A Model for Research Assignment Creation in the Context of Inquiry-Based Learning – William Badke

As Trinity Western University develops its inquiry-based core curriculum, it is clear that students will be doing more research than they have in the past. Inquiry inherently calls on students to discover answers to questions themselves, using information as a tool for problem-solving. That, in essence, is research, whether the information comes as a result of experimentation or probing into existing primary and secondary literature.

My experience over decades of working with students and writing in the area of student research ability development is that teaching students to do effective research is not a remedial task but an effort that has to span the curriculum. This means, in part, that we need to re-evaluate the nature of the research assignment. The following is an effort to suggest what that re-evaluation should entail.

I. Own your goals

Research assignments are intended to further the purposes of your course as you place your students under some expectation to perform as competent researchers. This means you need both to determine the expected student competencies and to identify ways in which those competencies can be achieved.

> Stage One – Define the ideal student researcher

You know what such a creature should look like. Take a bit of time and spell out the abilities you are hoping to be demonstrated in student researcher. Some examples from various disciplines:

(* indicates basic skill level; ** indicates intermediate; *** indicates advanced; ****indicates a continuum of skill development)

History	Psychology	Chemistry
*Grasps the nature of inquiry	*Grasps the nature of inquiry, including the difference between quantitative and qualitative research	*Bases research on the scientific method
*Can identify a research problem and formulate a research question or thesis statement to address it.	*Can identify a research problem and formulate a research question or thesis statement to address it.	*Can identify a research problem and formulate a research question or thesis statement to address it.
*Can distinguish primary and secondary sources	* Can distinguish primary research resources from secondary ones	*Can distinguish primary research resources from secondary ones
*Is able to do basic academic searches	*Is able to do basic academic searches	*Is able to do basic academic searches
**Is able to gather high quality and relevant research resources	**Can do an effective literature review	**Can do an effective literature review

**Searches databases with skill, finding high quality and relevant resources	**Searches databases with skill, finding high quality and relevant resources	**Searches databases with skill, finding high quality and relevant resources
**Regularly appropriates references from existing resources	**Regularly appropriates references from existing resources	**Regularly appropriates references from existing resources
***Is able to discover grey literature in the field	***Is able to discover grey literature in the field	***Is able to discover grey literature in the field
****Is able to use sound criteria to evaluate found resources	****Is able to use sound criteria to evaluate found resources	****Is able to use sound criteria to evaluate found resources
**Is able to base written work on a logical, inquiry-based outline	**Is able to base written work on a logical, inquiry-based outline or research plan	**Is able to base written work on a logical, inquiry-based outline or research plan
***Is able to enlist resources into a conversation around the stated issue	***In literature reviews is able to enlist resources into a conversation around the stated issue	***In literature reviews is able to enlist resources into a conversation around the stated issue
****Can make a critical thinking-based contribution to the problem	****Can make a critical thinking-based contribution to the problem	****Can make a critical thinking-based contribution to the problem
****Formats the paper and its citations correctly	****Formats the paper and its citations correctly	****Formats the paper and its citations correctly

Your list may differ, but it should express clearly what you would like to see from a good student researcher.

Stage Two – Identify common gaps in student skills

If your list of abilities is ideal, the reality may well be less than ideal. Identify which abilities are commonly weakest in your students. Remember, this is your course and these are your goals. If having your students achieve them is important to you, and you have not yet given in to despair, you need to do whatever is possible to build these abilities into every student.

II. Reconsider the purpose of the research project

Most research projects are summative tests of student abilities, whether those be critical thinking, content knowledge, research ability, or whatever. The scenario is this: The professor assigns the project, the student does the project outside of class time, the student submits the project, and the professor grades it. In this scenario it is possible for a student to repeat the same errors throughout his/her program, since there is limited professorial mentoring involved and many students do not read/take to heart the professor's comments on returned papers. Essentially, the research project is less a learning experience than an opportunity for the student to demonstrate and be tested on existing skill levels.

Most students are demonstrably lacking in university level research abilities despite often having a great deal of self-confidence about their research ability (Holliday et al., 2015; Moltena & Chan, 2015; Gross & Latham, 2012). If we were to reconceptualize the research project as a learning experience rather than

merely as a demonstration of existing competence, we could use the project as a means to develop student research ability.

The key distinction here is between a summative and a formative approach to the research project.

- The summative approach sees student research skills as already developed so that the project is a "show me what you can do" exercise, in which the student does the work and gets the grade, with no second chances.

- The formative approach views the project as an opportunity to mentor the student in research skills, often through breaking the large project down into smaller parts. The student submits a smaller assignment, receives professorial feedback (perhaps being asked to revise and resubmit), and uses the feedback to improve in the next stage of the research. The final grade is less significant to the process than is the learning that has been achieved. The goal of such a project is thus to say, "Let me guide you so that you can improve your research ability."

III. Use your research goals and perceived gaps to create faceted assignments that teach research skills.

Some examples (for more, see the assignments and rubrics at http://libguides.twu.ca/UNIV110):

A. You have found that your students fail to produce problem-based research projects that require critical thinking. They seem unable to formulate a good research question or thesis statement:

- Have students use reference sources to spell out a working knowledge of the topic;
- Require them to submit 3 or 4 possible research questions or thesis statements based on the topic;
- Have them suggest which of these is best and why.

In your grading of this facet, determine if the questions/theses are indeed problem-based or merely calling for regurgitation of existing information. Suggest ways in which poorly framed research problems could be turned into genuine inquiry that demands critical thinking.

This, instead of: "Who are the Taliban?"

ask: "Is the military approach to suppressing the Taliban the best option for long-term peace?"

B. Your students are using a lot of websites in reference lists. Even when they use proper academic databases, their reference lists fail to address the research problem well.

Instead of merely asking students to submit a preliminary bibliography (with or without annotation):

- provide some instruction (or ask a librarian to do this) on the nature and effective use of databases relevant to your discipline (tutorials available at http://libguides.twu.ca/library_research/home);

- get students to provide, not just a preliminary bibliography, but indication of what database(s) they used, what search terms they enlisted, and how they narrowed their results (often done through narrowing tools on the results page in a database).

You are thus better able to critique their work or even suggest better searches that would have produced more focused results.

IV. Plan your Mentoring

There are several stages in the average research project. Each could provide an opportunity for students to be mentored:

A. Develop a research problem

B. Develop a research plan / preliminary outline

C. Create a search strategy and seek out resources

D. Evaluate resources

E. Create final bibliography

F. Write the project/assignment

A guide that may be helpful to students is located at http://libguides.dbu.edu/planner. From Dallas Baptist University, it is a research assignment scheduling tool, based on my textbook, *Research Strategies*, which takes students step-by-step through the research process.

V. A (Perhaps) Uncomfortable Word about Research Assignments

Project Information Literacy, a massive ongoing research effort that looks at university student experiences with research on multiple campuses, has found that the number one complaint of students about research is that they do not understand what the professor wants them to do (Head & Eisenberg, 2010).

This is generally puzzling to professors, who believe they are being perfectly clear. Once again, however, limited student grasp of the research process is likely to blame, at least in part. While assignments may spell out types of resources to use and expectations for citation format, many students cannot picture what an acceptable research project should look like. Here, a combination of more classroom discussion of requirements and clear rubrics in stated assignments can help greatly. Here is an example of a rubric for an assignment calling for development of research questions and preliminary outline:

A well done assignment will include the following features:

1. Chosen research question is narrowly focused and requires analysis to answer (not just the compiling of existing information). Ask yourself: Can I get an answer just by looking something up (not good) or do I have to do some analysis to come up with a solution?

2. Outline is logical and deals directly with the requirements of the research question.

Never assume that students understand (or should understand) your research assignment. Many of them do not. The more instruction and guidance you can offer, the better.

VI. The Time Factor

Grading faceted assignments in mentoring mode is time consuming. We may believe that grading numerous final research projects is onerous, but turning single project submissions into 4 or 5 smaller submissions, along with mentoring, demands even more time. Yet the goal of education is to educate. If summative assignments are failing to mentor students in research ability, we have a failure to educate. The extra time it takes to do the mentoring may well have its own special rewards. You may consider using peer evaluation of smaller assignments, though you will likely need to vet these evaluations based on your own criteria.

Ultimately, mentoring students in research is far more rewarding than simply providing summative grades to mediocre student projects.

References

Gross, M., & Latham, D. (2012). What's skill got to do with it?: Information literacy skills and self-views of ability among first-year college students. *Journal of the American Society for Information Science and Technology*, 63(3), 574–583. Available from: http://ejournals.library.ualberta.ca/index.php/EBLIP/article/downloadSuppFile/19076/2914

Head, A. J., & Eisenberg, M. B. (2010). Assigning inquiry: how handouts for research assignments guide today's college students. Retrieved from http://projectinfolit.org/images/pdfs/pil_handout_study_finalvjuly_2010.pdf

Holliday, W., Dance, B., Davis, E., Fagerheim, B., Hedrich, A., Lundstrom, K., & Martin, P. (2015). An Information Literacy Snapshot: Authentic Assessment across the Curriculum. *College & Research Libraries*, 76(2), 170-187. doi:10.5860/crl.76.2.170. Available from: http://crl.acrl.org/content/76/2/170.full.pdf

Molteni, V. E., & Chan, E. K. (2015). Student Confidence/Overconfidence in the Research Process. *Journal of Academic Librarianship*, *41*(1), 2-8. doi:10.1016/j.acalib.2014.11.012. Available via TWU login from: https://ezproxy.student.twu.ca/login?url=http://www.sciencedirect.com/science/article/pii/S0099133314002420