GIRLS

Generation for INNOVATION, RESILIENCE, LEADERSHIP and SUSTAINABILITY

THE GAME IS ON!

2023

RESEARCH-BASED LEARNING COURSE HANDBOOK

Research-based teaching and learning represent a constructivist approach to education, emphasizing students learn through active research. Instructors facilitate this process by presenting topics that encourage exploration and inquiry, rather than offering closed-ended conclusions. Adopting this approach, students are empowered to delve into subjects, engage in research, and construct their understanding of the material.

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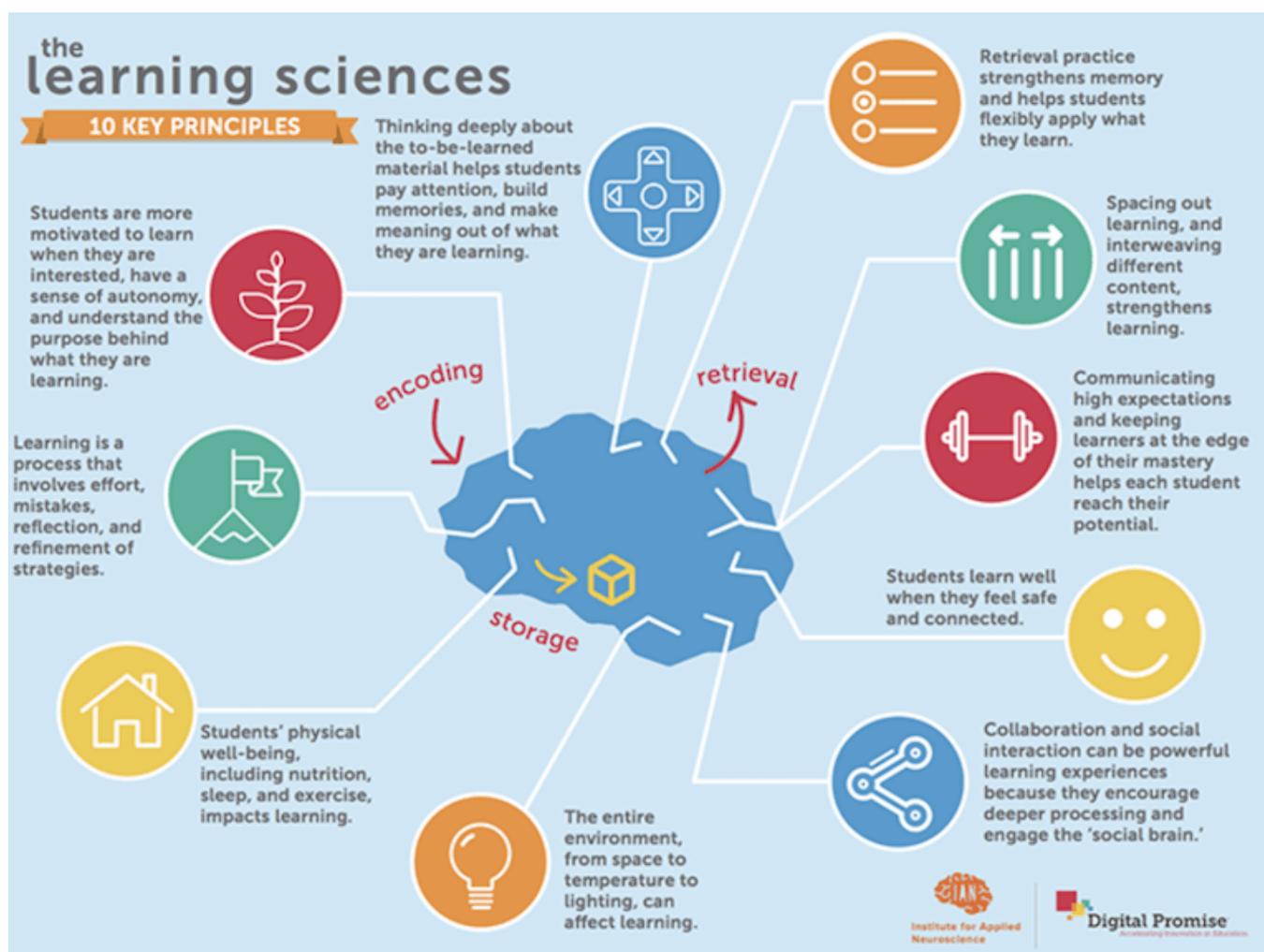# CONTENTS

WHAT IS RESEARCH-BASED LEARNING?

Research-based teaching and learning represent a constructivist approach to education, emphasizing that students learn through active research. Instructors facilitate this process by presenting topics that encourage exploration and inquiry, rather than offering closed-ended conclusions. By adopting this approach, students are empowered to delve into subjects, engage in research, and construct their understanding of the material.

HOW DOES IT WORK?

In a Research-Based learning approach, students engage actively in seeking out and using diverse resources, materials, and texts to investigate significant, pertinent, and engaging questions and challenges. Throughout this process, they discover, process, organize, and assess information and ideas, improving their reading skills and expanding their vocabulary. They acquire the ability to comprehend text deeply, formulate questions, interpret results, construct, and evaluate hypotheses, and engage in critical and creative thinking. Furthermore, they develop problem-solving abilities to address various challenges and dilemmas. Ultimately, they enhance their communication skills through written expression and collaborative discussions.

the learning sciences
10 KEY PRINCIPLES

Students are more motivated to learn when they are interested, have a sense of autonomy, and understand the purpose behind what they are learning.

Thinking deeply about the to-be-learned material helps students pay attention, build memories, and make meaning out of what they are learning.

Retrieval practice strengthens memory and helps students flexibly apply what they learn.

Learning is a process that involves effort, mistakes, reflection, and refinement of strategies.

Spacing out learning, and interweaving different content, strengthens learning.

Communicating high expectations and keeping learners at the edge of their mastery helps each student reach their potential.

encoding

retrieval

storage

Students learn well when they feel safe and connected.

Students' physical well-being, including nutrition, sleep, and exercise, impacts learning.

The entire environment, from space to temperature to lighting, can affect learning.

Collaboration and social interaction can be powerful learning experiences because they encourage deeper processing and engage the 'social brain.'

Institute for Applied Neuroscience

Digital Promise

Source: https://www.gettingsmart.com/2019/03/18/how-learning-works-10-research-based-insights/

THE BREAKDOWN OF A RESEARCH-BASED LEARNING COURSE DESIGN

Ensure a reasonable common students' background

Examining our students' existing knowledge and abilities, as well as identifying areas for improvement, exemplifies a strength-based perspective. It's crucial to prioritize their current knowledge rather than dwelling on their deficits. Embracing a growth mindset, both for ourselves and our students, yields remarkable outcomes. This period offers an opportunity to reinforce student self-efficacy and strengthen our collaborative efficacy as we unite in teamwork. Related to your curricular unit, identify the necessary bases on top of which your students will build and enhance their knowledge. If needed, devote some extra office hours where you will level the background.
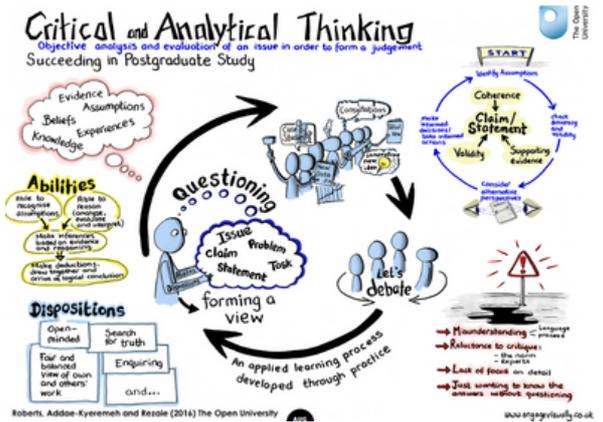
Create an intellectually challenging research-based educational environment

Provide opportunities for students to engage in authentic research experiences through independent projects, collaborations with faculty members, or participation in research groups.

Prepare ahead of time a list of available bibliographies related to the topics that your students will research.

If you are working within a teacher-tutor team that will accompany the students be sure

- to assess and fine-tune the degree of commitment and empathy between the group;
- that each tutor has the objectives clarified;
- to schedule follow-up meetings;
- to care from the human perspective: understanding training needs among tutors and potential help among peers;
- to arrange a bibliography and necessary teaching materials;
- to define action strategies, monitoring, and route evaluation;
- to set means of contact between tutors.

Critical and Analytical Thinking
Objective analysis and evaluation of an issue in order to form a judgement
Succeeding in Postgraduate Study

Roberts, Addoe-Kyeremeh and Rezaie (2016) The Open University

Iteratively practising and developing experiences and critical-thinking

Schedule regular follow-up meetings where students have the opportunity to discuss with each other their, at-the-moment, findings.

Define the monitoring calendar and schedule the tasks to be presented. This scheduling must be based on the availability of all students and the tutor. It implies, and suppose a commitment to attendance and preparedness for presenting work, with the opportunity for ongoing dialogue to address any uncertainties.

It is important to maintain availability while balancing the autonomy that students must acquire during this learning methodology.

Identify research problems inspired by the topic to be covered

Present to your students
- the topics covered by your curricular unit that they will have to master at the end of the studying period;
- research problems related to their main graduation course and the topics they should master from your curricular unit.

Be open to student's own creativity and background experience (most of the time students have very nice research ideas).

Certify that your students know what is the design of an experimental approach. Clarify that it should involve careful planning and consideration to ensure the validity, reliability, and effectiveness of the study. They should clearly define the objectives, the control variables, and the possibility of replication, and all necessary pre-study assumptions must satisfied.

A summary of ethics in research is always a point not to forget (knowing your students you will certainly know the amount of time needed here).

DATA COLLECTION

P QuestionPro

Collect and analyse data in the context of the research problem

If the research learning involves data collection help them to select valid and reliable measures to assess their variables of interest.
A data analysis brainstorm might help to point out the major conclusions driven from their research. As before the balance between autonomous work and teacher guiding is hard to achieve, but needed.
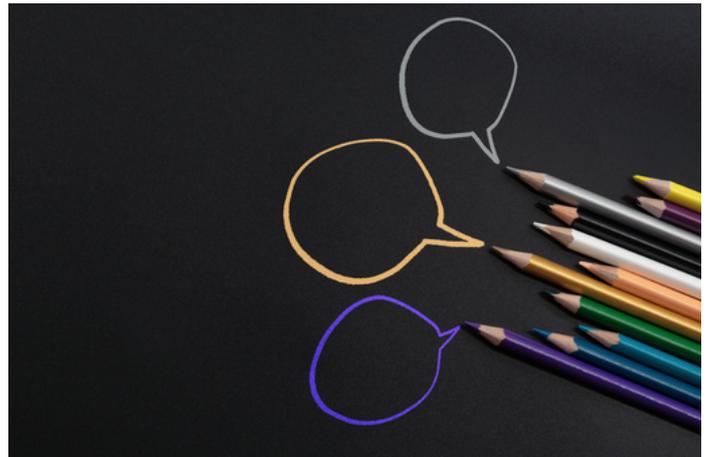
Have your students present their findings to each other, and outside stakeholders if there are any. They can develop posters, write essay, or a PowerPoint presentation.

Use this presentation moment also as a learning moment. Most certainly not all the students learnt the same. Therefore, this is a huge knowledge-sharing opportunity.

In figure 1, I showed you . In figure 2, I showed you …

You already told me that!
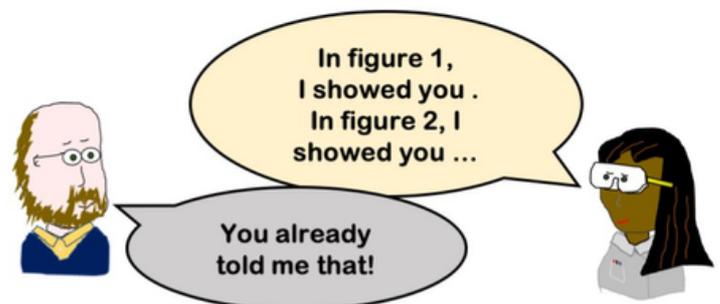
Don't direct your reader back to the data figures! Advance the story onto discussing what the data means!

TEAMS' DIMENSION AND RULES INSIDE THE GROUP

According to curricular unit goals, students' number, and teachers involved in the process, the team's dimension should be evaluated.

If there are conditions, groups of 3 students are ideal. It must be noticed that each student has a role (team coordinator, creative thinker, bibliography organizer, communicator, ...) and these roles must periodically change.

TEACHER ROLES AND RESPONSABILITIES

- Based on the bibliography agreed, check whether individual and group exploration requires further advice;
- Encourage autonomous search;
- Explain, remember that repetition is always needed at least in the beginning, what students should look for and research to achieve their involvement and autonomous learning;
- Question progress or lack thereof, encouraging persistence;
- Congratulate advances whether small or large.
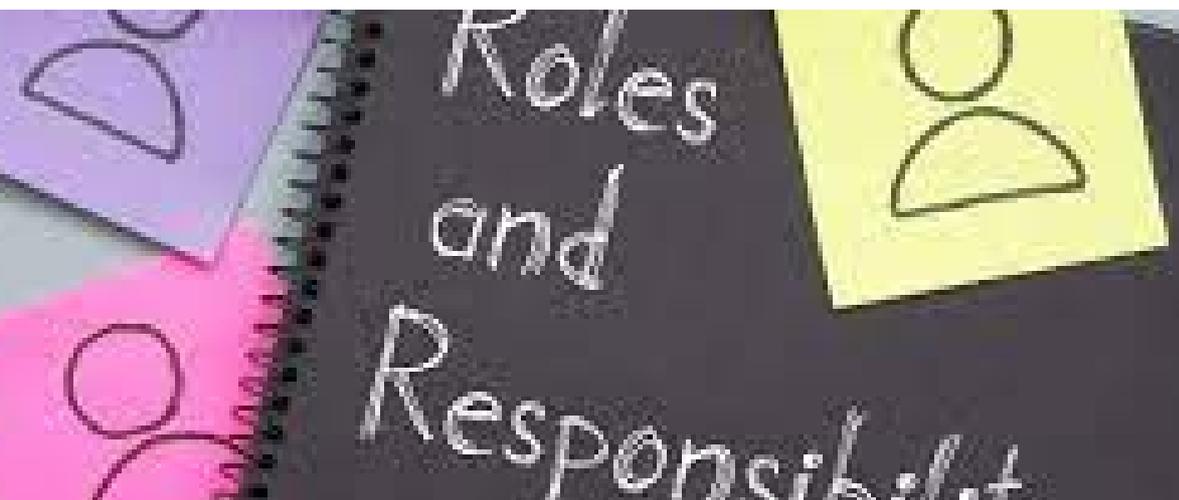
ASSESSING RESEARCH-BASED LEARNING

Example of an analytic rubric

	Needs Improvement (1)	Developing (2)	Sufficient (3)	Above Average (4)
Clarity (Thesis supported by relevant information and ideas)	The purpose of the student work is not well-defined. Central ideas are not focused to support the thesis. Thoughts appear disconnected.	The central purpose of the student work is identified. Ideas are generally focused in a way that supports the thesis.	The central purpose of the student work is clear and ideas are almost always focused in a way that supports the thesis. Relevant details illustrate the author's ideas.	The central purpose of the student work is clear and supporting ideas always are always well-focused. Details are relevant, enrich the work.
Organization (Sequencing of elements/ ideas)	Information and ideas are poorly sequenced (the author jumps around). The audience has difficulty following the thread of thought.	Information and ideas are presented in an order that the audience can follow with minimum difficulty.	Information and ideas are presented in a logical sequence which is followed by the reader with little or no difficulty.	Information and ideas are presented in a logical sequence which flows naturally and is engaging to the audience.
Mechanics (Correctness of grammar and spelling)	There are five or more misspellings and/or systematic grammatical errors per page or eight or more in the entire document. The readability of the work is seriously hampered by errors.	There are no more than four misspellings and/or systematic grammatical errors per page or six or more in the entire document. Errors distract from the work.	There are no more than three misspellings and/or grammatical errors per page and no more than five in the entire document. The readability of the work is minimally interrupted by errors.	There are no more than two misspelled words or grammatical errors in the document.

TEACHING AND LEARNING OUTCOMES REFLECTION

Ask your students to think back on what they gained from journeying through this learning methodology. Have them reflect on the following:

- What did you learn about the topic?
- What did you learn about your team?
- What did you learn about yourself?
- What were your feelings about autonomous learning?
- How do you now think differently about this learning methodology?

Reflection stands as a cornerstone, serving as a pivotal link between course assignments, academic content, and research experiences. It provides faculty with a means to evaluate students' fulfillment of learning objectives. As John Dewey famously articulated, "We do not learn from experience…We learn from reflecting on experience." This underscores the importance of students not only recounting their actions but also contemplating how these experiences resonate with their lives and future decisions. Preceding reflection, students should engage in "pre-reflection," wherein they consider the project before its initiation. All reflective activities should center on the connection between research, learning, and the individual student's development.

Personal or team meetings are important to share how students experienced this learning process. Their conclusions and inputs are valuable for continuously updating and improving teachers' next research-learning proposes.

LET'S WORK TOGETHER

MEET THE TEAM

Project Coordinator