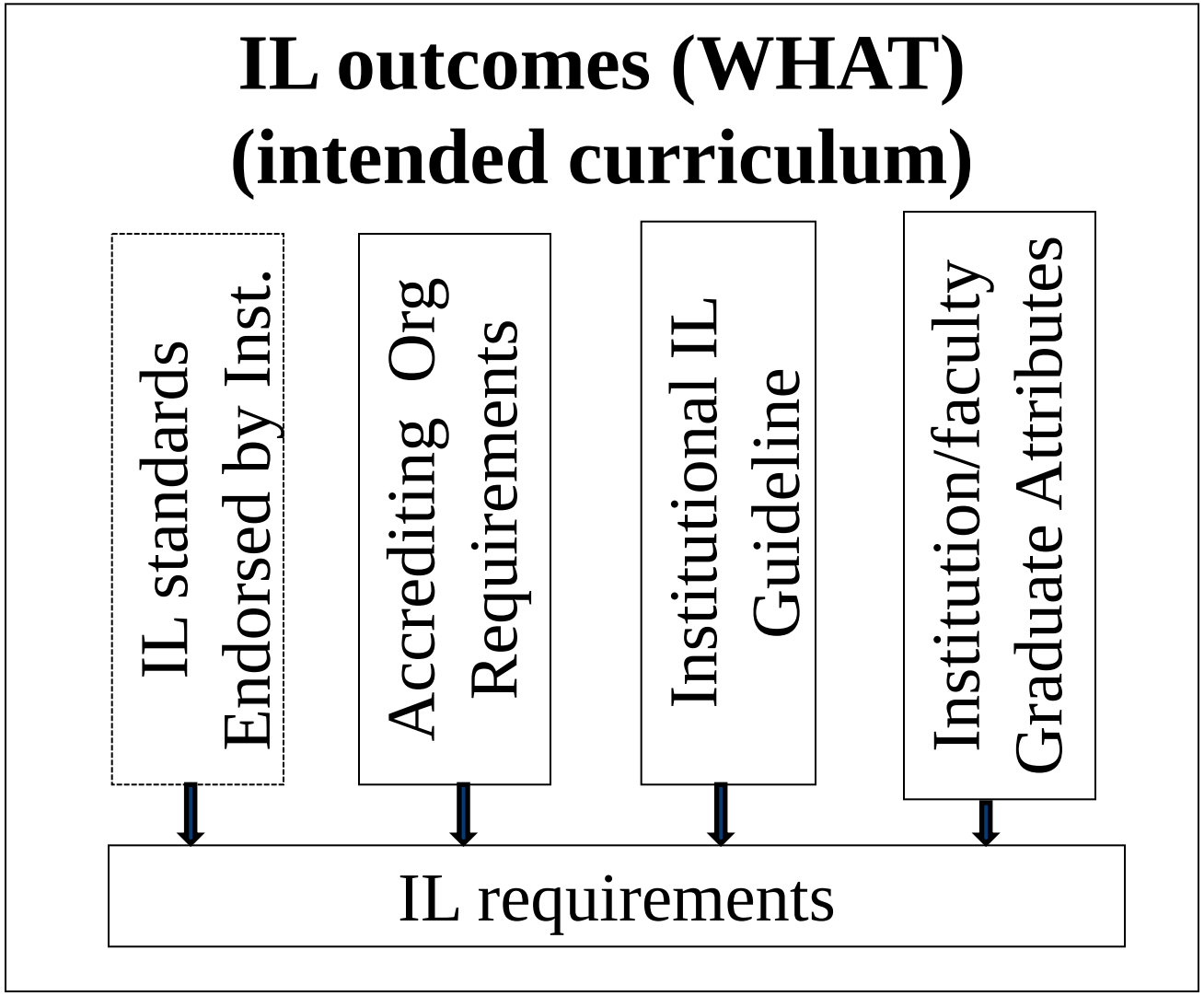
An IL integration model- *what*



Intended curriculum - what an institution expects its students to learn through its educational system

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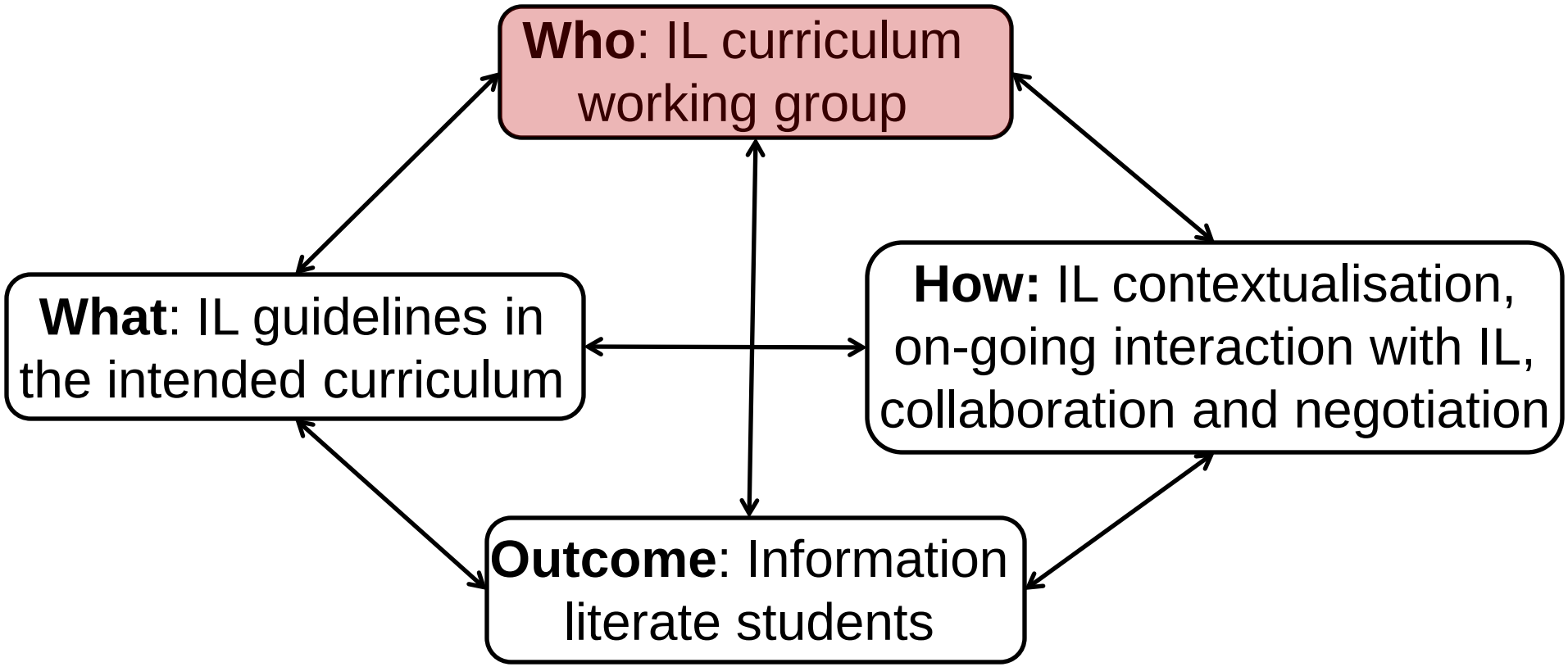
An IL integration model



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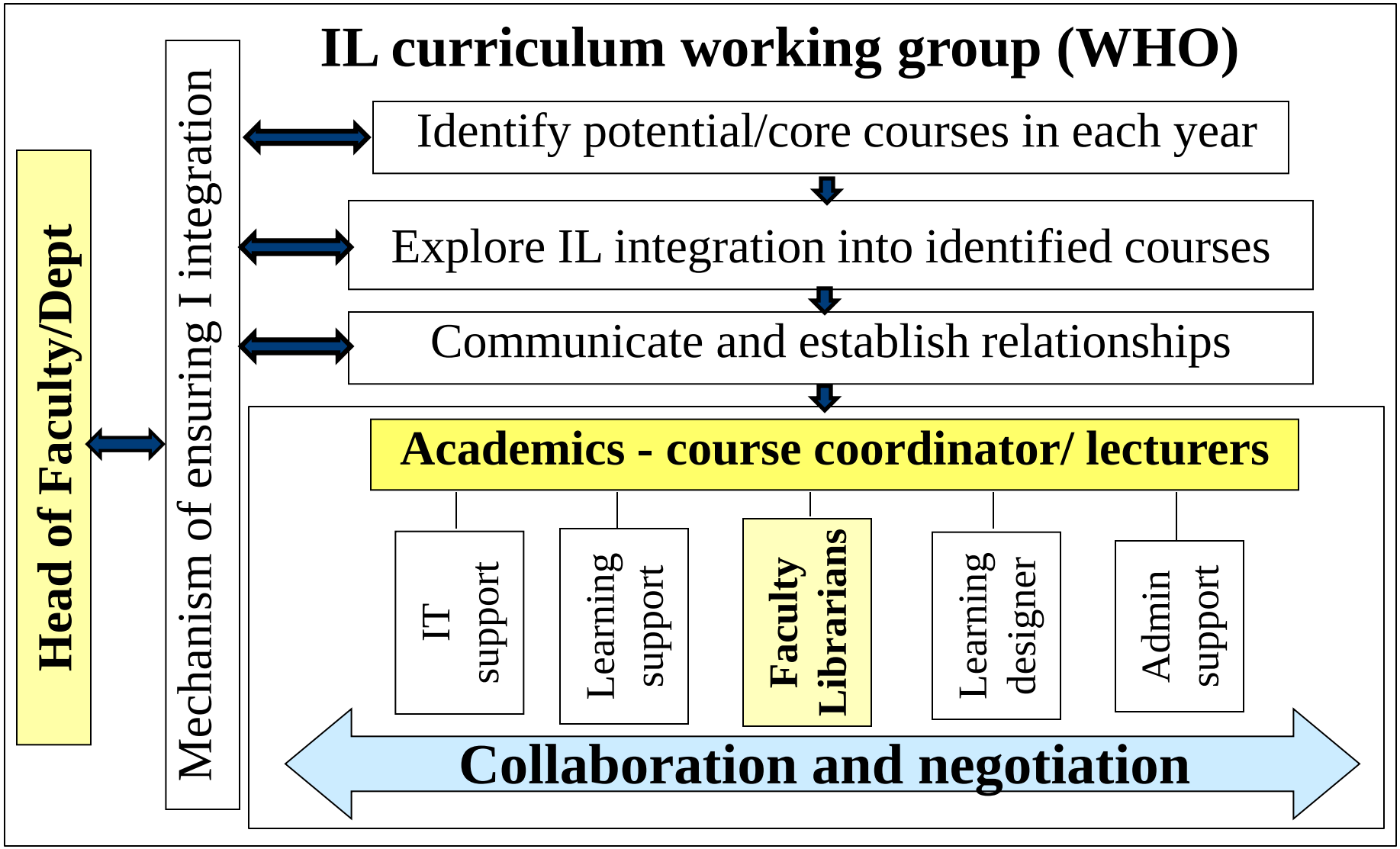
An IL integration model – *Who*



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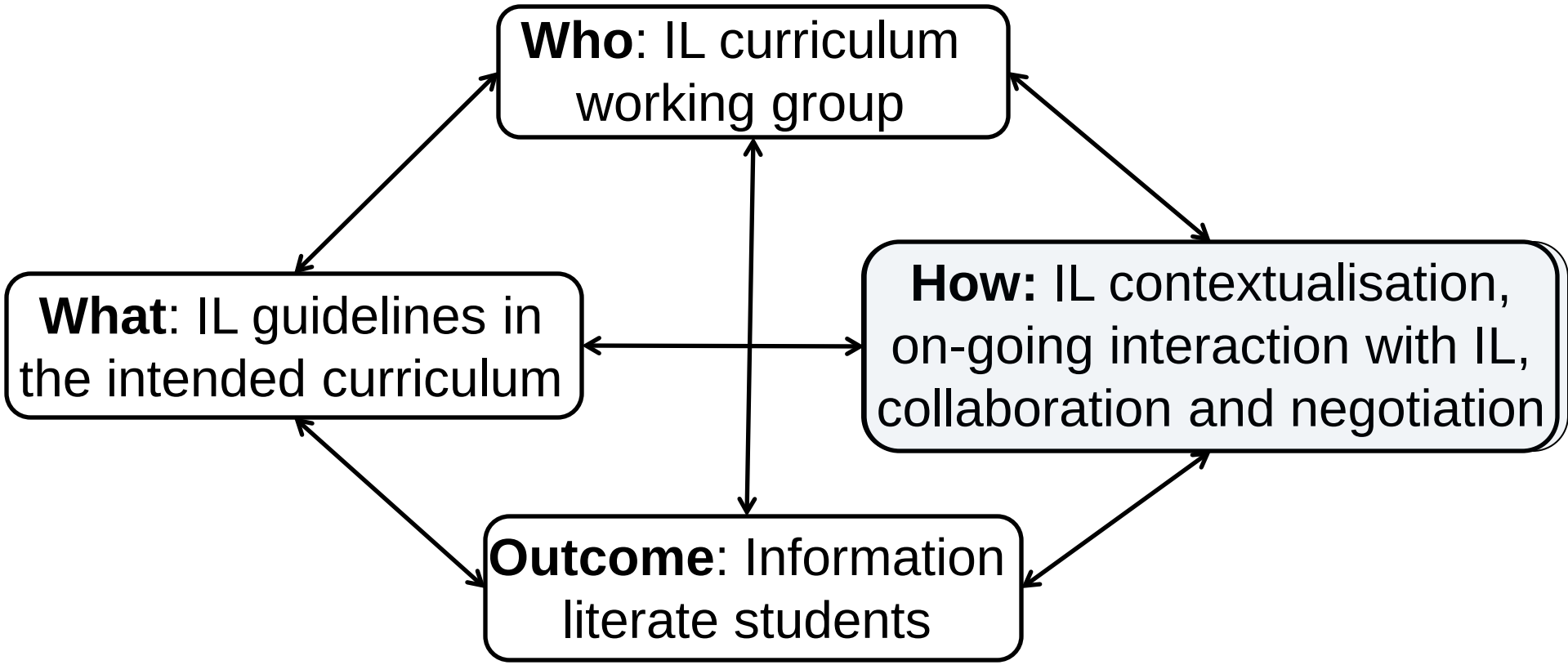
An IL integration model



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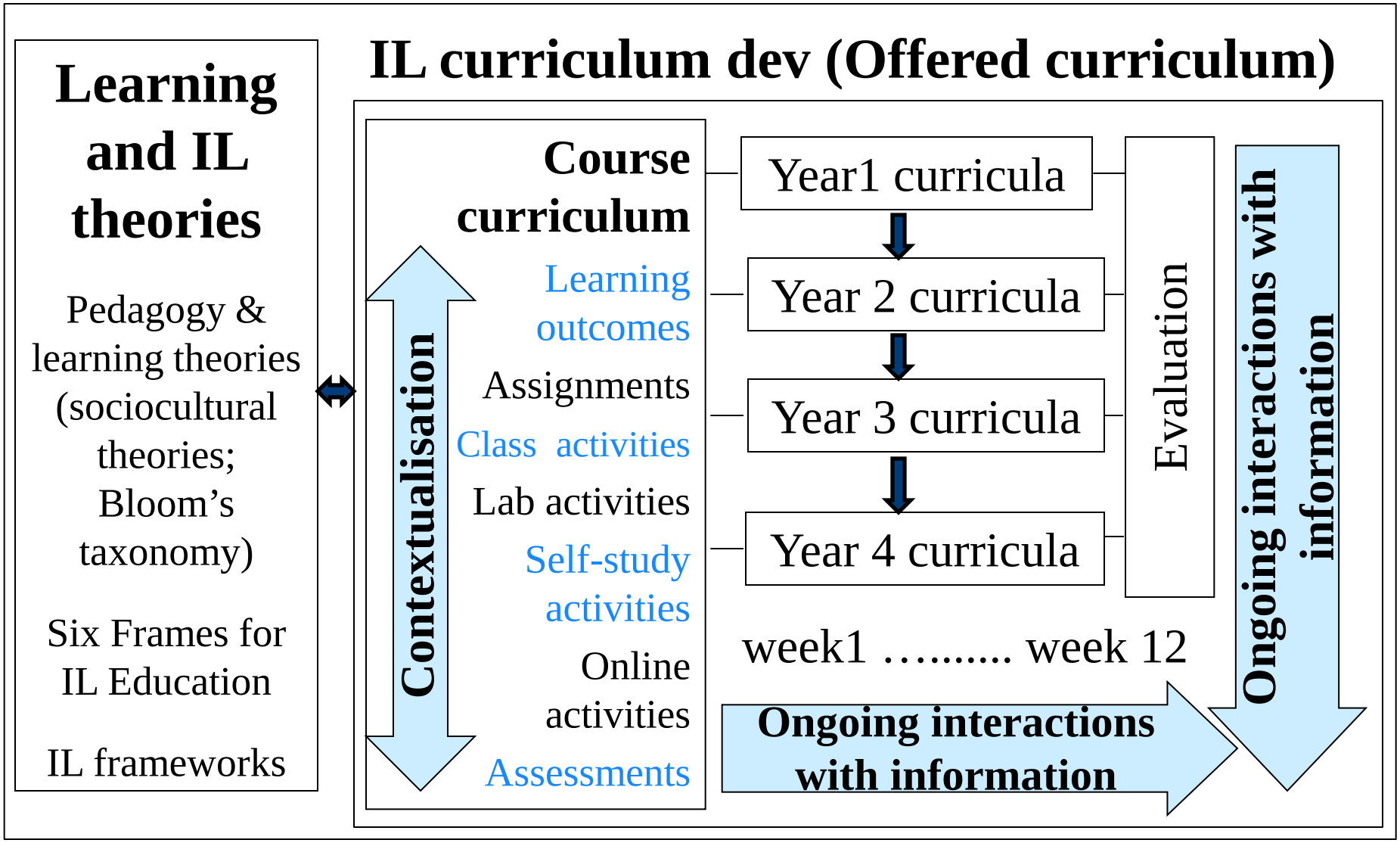
An IL integration model – *How* handout



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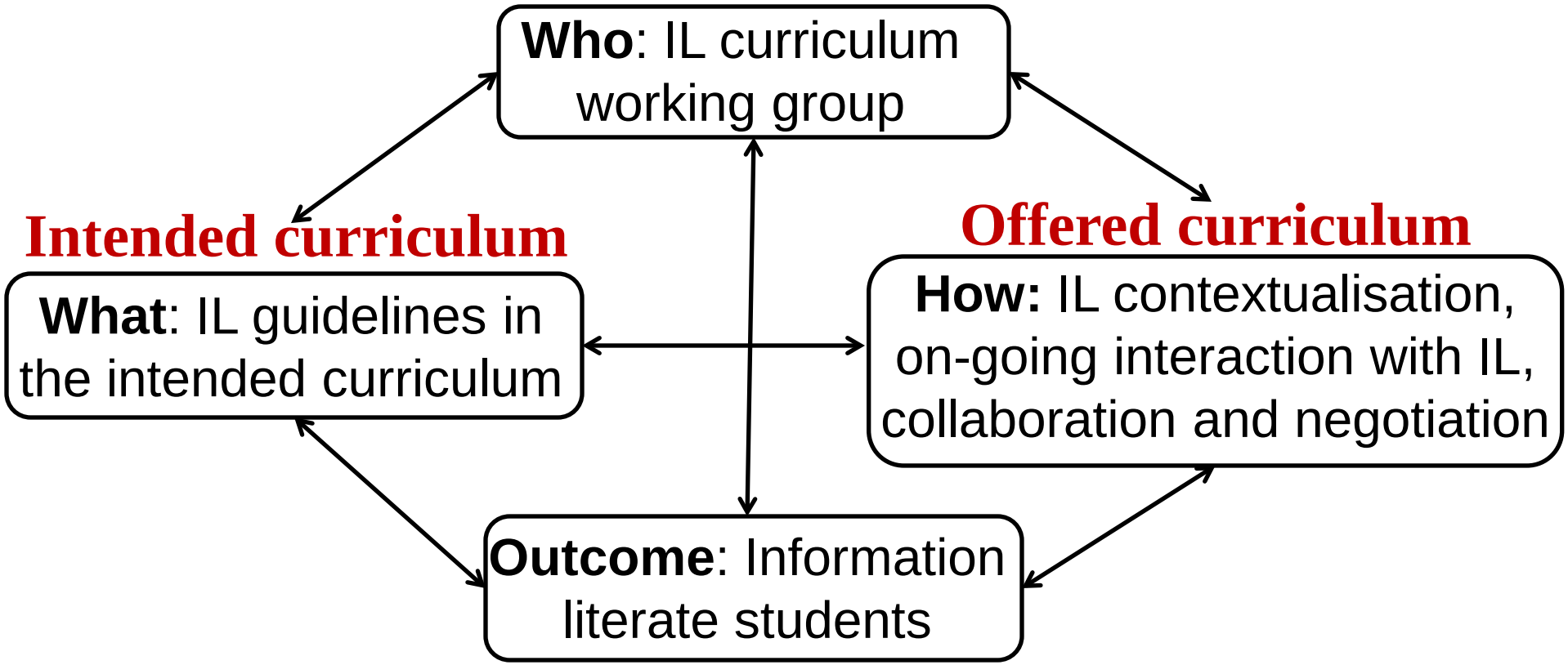
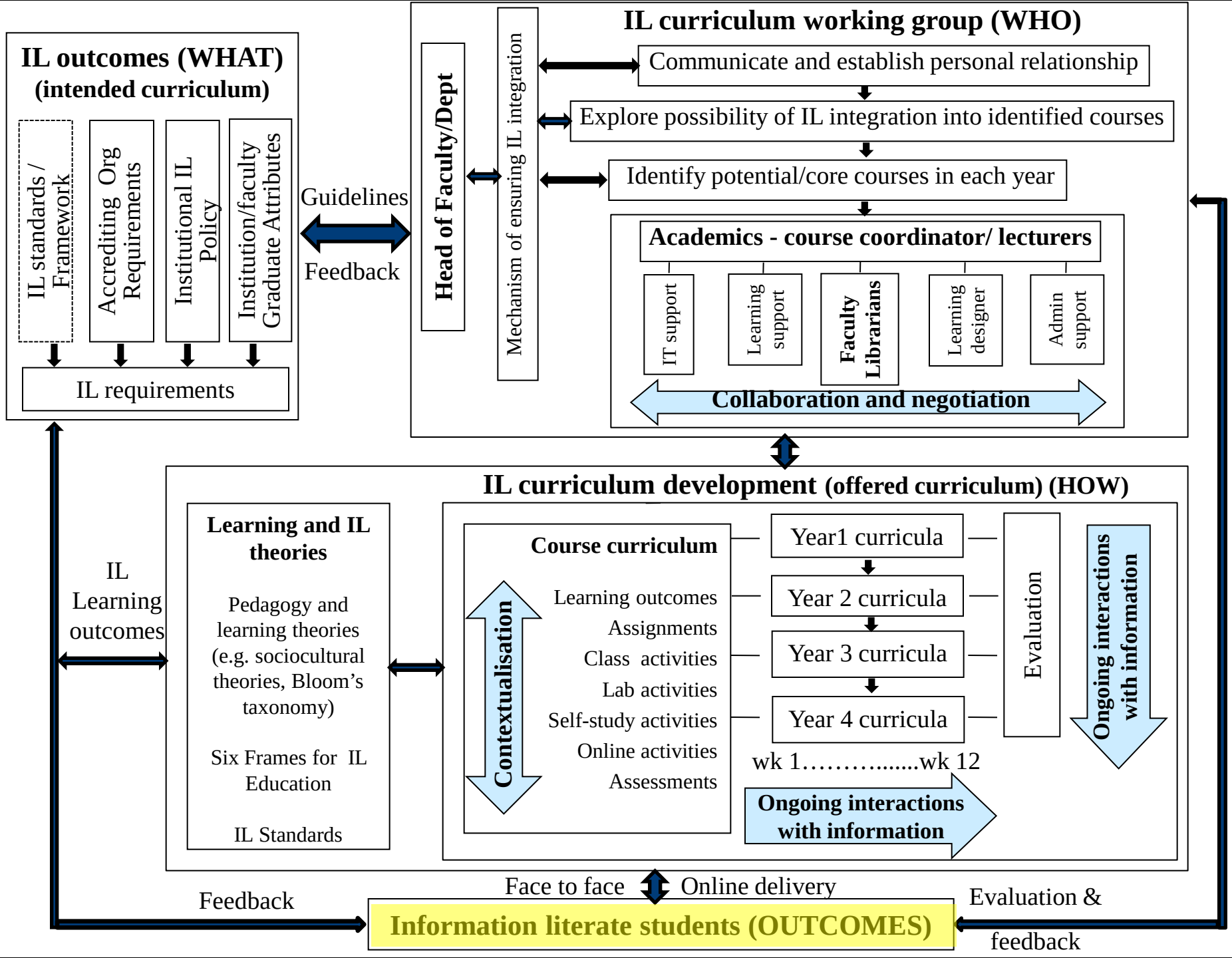
An IL integration model




IL outcomes (WHAT)
(intended curriculum)
IL standards / Framework
Accrediting Org Requirements
Institutional IL Policy
Institution/faculty Graduate Attributes
IL requirements
Guidelines
Feedback
IL curriculum working group (WHO)
Head of Faculty/Dept
Mechanism of ensuring IL integration
Communicate and establish personal relationship
Explore possibility of IL integration into identified courses
Identify potential/core courses in each year
Academics - course coordinator/ lecturers
IT support
Learning support
Faculty Librarians
Learning designer
Admin support
Collaboration and negotiation
IL curriculum development (offered curriculum) (HOW)
IL Learning outcomes
Learning and IL theories
Pedagogy and learning theories (e.g. sociocultural theories, Bloom's taxonomy)
Six Frames for IL Education
IL Standards
Course curriculum
Contextualisation
Learning outcomes
Assignments
Class activities
Lab activities
Self-study activities
Online activities
Assessments
Year1 curricula
Year 2 curricula
Year 3 curricula
Year 4 curricula
wk 1…….....wk 12
Ongoing interactions with information
Evaluation
Ongoing interactions with information
Face to face
Online delivery
Feedback
Information literate students (OUTCOMES)
Evaluation & feedback

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The model identifies 3 key characteristics of IL integration

- Collaboration
- Contextualisation
- Ongoing interactions with information

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S²J² collaboration model

- ***S****hared understanding*
- ***S****hared knowledge*
- ***J****oint dialogue with respect and tolerance*
- ***J****oint efforts with trust and support*

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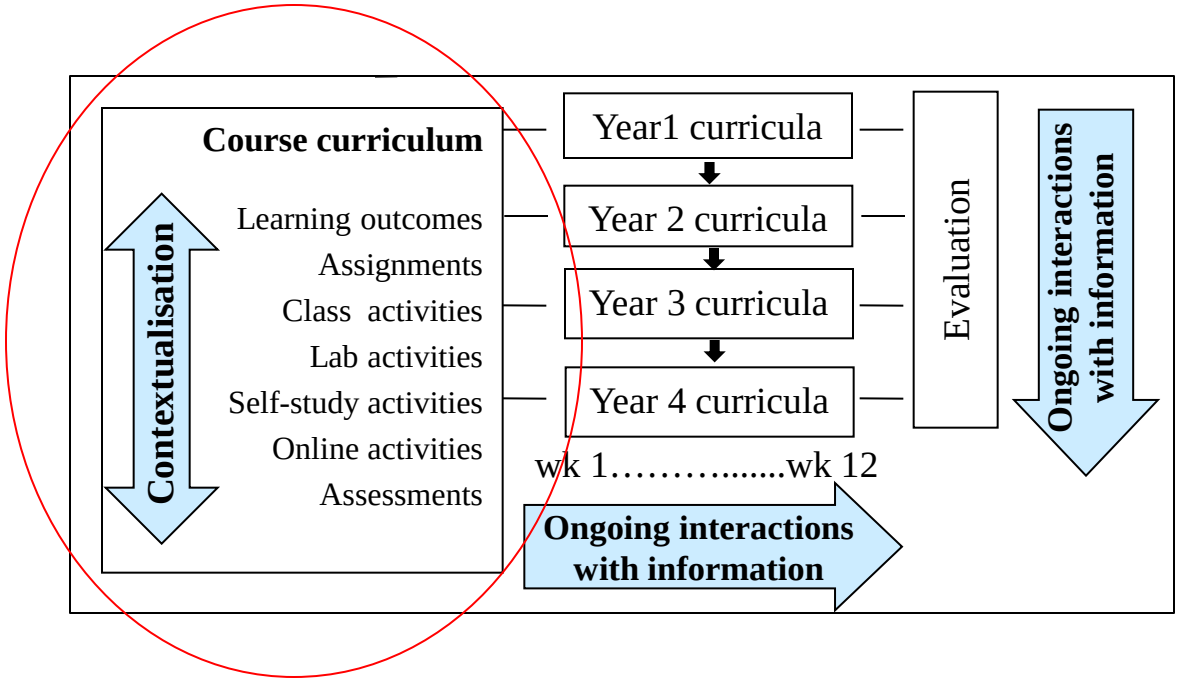
Contextualisation



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 is really a problem and if there are viable alternatives to its use as packaging.

Benjamin Smaill (Criterion Business Innovation Manager) with students on projects at Criterion: Camile Cowley, Kai-Ann Teh, Marielen Schoen (AUT), Xin Yi Wong, Peter Luk, Manuel Seidel and Richard Cross.

Criterion specialises in creating environments in the home and office which work for their customers. Among its best-selling ranges are home entertainment centres, computer workstations and office furniture.

Is polystyrene really bad?

Multi-database Search

Library databases primarily index journal articles and conference papers.

Multi-database Search allows you to search many databases simultaneously.
Choose between:
Quick Search using a pre-set group of databases.
Custom Search where you can select Engineering, your Department, and then up to 10 databases.

To learn more about *Quick Search* click on this video.

Click to play the video **(13.2MB, 01:56 mins)**

Activity: Drag and drop

Drag and drop the databases that are the most relevant for finding articles on polystyrene.

Guess, or use this list to check which Engineering Databases are useful. Incorrect choices will return to their original positions.

Databases

Scopus Georef Scifinder Kompass
Derwent Compendex Springerlink ScienceDirect
New Zealand Index Google Scholar CSA Illumina

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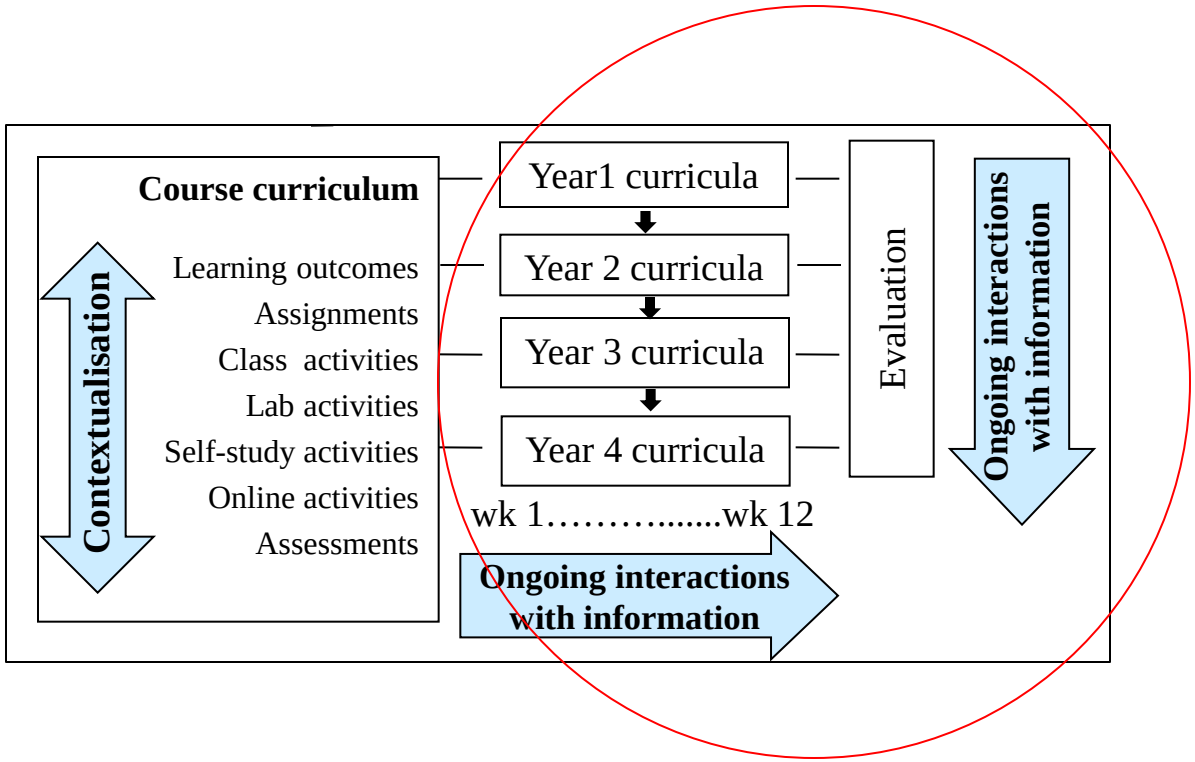
On-going interactions



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On-going interactions

Course I in semester I:

Week	Curricular activities	On going IL related activities
1	Tutorial 1	Quiz & IL assessment overview
2	Lecture	Research process and business resources co-presented by the lecturer and librarian
3	Tutorial 2	Business information sources review
4	Tutorial 3	How to write an annotated bibliography (AB) & referencing
6	Tutorial 4	How to write an essay based on your AB
9	Tutorial 5	AB & Essay reflection and summarising

Course II in semester II: ....

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Application of the Model

Applied in curriculum integration

- Understand intended curriculum
- Understand offered curriculum (curriculum analysis)
- Curriculum mapping
- Integration from year 1 to year 4

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Intended curriculum at UoA

IPENZ Graduate Requirements	University Graduate Profiles / IL Guideline	ANZIIL IL Standards
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.	II 5. An ability to recognise when information is needed and a capacity to locate, evaluate and use this information effectively.	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.
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.	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	5. The information literate person applies prior and new information to construct new concepts or create new understandings. Communicates knowledge and new understandings effectively.

IL model & application

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Year 2 Semester I

Civil 201 Land information Sys (10) S1 Larkin/St George
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 ✔ ✔

Civil 210 Introduction to Structures (15) S1 Omenzetter/Butterworth
Structural forms and systems. Analysis of determinate systems, engineering beam theory, composite beams, elasticity, failure theories. **Restriction**: ENVENG 210, RESOURCE 210

Opportunity, small design

Civil 220 Introductory Engineering Geology (10) S1 Prebble
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.

Civil 230 Fluid Mechanics 1 (10) S1 Tony Swann
Fluid properties and definitions. Hydrostatics and stability of floating bodies. Fluid flow, energy and continuity relationships. Viscosity. Force and momentum relationship. Dimensional analysis and similarity. Introduction to turbomachinery.
Potential, report on experimental

ENGSCI 211 Math modeling II (15) S1
Compulsory for all engineering students

Year 3 Semester I

ENGGEN 303 management for engineers S1, Des
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
✔ ✔

Civil 322 Geomechanics 2 (10) S1 Larkin
Stability analysis in geotechnical engineering; slope stability, soil pressures on retaining structures, bearing capacity. Consolidation and settlement.
Always opportunity,
design and report ✔

Civil331 Hydraulic Engineering (10) S1 Melville
Pipe flow - fluid resistance, friction factor, simple pipe flow and minor losses, steady-state pipe flow and pipe networks. Open channel flow - energy and momentum, uniform flow and flow resistance, critical flow, specific energy and flow force, backwater analysis, channel transitions.

Civil360 Transportation Engineering 1 (10) S 1 Henning
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

Civil 312 Structures and Design 2 (15) S1 Megget
Design of simple structures in timber, concrete steel and masonry to resist gravity, wind, earth pressure and other loads. Elastic and plastic analysis of indeterminate structures. Structural stability. Introduction to structural analysis programs.

ENVENG 341 (15) Environmental Engineering 2 S1 Anther & Takis
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
✔

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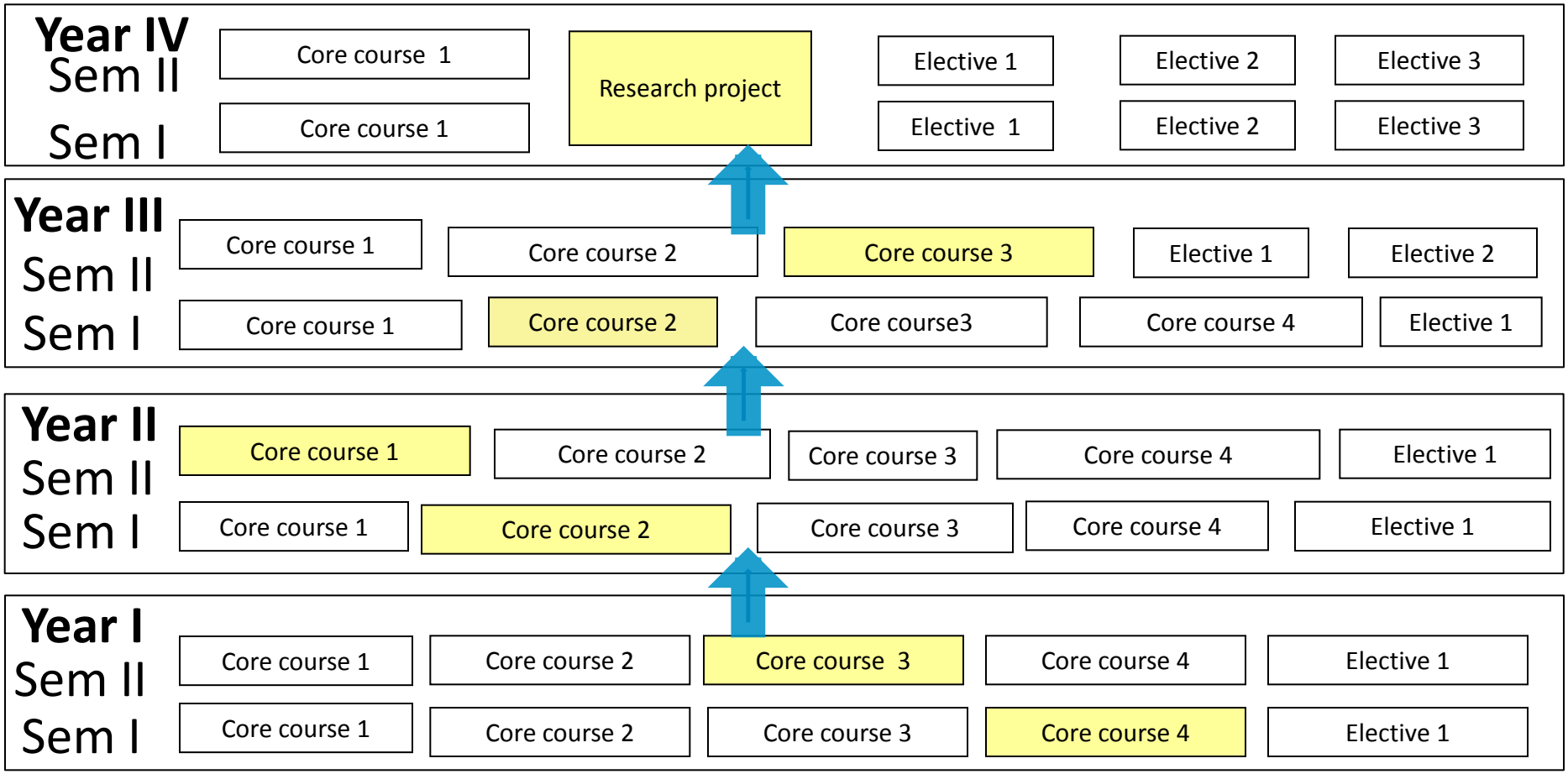
Integrating IL across curricula



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Application of Bloom's taxonomy

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

Bloom's taxonomy (handout)

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

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Example of IL learning outcomes (handout)

Graduate Attributes (GA)	Accrediting professional requirements (APR)	ANZIIL IL standards	Bloom's Taxonomy of Cognitive Processes	Examples of IL learning outcomes in Year 1	Examples of IL learning outcomes in Year 2	Examples of IL learning outcomes in Year 3	Examples of IL learning outcomes in Year 4
5(a) Respect for the ethics of research and scholarly activity. II 4. Intellectual integrity, respect for truth and for the ethics of research and scholarly activity.	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.	**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.	• 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;	• 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; • Record all pertinent citation information;	• 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; • View and save records in various formats; • Recognise important elements within a record and understand the significance of the citation;	• 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;

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Application of the Model

Staff development programme on curriculum integration

- 5 modules were developed based on the Model

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IL curriculum programme for subject librarians

- **Module 1**: IL introduction – What is information literacy and why is it important to us? (**What**)
- **Module 2**: Establishing relationships with key staff in your faculty (**Who**)
- **Module 3**: Understanding your faculty curriculum (**How**)
- **Module 4**: The integration of IL into curriculum and designing IL curriculum (**How**)
- **Module 5**: IL assessment and evaluation overview (**How**)

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IL curriculum programme for subject librarians

- It is required for all Subject Librarians
- The programme results in a lot of new IL integration projects
- Many Subject Librarians are working with academic staff, Learning Advisors, Learning Designer and IT support to integrate IL into curriculum

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What is next?

- AIL- Academic and Information literacy integrtoin into curriculum based on the Model
- Undestanding AIL
- Developing AIL framework
- Revised training programme by extending IL to AIL

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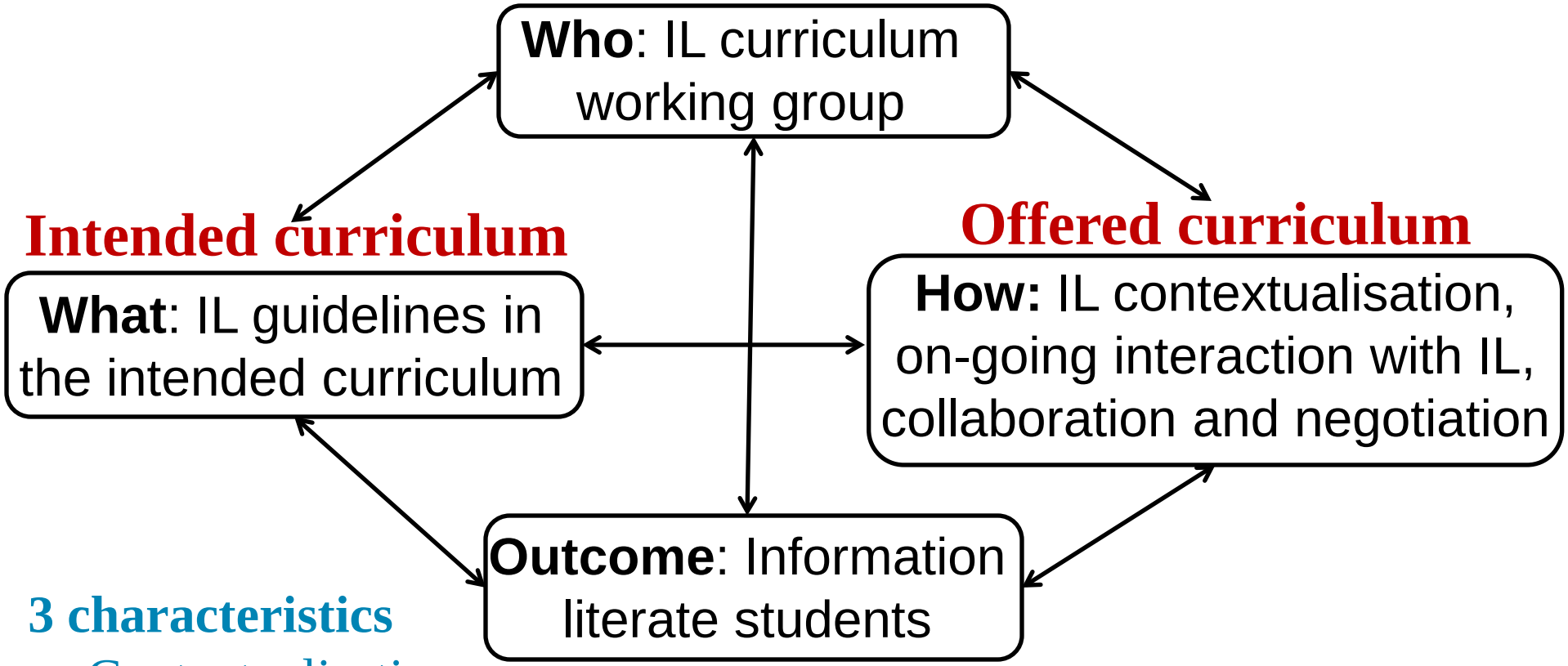
An IL integration model



3 characteristics

- Contextualisation
  - Ongoing interaction
    - Collaboration

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IL integration model Application

- Curriculum analysis
- Curriculum mapping with IL attributes
- Curriculum design & integration of IL

- Staff development programme on IL curriculum integration

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Thank you!

Questions?

Dr. Li Wang