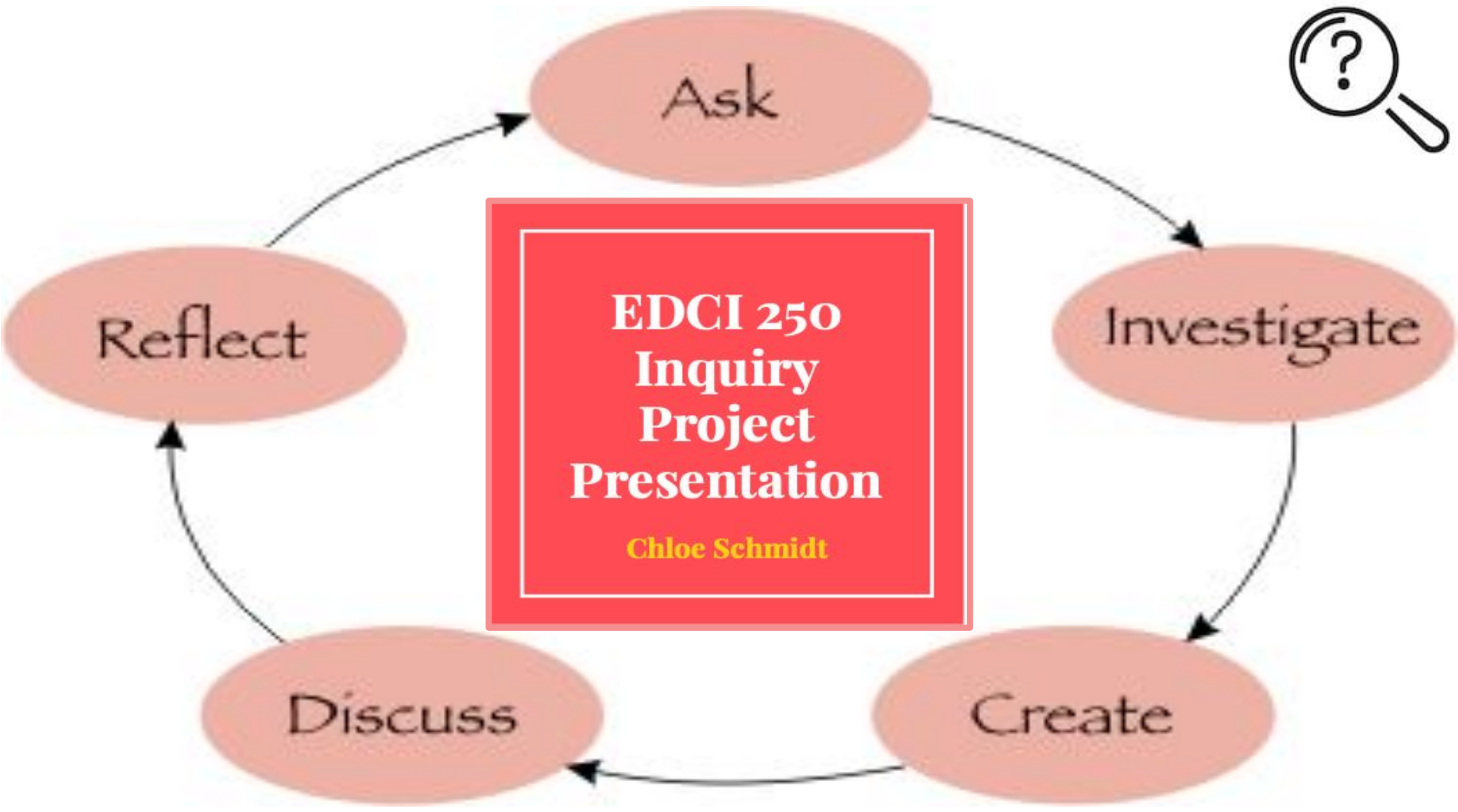




**EDCI 250  
Inquiry  
Project  
Presentation**  
Chloe Schmidt



Ask

Investigate

Create

Discuss

Reflect



# Introduction.

## 1. | Beginning Stages.

Wednesday Visits.



Scheduling, structure, and incorporating change into the classroom?

## 2. | My Question.

**“How is student engagement impacted when science courses (math, science, etc.) and arts courses (languages, reading, writing, social studies, art, etc.) are taught in the morning versus the afternoon?”**

## 3. | Relationship to BC Core Competencies of Teacher Education.

“Personal and professional preparation.”

Professional Standards for BC Educators:

1. “Educators value the success of all students. Educators care for students and act in their best interest.”
2. “Educators implement effective planning, instruction, assessment and reporting practices to create respectful, inclusive environments for student learning and development.”

*End goal: “To have conducted enough research and applied my findings to better understand what can be done to optimize student engagement in relation to scheduling.”*

(Ministry of Education, 2020)



Reading 



8:15 - 10:15



Music 

10:15 - 10:45



Math 



10:45 - 11:15



Recess 

11:15 - 11:45



Science 



11:45 - 12:15



Social Studies 

12:15 - 12:45



# The Importance of When.



Educators too often ask:

1. What are kids going to learn?
2. How are they going to learn it?
3. Who are they going to learn it with?

But **WHEN** are these things are actually taking place?

"Time of day explains about 20% of the variance in human performance on cognitive tasks."

-Dan Pink

# A Mismatch Between What Science Knows and Education Does?



## Study #1 – How the Time of Day Affects Productivity: Evidence from School Schedules.

- **Who:** Nolan Pope (University of Chicago).
- **Where:** United States.
- **What/who:** Analyzed the grade-point averages and standardized test scores of approximately two million children in grades 6–11 over the course of a 7 year period (2003–2009) from the math and English sections of the annual California Standards Test (CST).
- **Results:**
  1. Students who had a math class during the first two periods of the school day earned higher scores on the math section of the CST (an average of 309.8), than students who had a math class during the last two periods of the day (an average of 304.5).
  2. Students with an English class during the early periods had slightly higher marks than students who had an English class in the later periods. However, there was no significant difference regarding their English CST scores.

## Study #2 – The Afternoon Effect: Differential Impacts on Student Performance in Maths and History.

- **Who:** Velichka Dimitrova (Royal Holloway University of London).
- **Where:** Bulgaria.
- **What/who:** Examined academic achievement, class schedules, and absence rates at a secondary school over these course of a decade.
- **Results:**
  1. When students had math classes in the morning rather than the afternoon, their exam results improved by 7%.
  2. When students had history classes in the afternoon rather than the morning, their exam results improved by 6%.

Could a student's academic performance be enhanced by simply rearranging their timetable?

# Element of Science: How and Why Could These Results be True?



## What the experts have to say:

“...**Morning learning** is associated with superior immediate recall (**short-term memory**), whereas **afternoon learning** is more beneficial to **long-term memory** recall. Also significant, the **left hemisphere** of the human brain is the **most active in the early day**, giving us the **best capacity for linear reasoning, numeric manipulation, arithmetic skills, mathematical concepts and the language functions of grammar and vocabulary.**”

The **right hemisphere** is the **most active in the later day**, “and is responsible for **artistic ability, as well as the processing of audio-visual stimuli, spatial awareness, and facial perceptions.**”

- Amanda Wilde and Garry Shouppe

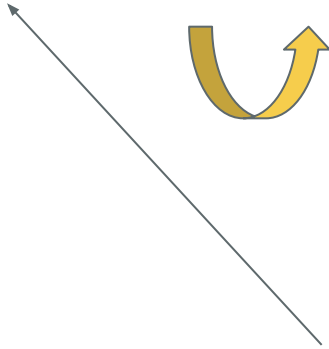
“**In the morning our brains are better and fresher**, so we are **better at doing something repetitive** like problem solving, where we require more speed and attention and focus. In the **afternoon it seems that this process slows down...** history is better suited to the afternoon, when **we are more creative and open to discussion.**”

- Velichka Dimitrova

"It is pretty clear from evidence that we should be doing **analytic kinds of work**, like math, reading and writing, **in the morning**, and **other kinds of classes**, like music and art and maybe even PE, **in the afternoon.**"

- Dan Pink

**Circadian Rhythm.** Daily Temperature Pattern. *Morning and Evening Active Sub-Groups.*



**Genetics and Biology.**



# Not to be Ignored: Break Taking.

## What?

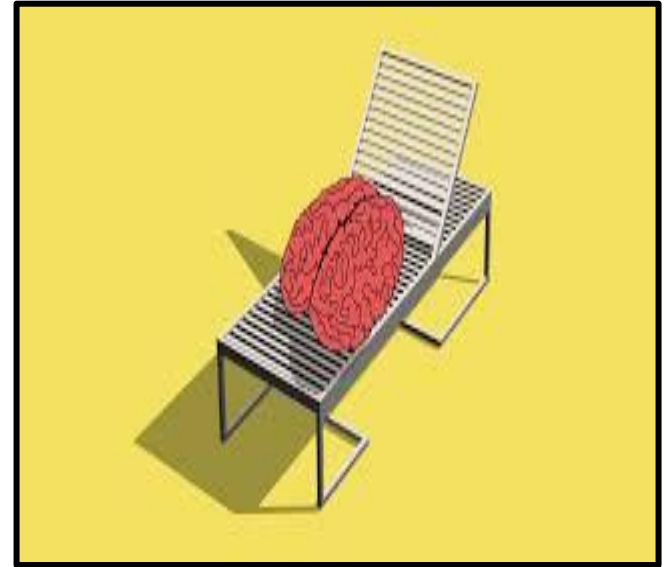
- We need to start viewing break-taking as a part of performance itself, not a deviation from it, or a concession to weakness.

## Why?

- Breaks are essential to our productivity, creativity, and overall well-being - they should be intentional.

## How Long?

- Roughly 10-15 minutes should be sufficient for most people.







# Thoughts from Teachers and Students.

## Takeaways from conversation summary:

**Students “thrive of off structure”** - allows them to formulate conclusions based on what is expected from them, easing any unnecessary worry that comes from the unknown.

- **Flexibility is still important!**

**Teaching more concentrated subjects in the morning** is oftentimes preferred - elementary school students become tired as the day progresses.

**Elective-centered subjects are best to have in the afternoon** as if students become rowdy because of an experiment or an interactive group project, they will not have to re-focus for more intense work later on.



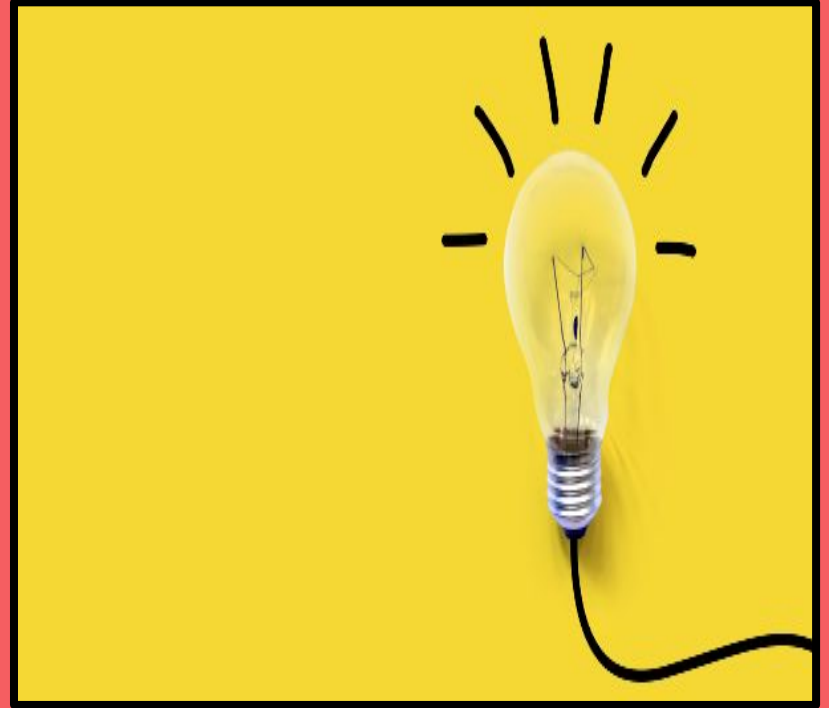
**Factors that increase student engagement include:** taking consistent brain breaks for movement and chatting, incentives like watching a movie after finishing a unit, extra-curriculars and clubs to look forward to, and acknowledging children and their feelings (meeting social and emotional needs).

**Factors that decrease student engagement include:** a lack of sleep, hunger, unexpected occurrences (fire drills, seeing a friend in the hallway, etc.), and listening to someone talk/instruct for too long.

**Reading your class is essential!**

# Connections to Coursework.

The value of collaboration and small group discussion...



# Summary.



1. **When** we teach and learn is **just as important as what** we teach and learn.
2. Some studies show that **rearranging schedules to take advantage of time-of-day effects** can be used by schools to **improve** a student's **academic performance**.
  - o **Morning learning** is associated with **short-term memory recall**.
    - “ **The left hemisphere** is the most active, giving us the best capacity for linear reasoning, numeric manipulation, arithmetic skills mathematical concepts and the language functions of grammar and vocabulary.”
    - “ **Subjects:** some areas of math, science, and literacy.
  - o **Afternoon learning** is associated with **long-term memory recall**.
    - “ **The right hemisphere** is the most, and is responsible for artistic ability, the processing of audio-visual stimuli, spatial awareness, and facial perceptions.
    - “ **Subjects:** some areas of history, and the arts (language arts, visual arts, music).
3. The **genetics and biology** of a student, along with that of their teacher (circadian rhythm), may be the **endmost determiner of an optimal time for engagement**.
4. **Breaks are a crucial part of the engagement process**, and should not be underestimated.
5. From students and teachers:
  - o **Scheduling and structure creates an expectation** for students to follow, but likewise it critical is for them to know that **things can change**.
  - o Concentrated, core academic subjects are best taught in the morning, and elective-type subjects are best taught in the afternoon.
  - o Taking breaks, incentives, extracurriculars, and addressing social and emotional needs **increase student engagement**.
  - o Limited sleep, hunger, anything unexpected, and prolonged periods of paying attention **decrease student engagement**.
  - o **Read your class!**



# Conclusion.

## 1. | Gratitude.

I'm thankful for the resources available to me, the chance to have a spoken with a variety of people, and your attention!



## 2. | Major Takeaways and Connections to FPPL.

**Learning (inquiry) is more personal and relational than I thought.**

**First Peoples Principles of Learning that resonate with this realization:**

1. "Learning involves patience and time."
2. "Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place)."
3. "Learning requires exploration of one's identity."

## 3. | What's Next?

1. Looking for research conducted with an elementary school-aged population relevant to my topic of inquiry.
2. Following the recommendations of the teachers and students that I conversed with (structure, core academic subjects in the morning, and elective-type subjects in the afternoon, etc.) during my spring practicum.

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