February 10th, 2025

Peer feedback assignment

Reflect and give feedback on empirical research skills

inge.wortel@ru.nl

Natural Computing (NaCo) Learning Goals

By the end of the course, you can

- Explain how the various algorithms * work and when (not) to use them.
- Implement, extensively test, and further develop methods based on natural computing* to solve a learning task or to simulate a biological system.
- Design, analyze, and interpret experiments applying natural computing algorithms* to a specific question and/or dataset.
- Communicate a problem statement, methodology, experimental outcomes and conclusions through appropriate visual / verbal means in a research report.

Most of these are very **skill-focused** (which is why you are assessed on projects rather than an exam).

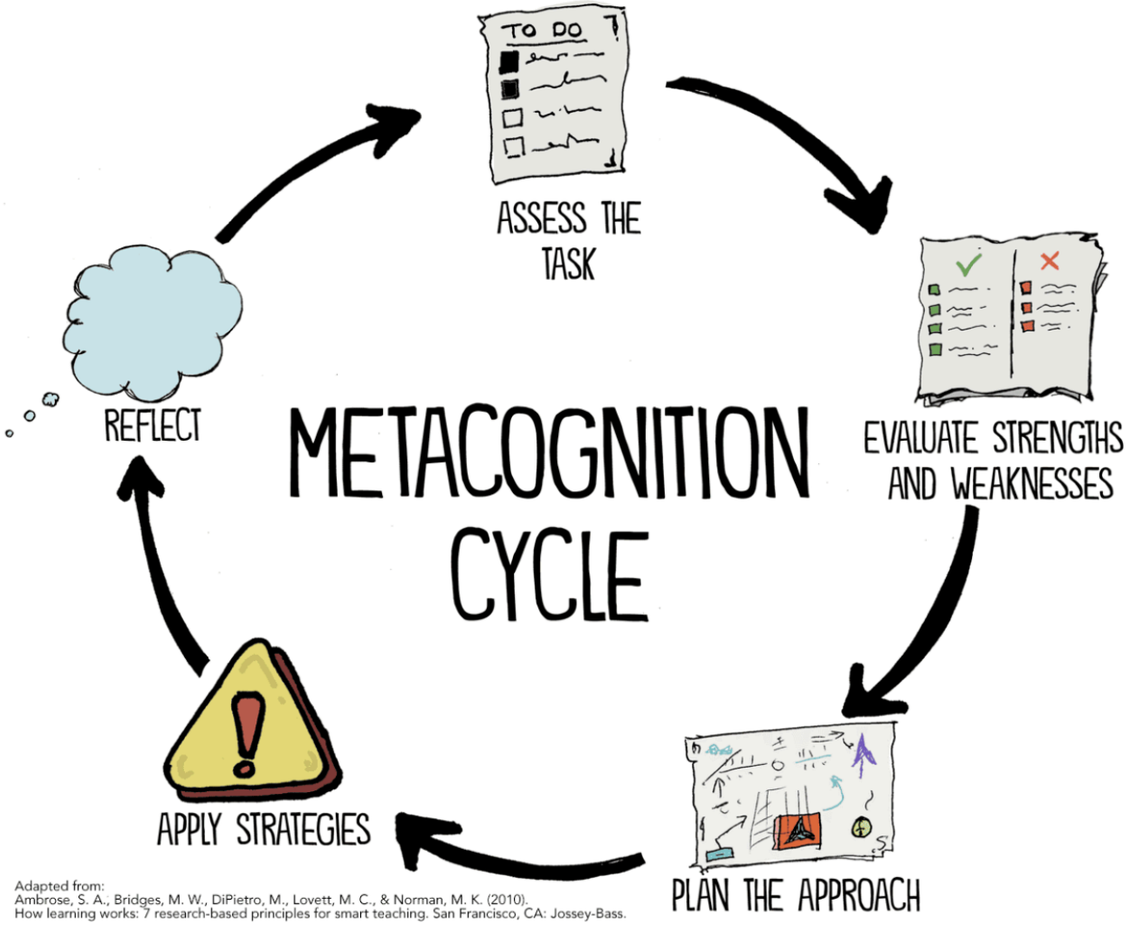
Learning skills: metacognition

THE POWER OF METACOGNITION

Metacognition is vital for students to thrive in college, in their careers, and in life-long learning. It helps promote autonomy and resiliency. When students improve their metacognitive skills, they are more likely to embrace a Growth Mindset and learn from mistakes.

If we want students to grow into problem-solvers and critical thinkers, we need to help them develop metacognition.

JOHN SPENCER

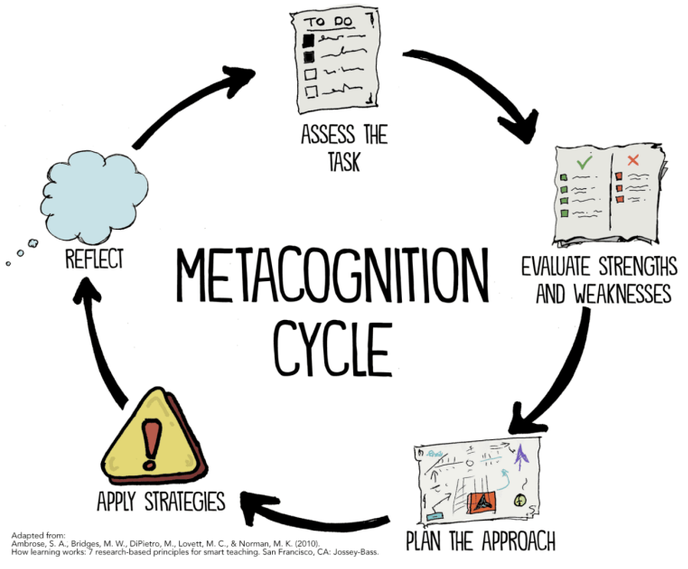


Adapted from:
Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). How learning works: 7 research-based principles for smart teaching. San Francisco, CA: Jossey-Bass.

Learning skills: metacognition

Example: assignment 1A

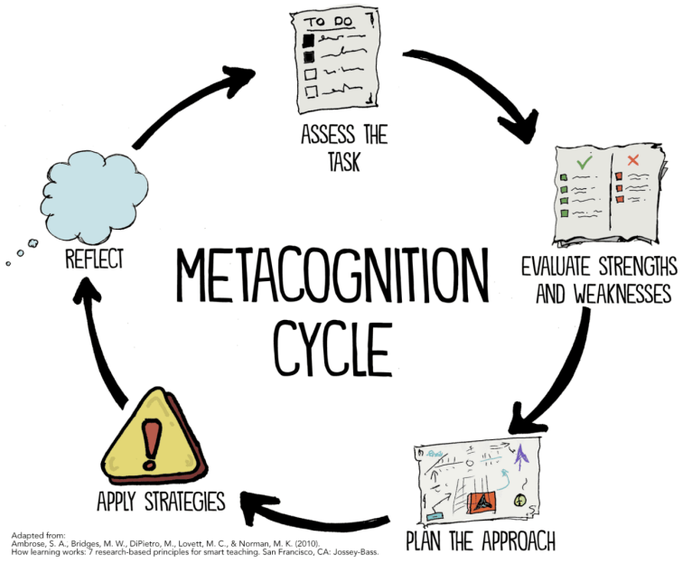
1. **Assess the task**: you probably (hopefully?) had some idea in mind of what constitutes a "good product".
2. **Evaluate strengths and weaknesses**: which skills do you already have to get there, what do you still need to figure out to succeed at this task?
3. **Plan the approach**: plan the steps/tasks you need to complete.
4. **Apply strategies**: do the assignment.
5. **Reflect**: based on feedback/criteria.
   This is where the learning happens!
6. **Repeat**: based on the above, update #1 and improve your work (=assignment 1C).



This assignment: peer feedback

In **assignment 1A**, you were asked to think about how to:

- design a CPM experiment to answer the given question
- visualize, analyze and present the outcomes of your simulations
- write a clear, structured research report (which is comprehensive enough that others can understand what you did and how to reproduce it)



Now in **assignment 1B**, your peers will help you assess: to what extent did you succeed, and where is there still room for improvement? In **assignment 1C** you will use this to improve your work.

Why peer feedback?

Who has experience with (peer) feedback?

- **Getting feedback** from others helps with the "reflect" step of the cycle (can be easier than assessing yourself)
- **Giving feedback** to others is useful too: how have others tackled the same problem? (Inspiration!)

The assignment

You will use the provided **peer feedback form** to guide your assessment of several criteria (experimental design, analysis, conclusions, report). Each section starts with **rubric** items:

Experimental design: to assess the effect of obstacles on collective migration as asked, the simulations should (a) have sufficient cells to exhibit collective migration, (b) be compared against a proper baseline, and (c) ensure that while assessing the effect of a variable of interest, everything else is held constant. Please assess the experiment according to these criteria:

1	2	3	4	Selection:
The # of cells was too low to speak of collective migration; cells mostly did not touch at all.	*There were enough cells that some of them were touching, but not enough to speak of "high densities" per the exercise.*	*The simulation contained an appropriate number of cells to allow for collective migration.*	*There were enough cells for collective migration, and the experiment varied the number of cells to test sensitivity of conclusions.*	*[choose 1-4]*

Afterwards, you summarise your findings in **constructive feedback** where you identify specific points to improve (>150w per topic).

Constructive feedback

When is feedback "constructive"?

Useful model (Hattie & Timperley, 2007) :

1. **"feed back"**: what did the team actually do (specifically!)?
2. **"feed up"**: relate it to a goal — what *should* the work look like, ideally? Why is that important? (Or: can be phrased as a problem)
3. **"feed forward"** : what are the (specific) next steps to get closer to the goal?

Example (assignment 2 appendix A):

Not very constructive	More constructive
"Your writing was sometimes not very clear."	"In section X, you wrote [...]. I did not understand what you meant because [...]. Could you explain?"
"Figure X was not clear to me."	"Figure X shows [...], but it took me a while to figure out what the take-home message was. I would suggest to highlight [...] with an arrow and to adapt the figure caption, such that a reader can see quickly what the take-home message is."
"You should fill the simulation	"Your current simulations only contain 5 replicates

Important

- **You are giving feedback, not grades!** Your main goal is to help the other teams improve their work (while learning something about your own in the process). You might have suggestions for improvement even if the report was already very good.
- Not helpful:
    - Superficial, "everything is great". (Nice maybe, but not helpful).
    - Disrespectful.
- Helpful:
    - Honest, respectful, precise, and constructive.

Get started

Materials and the feedback form will be provided tomorrow, after the deadline for Assignment 1A has passed.

- Download the assignment instructions and feedback form, and have a look at Appendix A (feedback examples).
- **Start with your team:** divide the feedback form **sections** (so not the reports!). It is most useful if you can compare different reports against the same criteria.
    - Suggestion: divide sections A-C, then do D,E together.
- **Individually:** Read through the other reports in your Feedback group (Brightspace > Activities > Discussions), and fill out your assigned section of the feedback form for each (rubric + draft of the feedback section).
- **Finish with your team:** Afterwards, briefly discuss with your team mates what you saw and finish the "group assessment and feedback" sections together (is it constructive enough?). Compile into one complete feedback form for every report you reviewed.

Hand in the completed form(s) in **two places**, before **17 February 12:00**:

- in the thread on the Discussion forum where you also found the report.
- in the submission system for assignment 1B

Final comments

- This should not have to be said, but... please don't use LLMs for the written feedback sections — not even to edit the feedback.
- Of note: research suggests that **you learn just as much from giving feedback as from receiving it**. You will benefit directly from doing your best on the feedback you provide to your peers.
- We encourage you to ask questions to the groups that provided the feedback in the Brightspace discussion forum. Usually, feedback is more useful if it is a discussion.
- In the **work group (20 Feb)**, we can help you make a revision plan from the feedback you receive. Please go there if anything in your feedback remains unclear, you need help prioritizing, you would like further input on your plans, and/or you did not get sufficiently useful feedback.