NU Learning and Teaching Toolkit #1

Research-Integrated and Inquiry-Based Learning

NU Quality Enhancement Theme

'We learn more by looking for the answer to a question and not finding it than we do from learning the answer itself'.

Alexander, 2006:p.24

We hope that this toolkit will guide and assist you in incorporating various research-integrated approaches into the learning and teaching process.

What is research-integrated teaching?

Research-integrated teaching can be defined as active learning that arises from involving students in "inquiry" or "research" activities in different ways (Kuhlthau, Maniotes & Caspari, 2015).

How can we introduce research-integrated and inquiry-based learning into day-to-day teaching practice? Which strategies can we apply to guide students in their inquiry?

Recommendation 1: Challenge your teaching status quo.

Review different models of research-integrated teaching (Figure 1) and try to apply more than one, as appropriate to the EQF level and the year of study. For fourth-year students you may consider applying inquiry-led teaching strategies (Anderson, 2015).

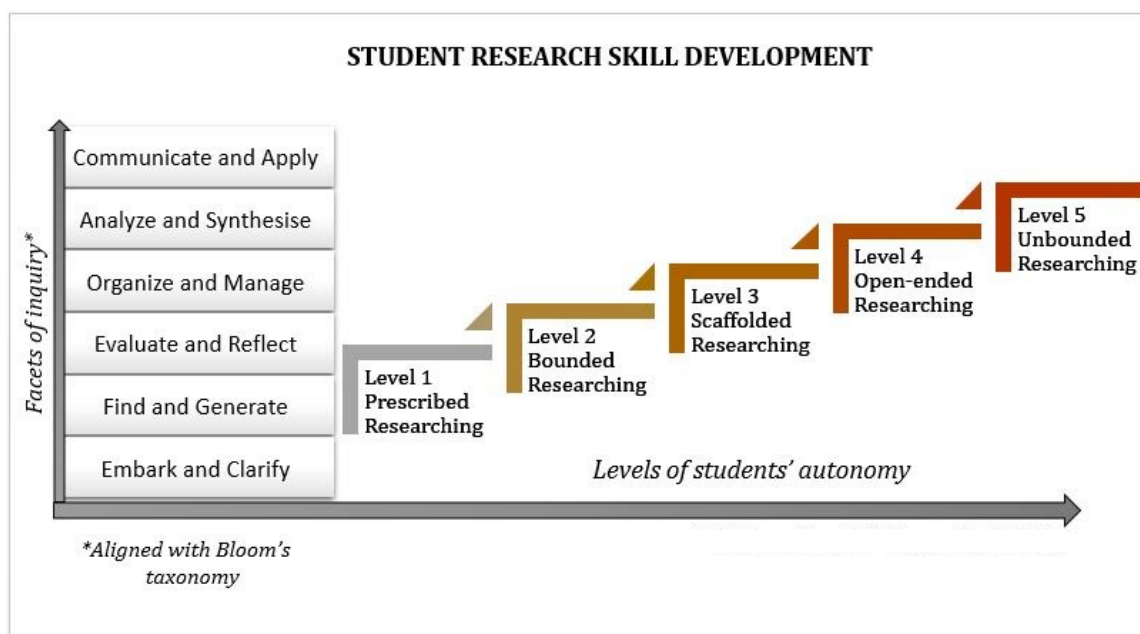*Models of Research-Integrated Teaching*

Figure 1 (Healey & Jenkins, 2009:p.9)

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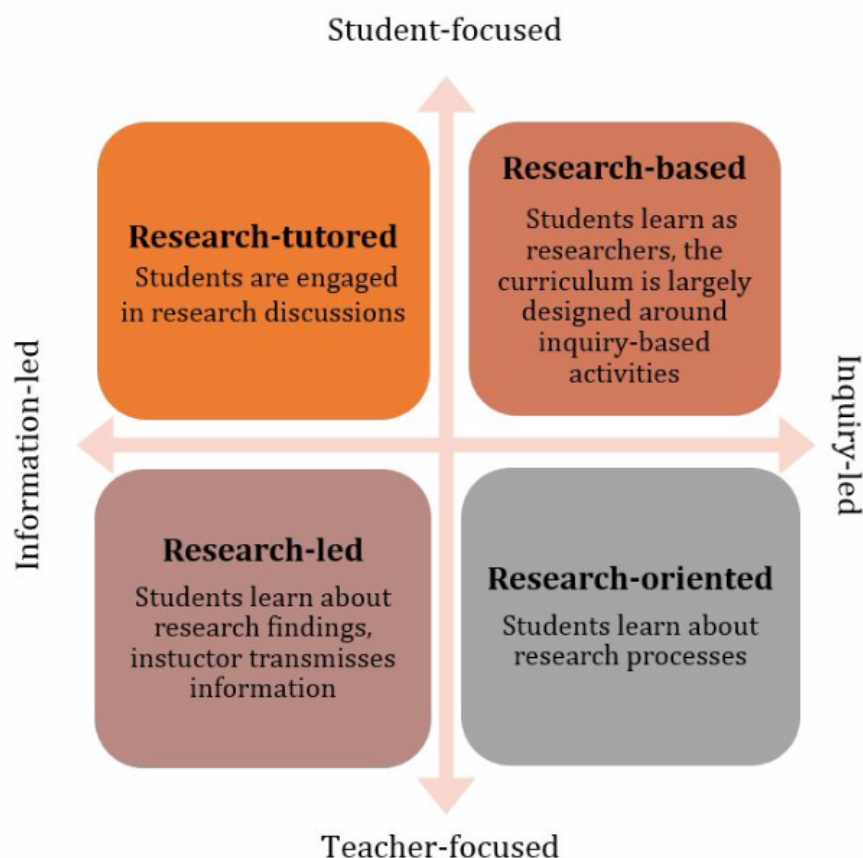
Recommendation 2: Review the program (course) learning outcomes and curriculum to support the incremental development of research skills.

- Consider offering courses including research methods as early components of the curriculum;

- When revising learning outcomes, you may refer to the Research Skill Development (RSD) Framework, which suggests a path in which students move from a low to a high degree of research autonomy (Anderson, 2015);

- When creating guidance, leave some space for students' inquiry and critical insights. This might encourage them to be more creative and to experiment with new ways of conducting research.

Figure 2 (Willison & O'Reagan,2007:p.395)

STUDENT RESEARCH SKILL DEVELOPMENT

Facets of inquiry* (vertical axis, top to bottom):
- Communicate and Apply
- Analyze and Synthesise
- Organize and Manage
- Evaluate and Reflect
- Find and Generate
- Embark and Clarify

Aligned with Bloom's taxonomy

Levels (steps, left to right / bottom to top):
- Level 1 Prescribed Researching
- Level 2 Bounded Researching
- Level 3 Scaffolded Researching
- Level 4 Open-ended Researching
- Level 5 Unbounded Researching

Levels of students' autonomy

Recommendation 3: Include a diverse range of research activities.

- Design research-related tasks (literature reviews, observations, criticism of the strengths and weaknesses of research questions, data collection and analysis);

- Involve students in research projects with different levels of independence, including group work (Edwards et al.,2007);

- Discuss the strengths and weaknesses of the various research methods;

- Incorporate practical activities and fieldwork. Organize trips to research laboratories to expand students' learning, knowledge and understanding through direct contact with experts and hands-on experience (Jenkins, 2008);

- Critically review recent research papers/articles with students.

Photo: SST students

Recommendation 4: Revise assessment tasks and design rubrics in line with the intended learning outcomes (ILOs).

Comprehensive and detailed assessment rubrics are important for determining the achievement of the intended learning outcomes (i.e., the development of specific research skills).

Figure 3 (The University of Adelaide, 2012)

You may wish to consider some example ILOs in different disciplines developed by instructors at the University of Adelaide (Australia) by following this link.

For the progressive development of research skills, it is critical to provide comprehensive feedback that indicates both areas for improvement and strengths. Consider including peer review as one of the forms of assessment.

Recommendation 5: Foster a research culture in each department.

- Involve students in both independent and joint faculty-student research projects (Fukami, 2013);

- Encourage undergraduates to attend research seminars and/or dissertation proposal defenses;

- Invite students to contribute to conference papers;

- Organize poster presentations to help first-year students learn to conduct research (Lucas, 2008);

- Involve students in Summer Research Fellows Program.

Recommendation 6: Connect undergraduate research with real-life cases and prospective employability.

Encourage students to contact industry partners, potential employers, and businesses. External research may positively affect students' prospective careers (Ryser et al., 2013). Through hands-on experience, they will become better prepared for real-life settings with a range of essential skills, including critical thinking and research.

In the video below professor Jonathan Bacon (University of Sussex) shares his experience in integrating research into teaching.

(Sussex MTL, 2012)

Recommendation 7: Promote joint faculty-student research projects.

To significantly increase students' motivation to learn, introduce them to the requirements for the submission of research articles to peer-reviewed journals in their field (Edwards et al., 2007).

Relevant PD opportunities

1. The Office of the Provost coordinates the delivery of a series of professional development sessions provided by the **University of Wisconsin–Madison** and **Higher Education Academy (HEA, UK)** on various pedagogical techniques, including research-integrated teaching. Don't miss this opportunity.

2. An online seminar, provided by Magna Publications, live on November 8, 2017, helps facilitate inquiry-based learning and student engagement through Socratic questioning. Follow this link to register.

3. Please consider subscribing to the CUR's new scholarly journal, *Scholarship and Practice of Undergraduate Research* (SPUR). The journal provides useful and inspiring information that increases our understanding of undergraduate student-faculty engagement in research, scholarship, and creative work in all disciplines and at all types of higher educational institutions. Follow the link to subscribe.

Research Integrated and Inquiry Based Learning in different

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Useful resources and links

Please be informed that a pool of resources on Research -Integrated and Inquiry-Based Learning is available at my.nu.edu.kz.(Academic_Quality_Enhancement-->Enhancement Theme)

References:

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Edwards, A., Jones, M., Susan M., Wapstra, E. & Richardson, A. (2007) Engaging students through authentic research experiences. UniServe Science Teaching and Learning Research Proceedings. Available from: http://science.uniserve.edu.au/pubs/procs/2007/33.pdf. [Accessed 3rd October 2017].

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Levy, P. (2009) *Inquiry-based learning. A conceptual framework (version 4).* Centre for Inquiry-Based Learning in the Arts and Social Sciences, University of Sheffield. Available from: www.shef.ac.uk/ibl. [Accessed 5th September 2017].

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Sussex MTL. (2012) *Research Informed Teaching.* Available from: https://www.youtube.com/watch? v=PRym1vQSQuY [Accessed 13th September 2017].

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View more resources

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