Self-regulated learning as pedagogy for online learning & teaching: Instructional strategies during different stages of learning

Binbin Zheng, Ph.D.

March 21, 2022

Recap

- SRL framework: Zimmerman, 2002

Barry J. Zimmerman (2002) Becoming a Self-Regulated Learner: An Overview, Theory Into Practice, 41:2, 64-70, DOI: 10.1207/s15430421tip4102_2

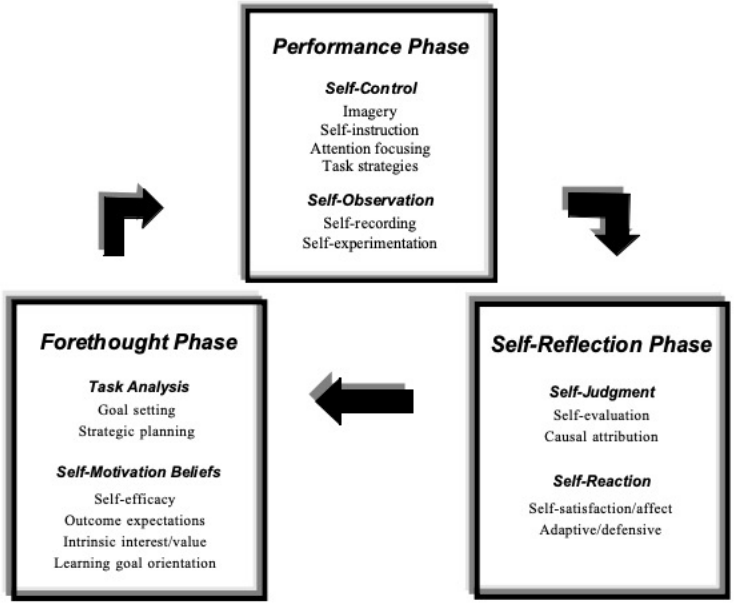


Figure 1. Phases and Subprocesses of Self-Regulation. From B.J. Zimmerman and M. Campillo (in press), "Motivating Self-Regulated Problem Solvers." In J.E. Davidson and Robert Sternberg (Eds.), *The Nature of Problem Solving*. New York: Cambridge University Press. Adapted with permission.

Forethought

- Goal setting and strategic planning
  - Provide explicit and attainable learning objectives to help students set up learning goals
  - Weekly email/audio/video introduction of learning for the upcoming week and summary of last week's learning

Written summary and introduction

Hello everyone! Welcome to Week 3 of CEP xxx

In Week 2 we first tried out the Popplet activity that we did not get a chance to finish in Week 1. It is amazing to see the *wisdom of crowds* with the collective knowledge created by all of us together! Collective knowledge of a group can be greater than the knowledge of an individual or even that of an expert individual. Attached please find a PDF copy of the final map. Popplet could be something you can use in your classrooms for brainstorming or other collaborative activities.

Second, I hope you had a great reading experience using NowComment. Using Social annotation in reading could potentially encourage students to take on a more active role in reading and engage in deeper and higher-order thinking. As the audience, students could not only have a conversation with the author, but also actively interact with peer readers. This kind of reading-writing activity could be beneficial for understanding the written text and building a favorable environment for deep thinking and peer interaction. Your discussions about "new doesn't always equal better" in this reading in Paragraph 23 sets an excellent example for that.

Written summary and introduction

SO, Week 3's topic is "Navigating and Reading New Media" with two overarching questions:

- What does a "reading brain" need to do to construct meaning from signs on a paper?
- What old and new skills and strategies are required for navigating and reading new media texts?

This week, we're going to dig a bit deeper into some of the interesting and important complexities of teaching and learning with new media skills. Below is a preview of the four assignments (besides reading) in Week 3:

1. Screencast recordings of you reading two different texts (one traditional text and one digital text) using Screencast-O-Matic;
2. Five minutes of creativity (Creating an avatar for the student sketch you depicted in Week 2);
3. Discussion about "What use or application of NMTT would you like to become an expert about this semester?"
4. After completing your discussion post, make a mini-presentation about it with FlipGrid.

Weekly introduction in audio/video format

Forethought

- From the student's end
  - Study planning module (Davis et al., 2016)
  - *In the space below, please describe, in detail, your study plan and desired learning objectives for the week regarding your progress:*
    - e.g.
    - *I plan to watch all of the lecture videos.*
    - *I will write down questions I have about the videos or assignments and discuss them in the forum.*

Forethought

- From the student's end
  - Reflection prompt (Davis et al., 2016)
  - *How closely did you follow your study plan from the beginning of the week? Did you successfully meet all of your learning objectives? In the space below, explain how you can improve upon your study habits in the following weeks in order to meet your goals.*

Forethought

- Davis et al., 2016
  - Learners who engaged in the study prompt had higher course engagement, persisted more in the course, and had higher final grades than learners who did not engage in such prompts.

Forethought

- Sitzmann and Johnson, 2012
  - Develop a plan worksheet for when, where, and how much time they were going to devote before each module
    - Each module would take about 1 hour to complete
    - Ask students to view the calendar and select the dates they were planning to log in to the course and report how many hours they were planning to spend reviewing
    - Informed students that they need to choose a study environment that is quiet and free from distractions
    - Print out a copy of their plan

Forethought

- Sitzmann and Johnson, 2012
  - Students benefited from the planning intervention when it was paired with another intervention – prompting self-regulation – targeting self-regulatory processes that occur subsequent to planning (e.g., monitoring, concentration, learning strategies).

Forethought

- Sitzmann and Johnson, 2012

  - Am I setting goals to help me remember the material after I finish the course?
  - Am I setting goals to ensure I have a thorough understanding of the training material?
  - Am I concentrating on learning the material?
  - Do I understand all the key points of the material?
  - Do I know enough about the material?
  - Are the study strategies I am using helping me learn the material?
  - Would I do better on the next quiz if I studied more?

Using technologies to support planning

- Notion

Using technologies to support planning

GIS

Created August 30, 2020 2:14 PM

Tags GIS

Add a property

Add a comment...

Learning materials Default view

Name	Subjects	Mode	Watched	Cleared	Notes/Flashcards	MCQ/...	Rep1	Rep2	Rep3	Rep4	Rep5
GIS01_Abdominal wall	Anatomy	E-learning	☑	☑	☑	☑	2/9/2020 3	19/10/2020 3	2/12/2020 6	2/4/2021 4	
GIS02_ Abdominal cavity	Anatomy	E-learning	☑	☑	☑	☑	2/9/2020 3	23/10/2020 4	2/12/2020 5	5/4/2021 5	
Anatomy Dissection Practical VI - Anterior abdominal wall and inguinal region	Anatomy	Practical	☑	☐	☐	☐					
Anatomy Dissection Practical VII - Abdominal cavity	Anatomy	Practical	☑	☐	☐	☐					
Anatomy Dissection Practical VIII - Abdominal cavity (cont.) and mesenteric vessels	Anatomy	Practical	☑	☐	☐	☐					
GIS05-06_Gross anatomy of the GI tract, liver and the pancreas	Anatomy	Lecture	☑	☑	☐	☑	23/10/2020 2	3/12/2020 5			
Anatomy Dissection Practical IX - Posterior abdominal viscera and wall	Anatomy	Practical	☑	☐	☐	☐					
GIS03_Histological features of esophagus, stomach and intestines	Histology	E-learning	☑	☑	☑	☑	19/11/2020 7	4/12/2020 6	3/4/2021 4		

COUNT 44

Credit of Yuen Ying Tsang, HKU MBBS Year-3 student

Share

Name	Subjects	Mode	Watched	Cleared	Notes/Flashcards	MCQ /...	Rep1	Rep2	Rep3	Rep4	Rep5
Anatomy Practical I - Histology of the GI tract	Histology	Practical	☑	☑	☐	☐					
GIS04_Digestive glands	Histology	E-learning	☑	☑	☑	☑	19/11/2020 3	4/12/2020 5	5/4/2021 5		
GIS08_Development of the foregut and its derivatives	Embryology	E-learning	☑	☑	☑	☑	24/11/2020 1	4/12/2020 3	7/4/2021 4		
GIS14 _Digestion of Carbohydrates, Fats and Protein	Physiology	E-learning	☑	☑	☑	☑	6/12/2020 5	14/4/2021 5			
GIS09_Gastroduodenal secretions and control	Physiology	E-learning	☑	☑	☑	☑	24/11/2020 1	5/12/2020 4	20/12/2020 4	13/4/2021 5	
GIS18_Control of biliary and pancreatic secretions	Physiology	E-learning	☑	☑	☑	☑	25/11/2020 1	5/12/2020 4	20/12/2020 4	14/4/2021 5	
GIS16 Functions of the liver	Physiology	E-learning	☑	☑	☑	☑	27/11/2020 1	6/12/2020 4	14/4/2021 4		
GIS23 Absorption along the GI tract: membrane transport	Physiology	E-learning	☑	☑	☑	☑	6/12/2020 4	14/4/2021 5			
GIS19_Motility of the GI tract	Physiology	E-learning	☑	☑	☑	☑	7/12/2020 3	17/4/2021 4			
GIS27_Diarrhea- nutritional, fluid and electrolyte consequences	Physiology	E-learning	☑	☑	☑	☑	7/12/2020 3	18/4/2021 5			
GIS24 Drugs affecting motility of the GI tract	Pharmacology	E-learning	☑	☑	☑	☑	7/12/2020 4				
GIS10 Pathology of the esophagus and cardia	Pathology	Lecture	☑	☑	☑	☑	27/9/2020 1	7/12/2020 4	8/12/2020 5	20/4/2021 4	
GIS17 Pathology of peptic ulcers, gastritis and gastric cancer	Pathology	Lecture	☑	☑	☑	☑	27/9/2020 1	7/12/2020 1	8/12/2020 4	21/4/2021 5	
GIS15 Aggressive factors and ulcer healing drugs	Pharmacology	Lecture	☑	☑	☑	☑					
GIS11 Pathology of small and large bowel	Pathology	Lecture	☑	☑	☑	☑	14/9/2020 1	27/9/2020 1	8/12/2020 4	27/4/2021 4	
PBL Case 1		PBL	☑	☐	☐	☐					
Pathology Practical I - Pathology of esophageal cancer, peptic ulcer, gastric cancer and colon cancer	Pathology	Practical	☑	☑	☐	☐	28/9/2020	8/12/2020	28/4/2021		

COUNT 44

Peer learning

- Study groups
  - Set up learning goals, check on each other's progress every day

Perusall

- Social annotation platform for pre-class reading materials
  - Flipped classroom introductory physics class (Miller et al., 2018)

P

Perusall

Perusall physic... ×

Course home
My scores
Add to my calendar

Readings

Documents
College E&M Textbook

Assignments
Feb 12: Assignment 1: ...

Chats

Groups
Announcements
General discussion

One-on-One

- Describe how a lightning rod works.
- Explain how a metal car may protect passengers inside from the dangerous electric fields caused by a downed line touching the car.

18.8. Applications of Electrostatics

- Name several real-world applications of the study of electrostatics.

Introduction to Electric Charge and Electric Field

The image of American politician and scientist Benjamin Franklin (1706–1790) flying a kite in a thunderstorm is familiar to every schoolchild. (See Figure 18.2.) In this experiment, Franklin demonstrated a connection between lightning and **static electricity**. Sparks were drawn from a key hung on a kite string during an electrical storm. These sparks were like those produced by static electricity, such as the spark that jumps from your finger to a metal doorknob after you walk across a wool carpet. What Franklin demonstrated in his dangerous experiment was a connection between phenomena on two different scales: one the grand power of an electrical storm, the other an effect of more human proportions. Connections like this one reveal the underlying unity of the laws of nature, an aspect we humans find particularly appealing.

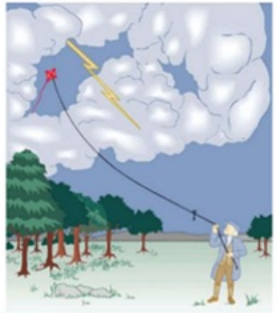


Figure 18.2 When Benjamin Franklin demonstrated that lightning was related to static electricity, he made a connection that is now part of the evidence that all directly experienced forces except the gravitational force are manifestations of the electromagnetic force.

Much has been written about Franklin. His experiments were only part of the life of a man who was a scientist, inventor, revolutionary, statesman, and writer. Franklin's experiments were not performed in isolation, nor were they the only ones to reveal connections.

For example, the Italian scientist Luigi Galvani (1737–1798) performed a series of experiments in which static electricity was used to stimulate contractions of leg muscles of dead frogs, an effect already known in humans subjected to static discharges. But Galvani also found that if he joined two metal wires (say copper and zinc) end to end and touched the other ends to muscles, he produced the same effect in frogs as static discharge. Alessandro Volta (1745–1827), partly inspired by Galvani's work, experimented with various combinations of metals and developed the battery.

During the same era, other scientists made progress in discovering fundamental connections. The periodic table was developed as the systematic properties of the elements were discovered. This influenced the development and refinement of the concept of atoms as the basis of matter. Such submicroscopic descriptions of matter also help explain a great deal more.

Atomic and molecular interactions, such as the forces of friction, cohesion, and adhesion, are now known to be manifestations of the **electromagnetic force**. Static electricity is just one aspect of the electromagnetic force, which also includes moving electricity and magnetism.

All the macroscopic forces that we experience directly, such as the sensations of touch and the tension in a rope, are due to the electromagnetic force, one of the four fundamental forces in nature. The gravitational force, another fundamental force, is actually sensed through the electromagnetic interaction of molecules, such as between those in our feet and those on the top of a bathroom scale. (The other two fundamental forces, the strong nuclear force and the weak nuclear force, cannot be sensed on the human scale.)

This chapter begins the study of electromagnetic phenomena at a fundamental level. The next several chapters will cover static electricity, moving electricity, and magnetism—collectively known as electromagnetism. In this chapter, we begin with the study of electric phenomena due to charges that are at least temporarily stationary, called electrostatics, or static electricity.

This OpenStax book is available for free at http://cnx.org/content/col11406/1.9

Current conversation

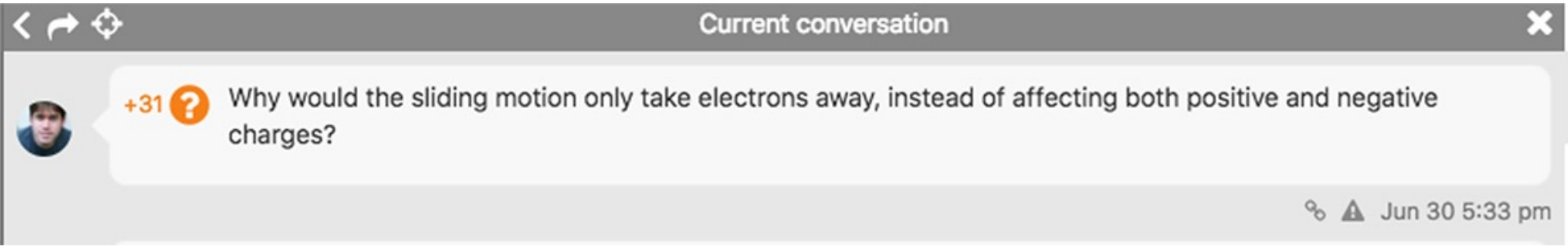
+18 I didn't realize that lightning was due to static electricity - is this true? I thought static electricity means electrons that are still -with lightning - the electrons are clearly moving quickly as the lightning strikes. Lightning travels 2.8 x 10^8 m/s - that's almost as fast as the speed of light - clearly not static!

Jun 28 10:21 pm

+15 good question! lightning itself is not static (as it is moving). however - lightning strikes when there is enough of a build-up on charge (in the clouds - compared to the ground) that there is a breakdown of the air that separates the clouds from the air. Lightning doesn't happen without enough of a build-up of static charge.

Jun 28 10:39 pm

Enter your comment or question and press Enter. Mention a friend by


Current conversation
+31
Why would the sliding motion only take electrons away, instead of affecting both positive and negative charges?
Jun 30 5:33 pm

Perusall

- Miller et al., 2018
  - Student completion of reading assignments (90-95%) is substantially higher than what has been reported in the vast majority of the literature (60-80%)
  - Students using Perusall perform significantly better on in-class exams

Perusall

- Walker, 2019
  - https://wac.colostate.edu/docs/jwa/vol3/walker.pdf

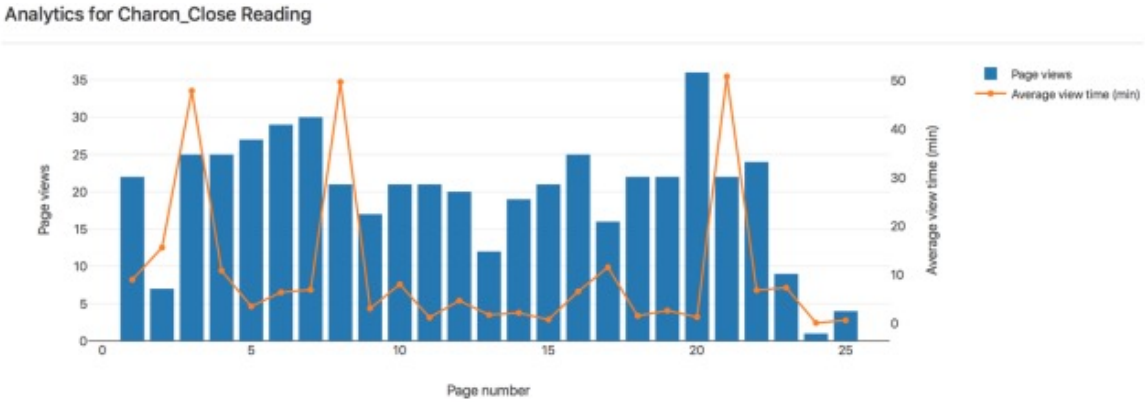
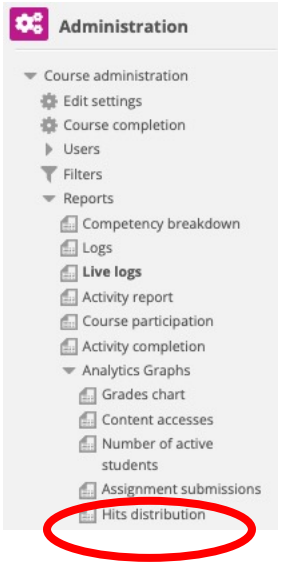


Figure 10. Graph of student page views & view times 1.

Time management: instructional support

- Timely reminder (LMS, email, text message)
  - Regular reminder to all students (encourage them to watch learning materials, boost morale and motivation) (Goh, Seet, and Chen, 2012)
  - Learner behavior data from LMS

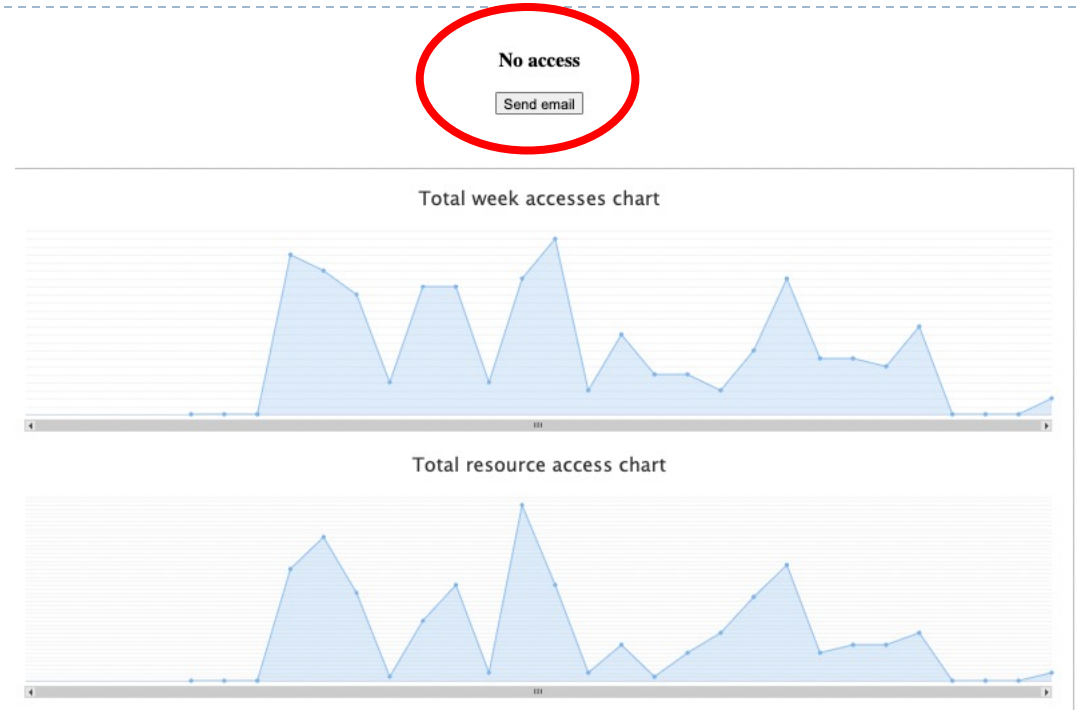
Moodle learner behavior data



Hits distribution

Students	Course hits	Days with access	Number of days by week with access *(Number of weeks: 27)*	Resources with access	Number of resources accessed by week
[redacted]	66	29		20	
[redacted]	76	23		22	
[redacted]	52	24		22	
[redacted]	50	25		17	
[redacted]	62	21		23	
	128	36		21	

Moodle learner behavior data

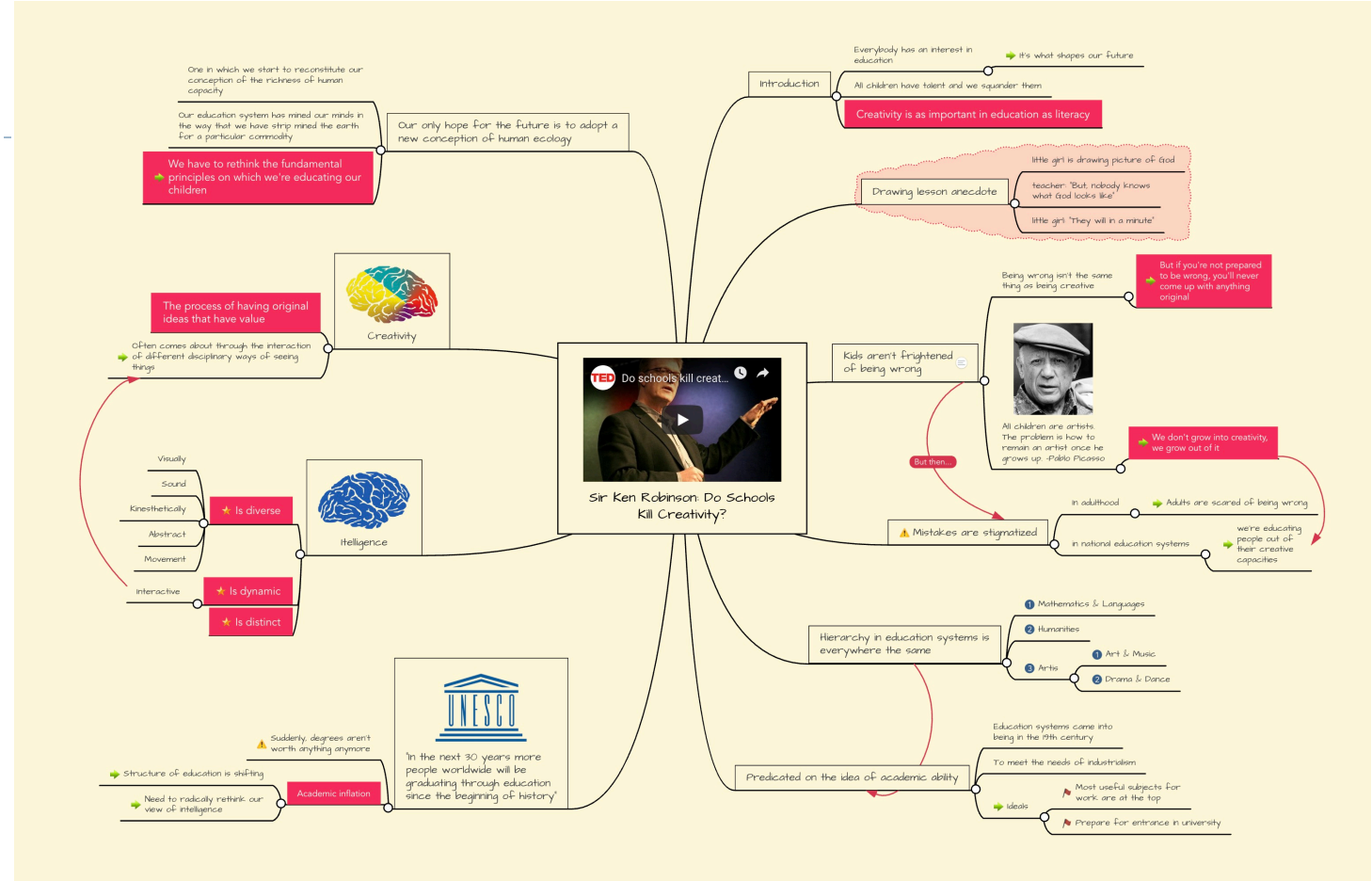


Task strategies

- Effective note-taking
- Self-questioning
- Critical thinking

Effective note-taking

- Simply copy and paste information to active note-taking
  - Turn learning objectives into questions and take notes accordingly
  - Instead of organizing by weeks, organize notes by topics
  - Concept mapping/graphic organization



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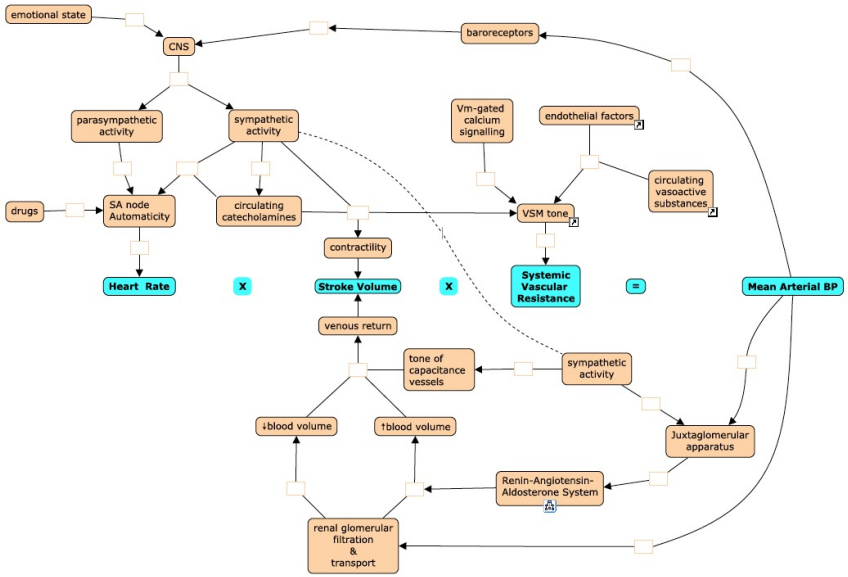
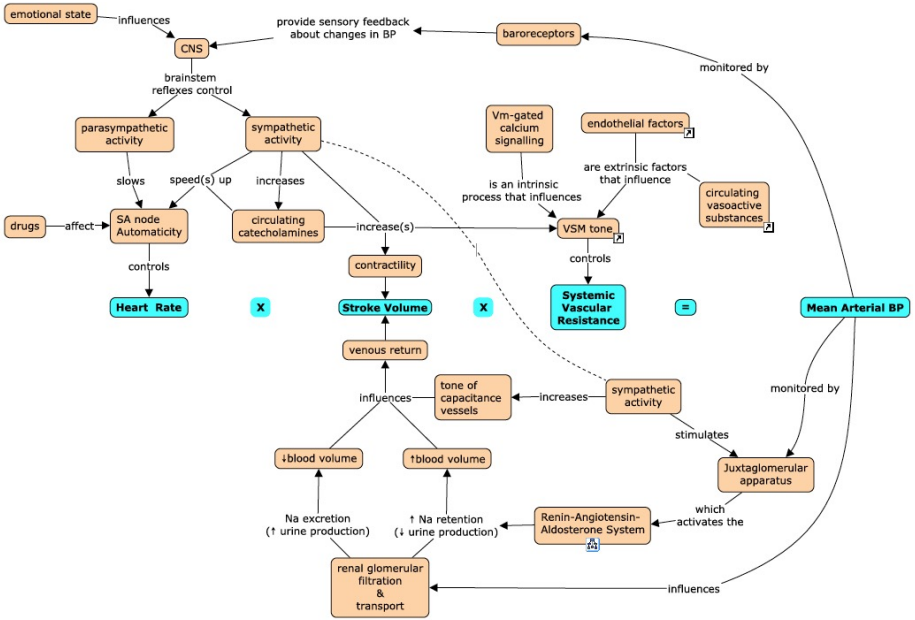
Concept mapping





Credit of Bill Wonderlin, PhD, Michigan State University

Self-monitoring

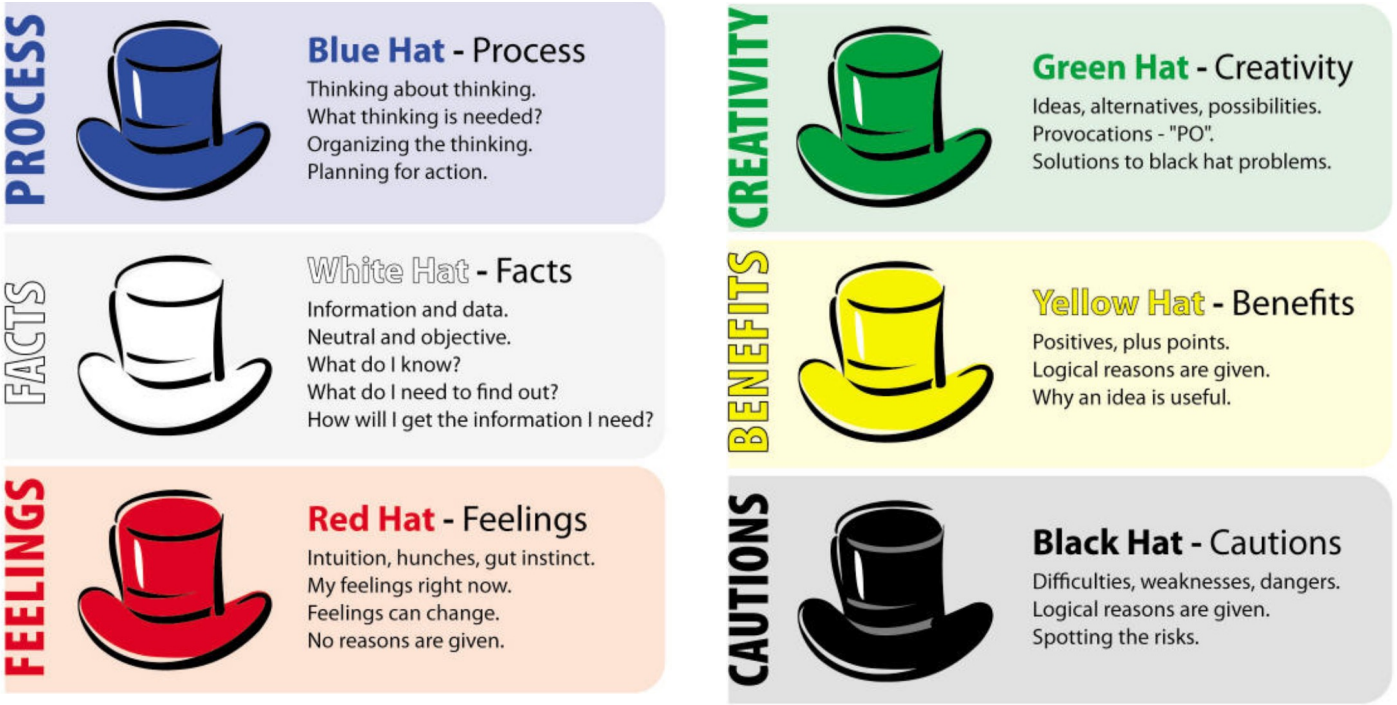
- Self-questioning
  - What does this mean?
  - What is most important about it?
  - How does this relate to the last thing I read?

Instructional support

- Video: Pause to provide prompts

Critical thinking

- Six thinking hats (DeBono, 1994)



Using the ‘six thinking hats’ model of learning in a surgical nursing class: sharing the experience and student opinions

Figure 3: Evaluation of transplantation patients using the ‘six thinking hats’ model: case study 1

Bahadır aged 9 was receiving dialysis for renal failure and received a kidney transplant from her mother in May 2004 at a university hospital. Bahadır really loves her mother and says she will never make her mother sorry she gave her a kidney and now can run and play. Bahadır’s current health status is good and her renal function tests are within normal limits.
Bahadır was asked several questions and she gave her answers.

What is illness? Not being able to play, going to dialysis and not being able to go where you want.
If you had been a doctor what would you have done? I would have made a new kidney.
Where can a new kidney be found? My mother gave it to me as a gift.
What do you think about your new kidney? Sometimes I put my hand on it and give it strength; I want it to feel me.

WHITE HAT
What do you think Bahadır understands about her diagnosis?
What are Bahadır’s concerns and hopes for her future?
What is kidney transplantation?

RED HAT
Explain the family’s feelings of sadness about Bahadır’s condition before surgery.
How would you explain Bahadır’s experience with anger?
What will Bahadır feel if she has kidney transplant rejection?
What will Bahadır’s family feel if she has kidney transplant rejection?

BLACK HAT
Could Bahadır lose her kidney?
If Bahadır loses her kidney what will her mother who gave the kidney feel?
How would a CMV infection, frequently seen after kidney transplant, affect Bahadır?

YELLOW HAT
What are your opinions about appropriate holistic care for Bahadır and her mother?
Even though the choices are limited for kidney transplant, what choices are there? (mother, father, sibling, cadaver, etc.)

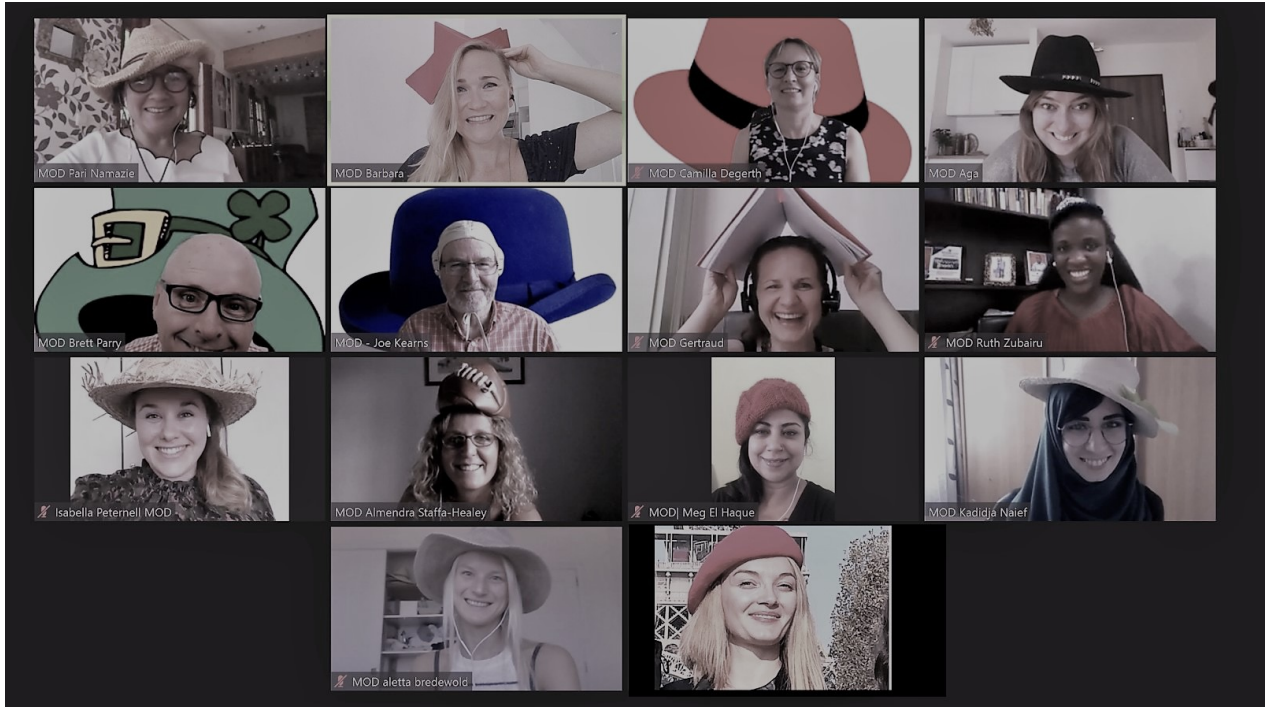
GREEN HAT
What are Bahadır’s support systems?
What other support systems are needed?
Other than her mother, who are the people who can support Bahadır? What can be done to discover who these people are?

BLUE HAT
What do you think about Bahadır’s treatment process?

Examining a case from six different perspectives helps to simplify complex thinking processes

”Red hat” activity created an opportunity for students to develop their empathy skills.

Pedagogical support: critical thinking



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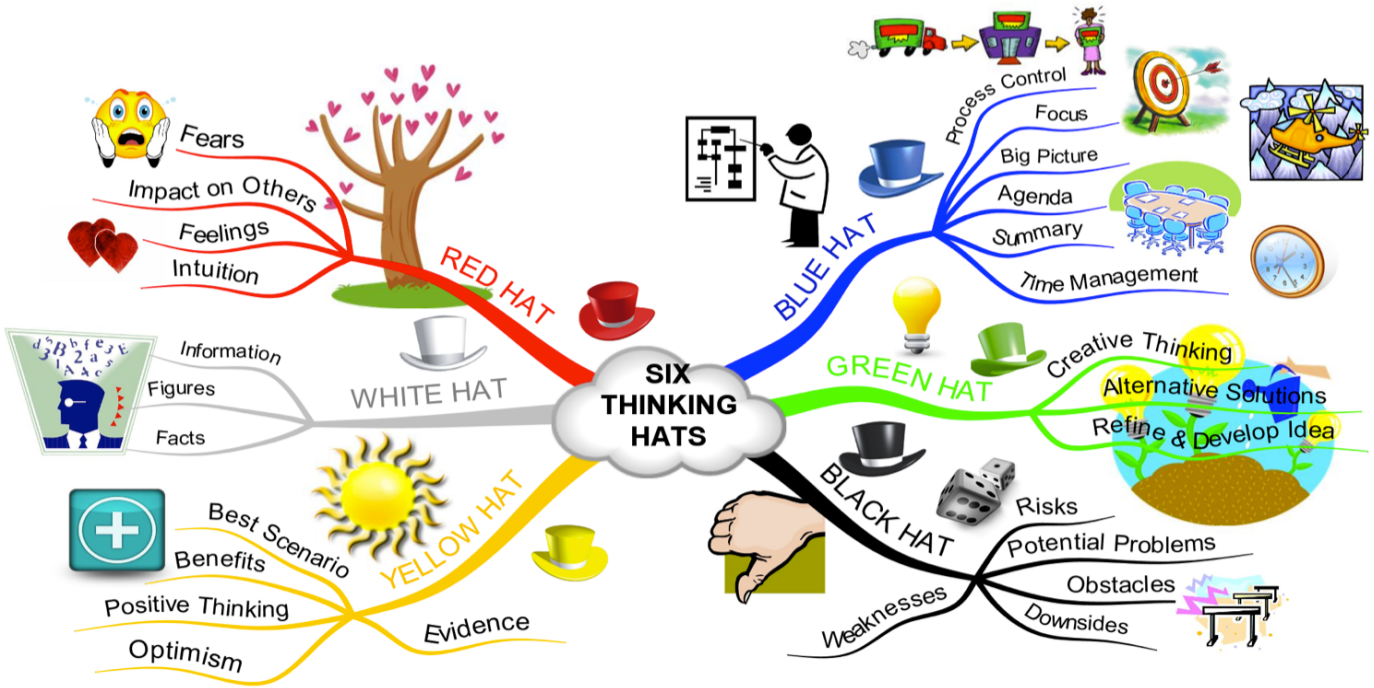
Six thinking hats: MindMap

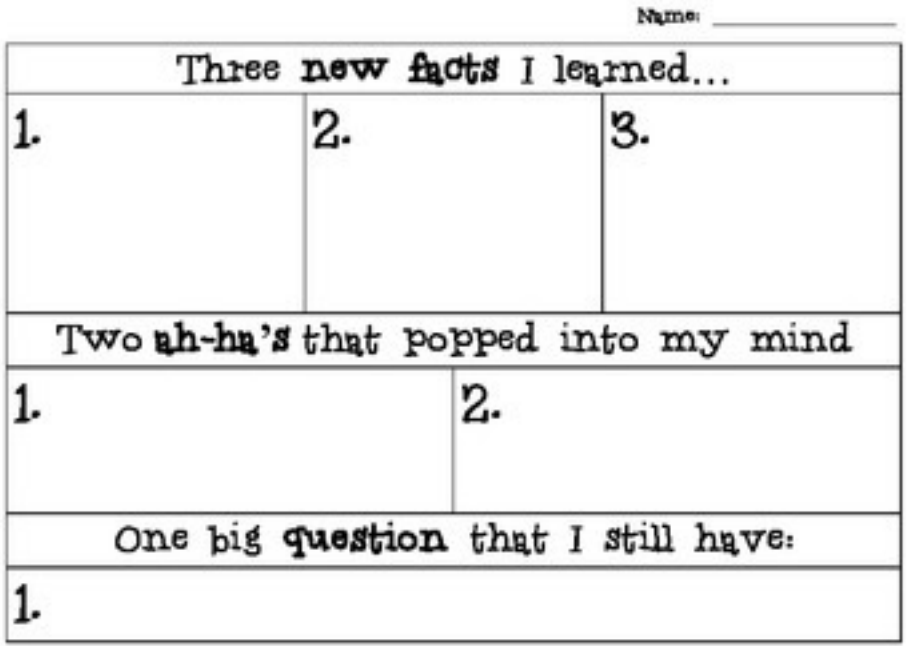


Self-reflection

- Strategies
  - Use flashcards to quiz themselves or go back to learning objectives to make sure they were able to "recall the information".
  - Delayed multiple testing with time intervals
  - Peers question, test, and teach each other

Reflection

- 3-2-1 model



Name: _____

Three **new facts** I learned...		
1.	2.	3.
Two **ah-ha's** that popped into my mind		
1.	2.	
One big **question** that I still have:		
1.		

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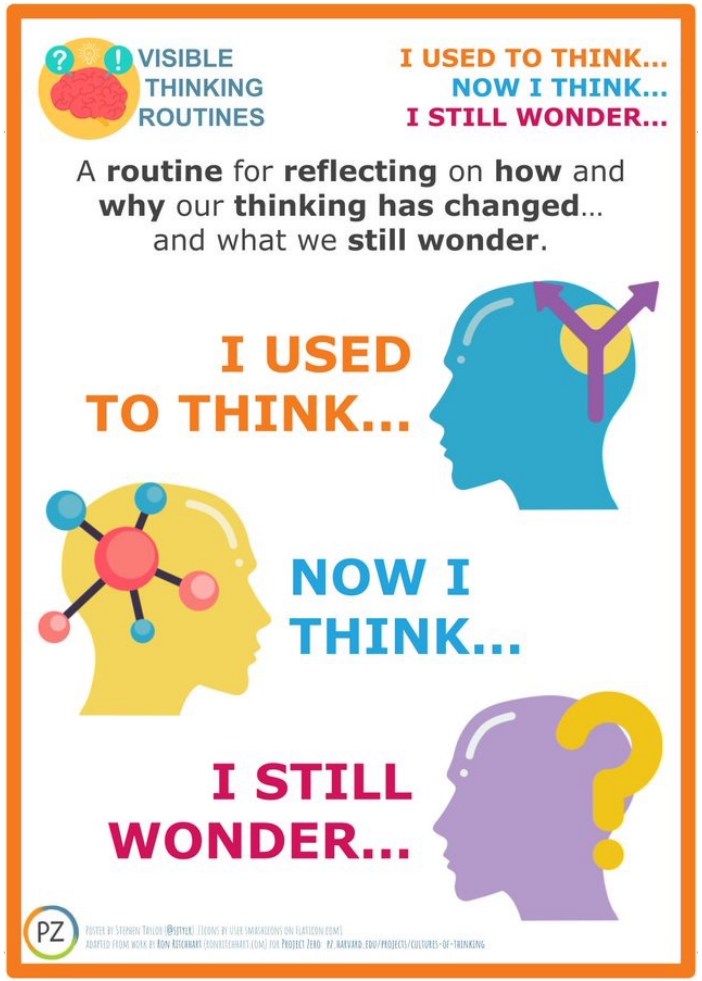
Reflection



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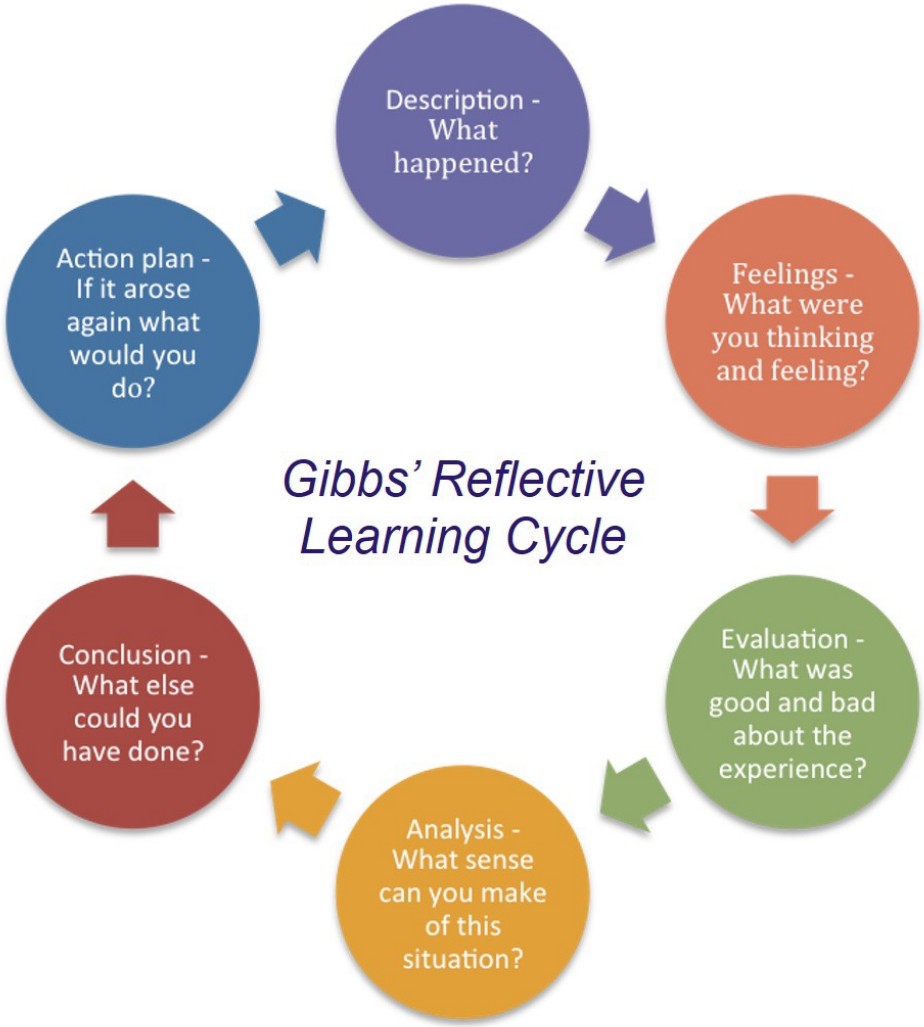
- Gibbs, 1988


Description - What happened?
Feelings - What were you thinking and feeling?
Evaluation - What was good and bad about the experience?
Analysis - What sense can you make of this situation?
Conclusion - What else could you have done?
Action plan - If it arose again what would you do?
Gibbs' Reflective Learning Cycle

Tools to facilitate reflection in online learning

- Zoom chatbox
- Google Docs

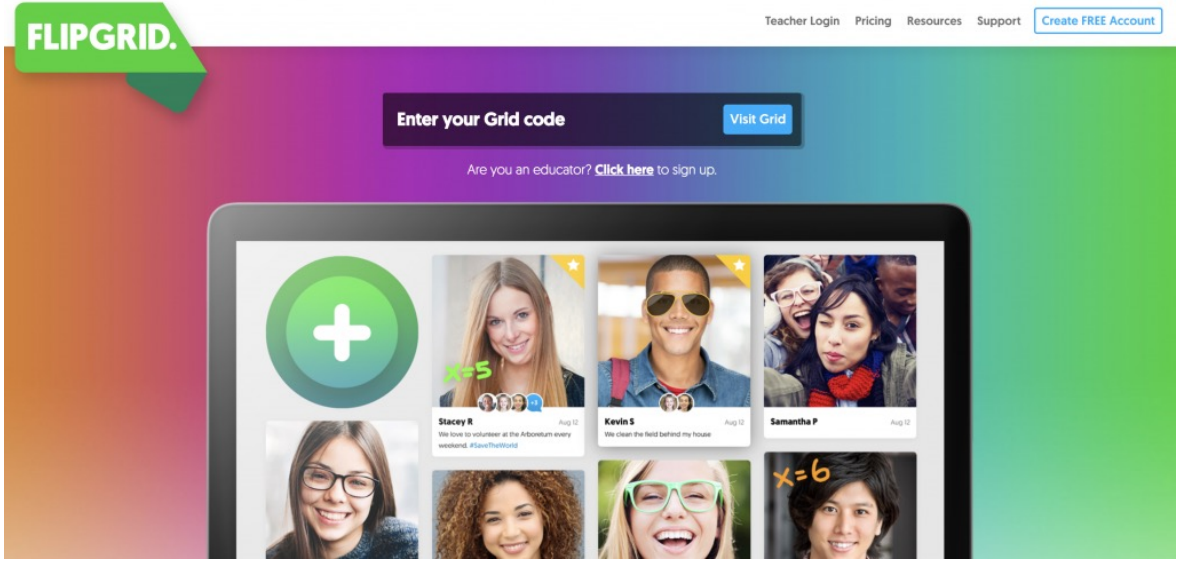
Tools to facilitate reflection in online learning

- Mentimeter/Poll Everywhere
- Padlet/Miro

Tools to facilitate reflection in online learning

- Reflection essay

- Flipgrid for video reflection



A Flipgrid for reflection activity

- Kiles et al., 2020: Community Pharmacy course
  - Flipgrid reflections throughout the semester
  - Video clips: 2-5 minutes

Table 1. Flipgrid Reflection Prompts

Introduction*	1) Your name 2) Where you're from 3) What community pharmacy experience you have 4) What your career goals are 5) What you hope to learn from this class
Community Competency Reflection	1) What did you enjoy about this activity? 2) What did you not enjoy about this activity? 3) Why do community pharmacists need to be community competent? 4) How might you apply this concept to your community pharmacy practice? 5) What role do you think pharmacists play in a community?
Bootcamp Reflection	1) What did you like about this activity? 2) What did you not like about this activity? 3) What did you learn from this activity? 4) What concepts from this activity might you apply to your community pharmacy practice? 5) What suggestions do you have for this activity next year?
Workflow & Management Reflection	1) What have you learned from this portion of the course that you can apply to your community practice? 2) What is the most concerning business aspect of community pharmacy for you? 3) What can you do to better prepare yourself to be a practicing community pharmacist? 4) What additional training/information would you like to see from the college? 5) What do you think the profession of community pharmacy needs to change?
Being the Change + Course Feedback	1) How can you "BE the change" in community pharmacy? 2) Did you learn what you were hoping to learn from the course? Please provide feedback to the instructors: 3) I liked 4) I wish 5) I wonder if... *or 3) Stop 4) Start 5) Continue

*Students were required to respond to an assigned classmate's video. Assignments were intentional to match students on different campuses. Faculty also individually responded to each student's video.

Students strongly preferred Flipgrid over written reflections

As a social platform to allow students connect with each other, and more freely express themselves

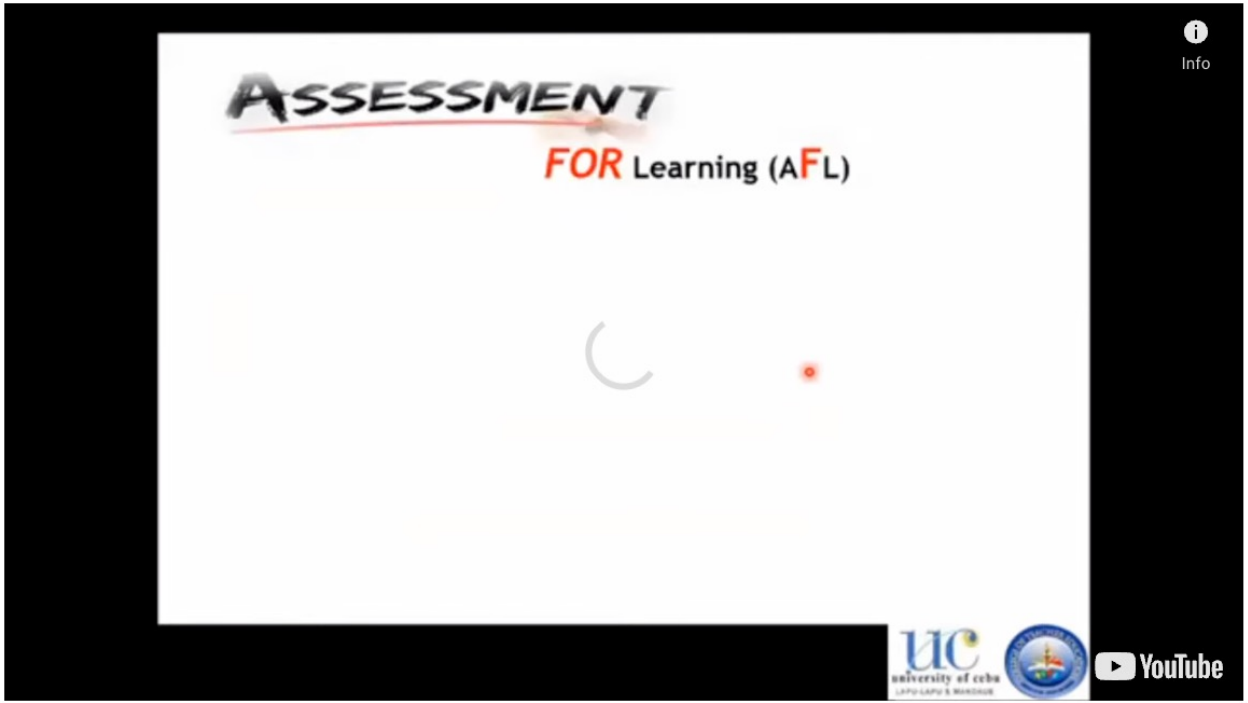
Using Flipgrid to improve reflection

- Undergraduate sports coaching program (Stoszkowski et al., 2021)
  - Participants exhibited more frequent and more critical responses (a higher-level response as compared to descriptive and dialogic reflection) as compared to blog-based written response

EdPuzzle

Assessment FOR, OF, AS Learning| Purposes of Assessment|Assessment in Learning

By Binbin Zheng



MULTIPLE CHOICE QUESTION

Which of the following type of assessment promotes students' meta-cognition?

- Assessment for learning
- Assessment of learning
- Assessment as learning

Rewatch

Submit

MULTIPLE CHOICE QUESTION

100 out of 100

Which of the following type of assessment promotes students' meta-cognition?

- [x] Assessment as learning

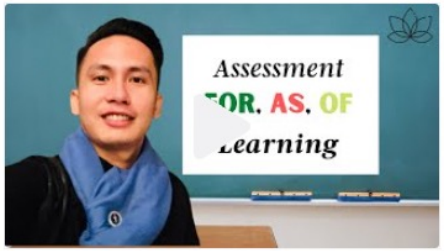
  Assessment as learning is more about students' self-assessment and thus promotes meta-cognition

- [ ] Assessment for learning

  Assessment for learning is used to improve future learning

- [ ] Assessment of learning

  Assessment of learning is to judge results against established standards



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11 Answers to grade

Live mode | Share assignment

Students | Questions

00:57

Multiple choice question — 5 out of 10 right

Which of the following type of assessment promotes students' meta-cognition?

- ✗ Assessment for learning
- ✗ Assessment of learning
- ✓ Assessment as learning

Embed EdPuzzle into Moodle

Assessment|Assessment in Learning

Assignment link

Provide your students with direct access

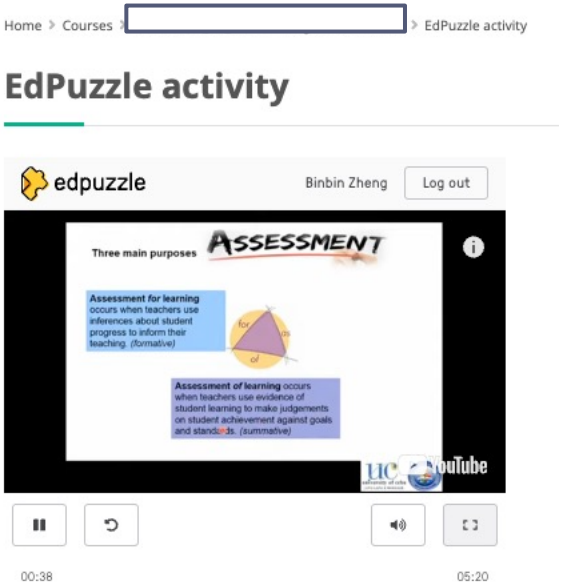
https://edpuzzle.com/assignments/616e8f637efcd8416cd14 Copy link

Embed code

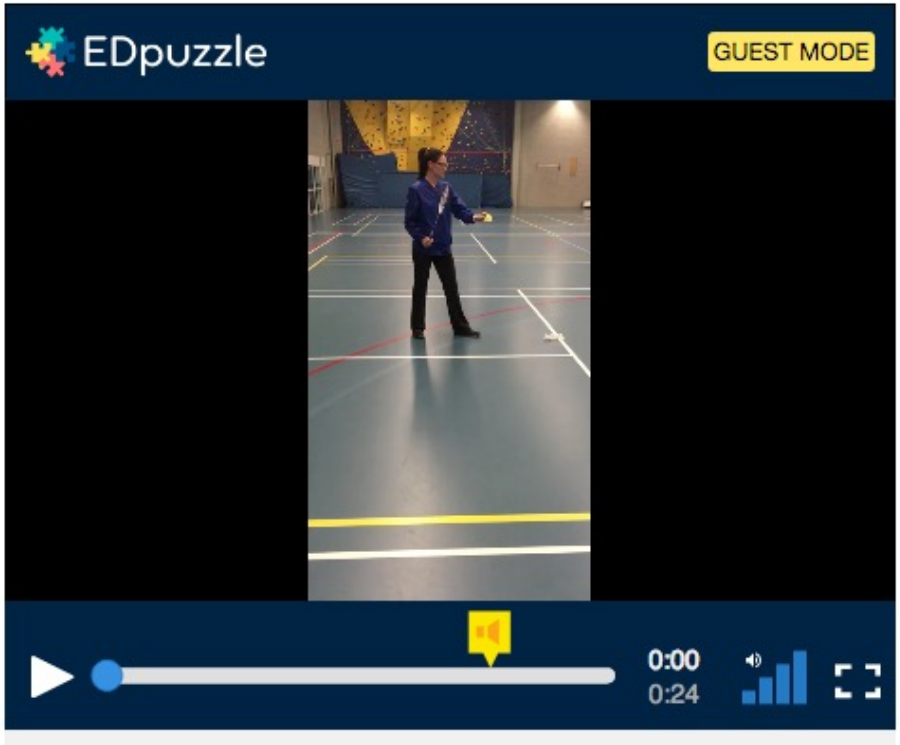
Embed this video on your LMS

Medium size

<iframe width="470" height="402" src="https://edpuzzle.c Copy code

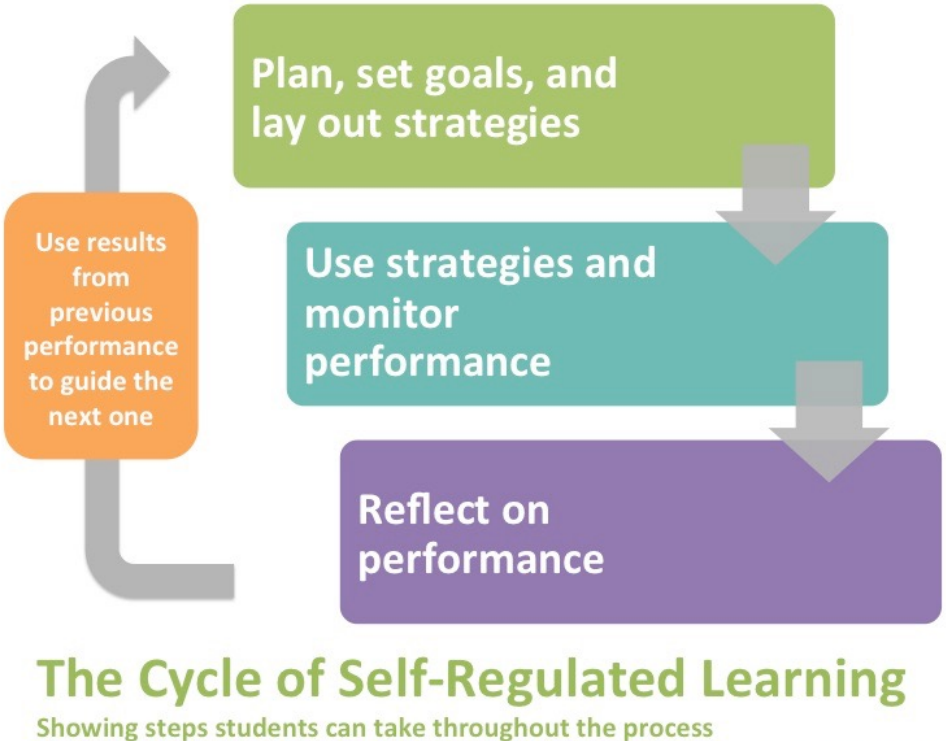


EdPuzzle



Adaption

- It's okay to fail



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Thank you!

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