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YComm

The Art of Blended and Virtual Learning in Statistics and Data Science

Insights from the coronavirus quarantine

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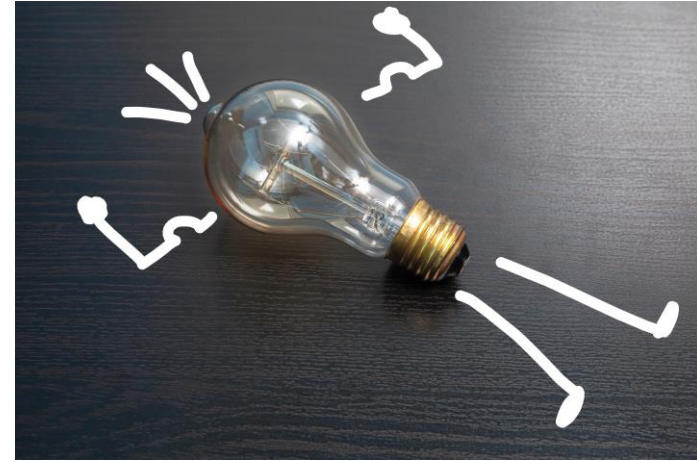*YCOMM, USA*
SKL, Norway

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Calumet College of St. Joseph, USA

Royal Statistical Society, 2020

What we will cover

Art = Strategy

1. ## Framework
   - COVID-19 highlighted the need for effective blended and virtual learning strategies
   - In-person, blended, or virtual environments & how to pass back and forth

2. ## Statistics and Data Science can be stressful for students
   - Blend in-person with virtual safe spaces

Logistics

- Questions?
  - Use the Q&A function (Or Chat box)
  - We will be monitoring it!

- Mentimeter – Information gathering/ discussing

- Resource Page

#RSSConf2020

#OnlineStatsEd

Problem

- Instructors struggled to **adjust** successful in-person statistics, data science, and STEM classes into effective online courses

    Even if they were comfortable with the necessary technology

- Successful courses don't always translate well into the virtual environment

- Online space traditionally a repository of files

- There's a generation gap in how people engage virtually

- Perceived devaluation of virtual learning

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To make matters worse…

- As a result of the COVID-19 global pandemic, professionals and educators were forced to make a quick and dirty transition from in-person to virtual learning environments.

- How we assess students has changed.

  New York Times, 8/14/2020: "*Parents, Students and Teachers Give Britain a Failing Grade Over Exam Results*"

- How we perceive the value of education has changed.

  New York Times, 8/15/2020: "*As Colleges Move Classes Online, Families Rebel Against the Cost*"

- Issues of equity has impacted education.

  New York Times, 4/4/2020: "*College Made Them Feel Equal. The Virus Exposed How Unequal Their Lives Are*"

Solutions

Framework should have:

- ## Nimble translation
  Successful courses to effective virtual environments

- ## Dynamic use of media
  Not just a repository

- ## "Gentech" awareness
  Engage learners virtually the way that they engage socially

- ## Enriching the virtual experience
  Virtual Recreational Space: safe "e-sandbox" to explore/test/play outside the classroom

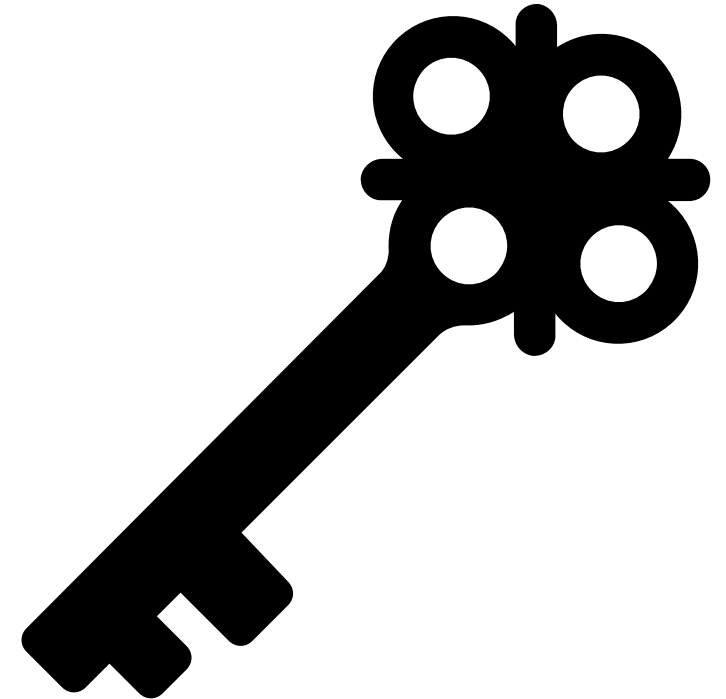 Mimics what is perceived as "lost" from in-person environments
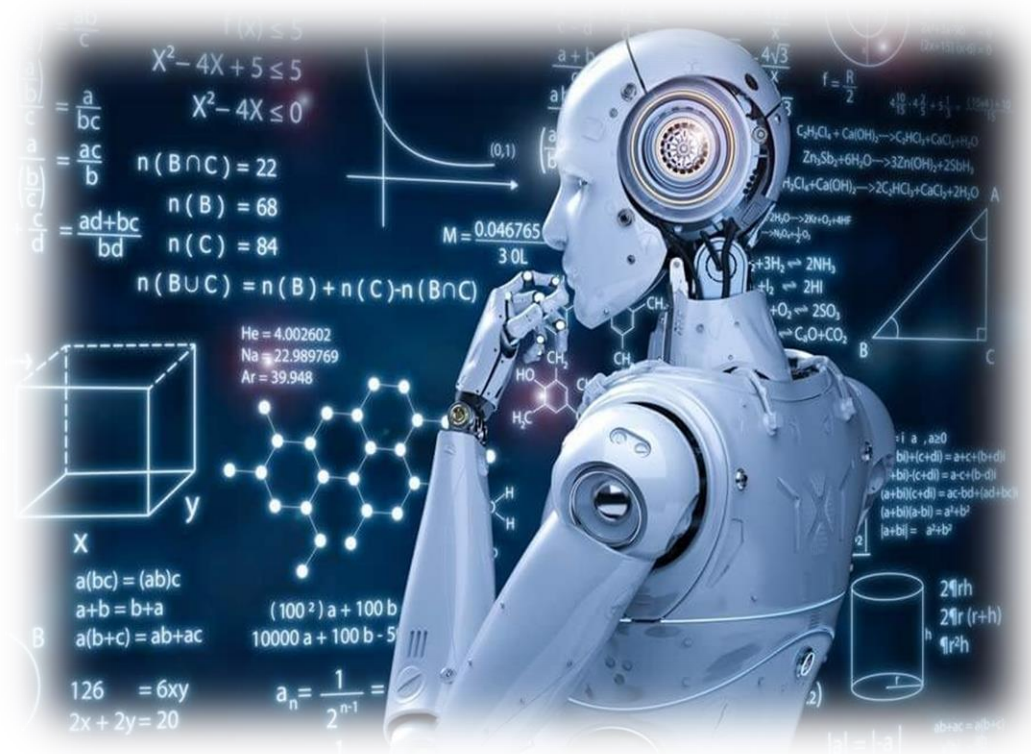
Focus Concept

As Faculty, we have to remember:

We ***do not*** control student learning!

Only <u>they</u> have control over what they take in and how they use it.

Our job is to ***create/craft*** environments that help them ***grow and develop***

Online learning research

- How do we translate effective classroom strategies into the online space?

- Researched-based theories of learning in science education

  - Model-based inquiry [1]
    Communication is essential

  - Argument-based inquiry [2]
    Peer-to-peer _discourse_ is essential

[1] Yarker, M. B. (2013). (Doctoral dissertation)
[2] Benus, M. J. et al. (2013). doi:10.4018/978-1-4666-2809-0.ch012

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Dynamics and Interactions of Classroom Environments (DICE)*

DYNAMICS	FOUR INTERACTIONS OF CLASSROOM ENVIRONMENTS			
	DEVELOPING	**SUPPORTING**	**APPLYING**	**STRESSORS**
LEARNING	Micro/Macro Learning	Participant Motivation/Retention	Real-World Application	Growth and Development
ENGAGING	Collaborative Discourse	Nurturing Interaction(s)	Fulfilling Experience	Responsiveness to/from Participants
INSTRUCTING	Relevant Instructional Content	Instructional Modalities and Practices	Rigor of Resources, Tools, and Outcomes	Expectations and Infrastructure of Course

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Generating Peer Discourse

- Social Media vs. Forums [1]
  - Increases in (statistically tested):
    1. Number of interactions
    2. Quality of interactions

- Why is Social Media different?
  - **Informal:** Learners feel comfortable taking part in friendly conversation
  - **Routine:** Already integrated day-to-day, so they check in often
  - **Established/Familiar Community:** Invested interest so they want to return
    - Community = Feels a sense of belonging

[1] Yarker, M.B. & Mesquita, M. d.S. (2015). doi:10.4018/IJOPCD.2018100101

Testing YCOMM – A Short course

	Group A Control *13 participants*	Group B YCOMM *14 participants*
Website interactions (logins, clicks, etc.)	1,127	1,456
WhatsApp posts	28	42
# Participants who Earned Certificate	4	5

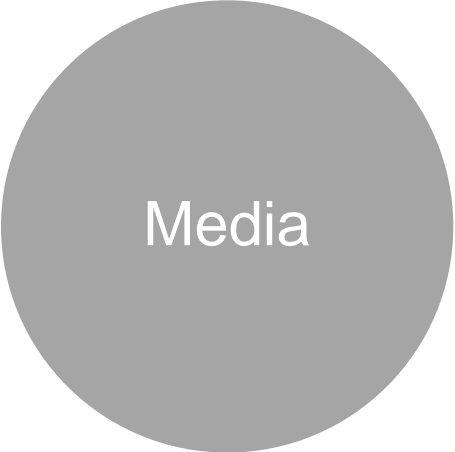**YCOMM Motivational Strategies**

Virtual Badges
Discussion: Informal, personal
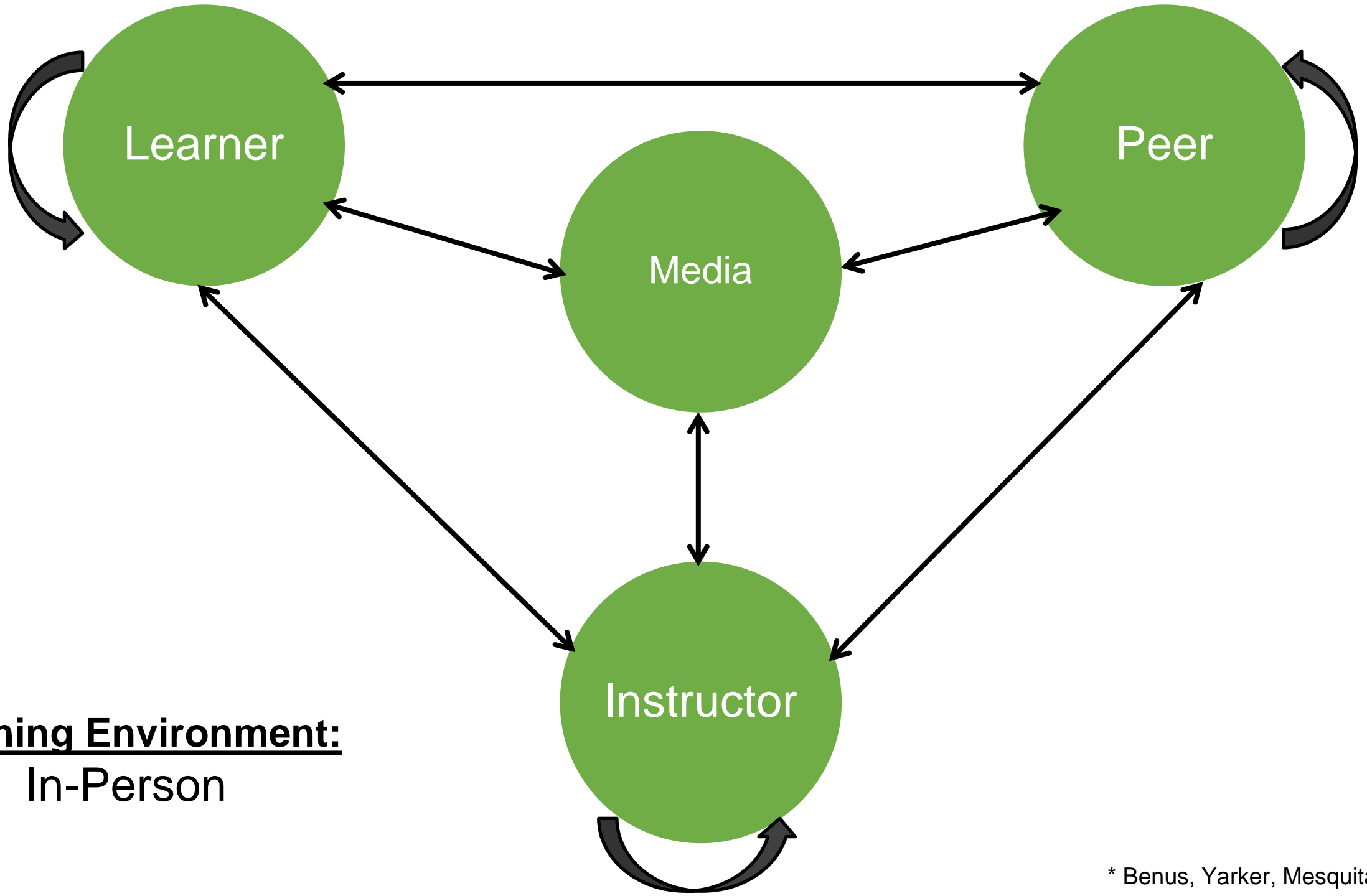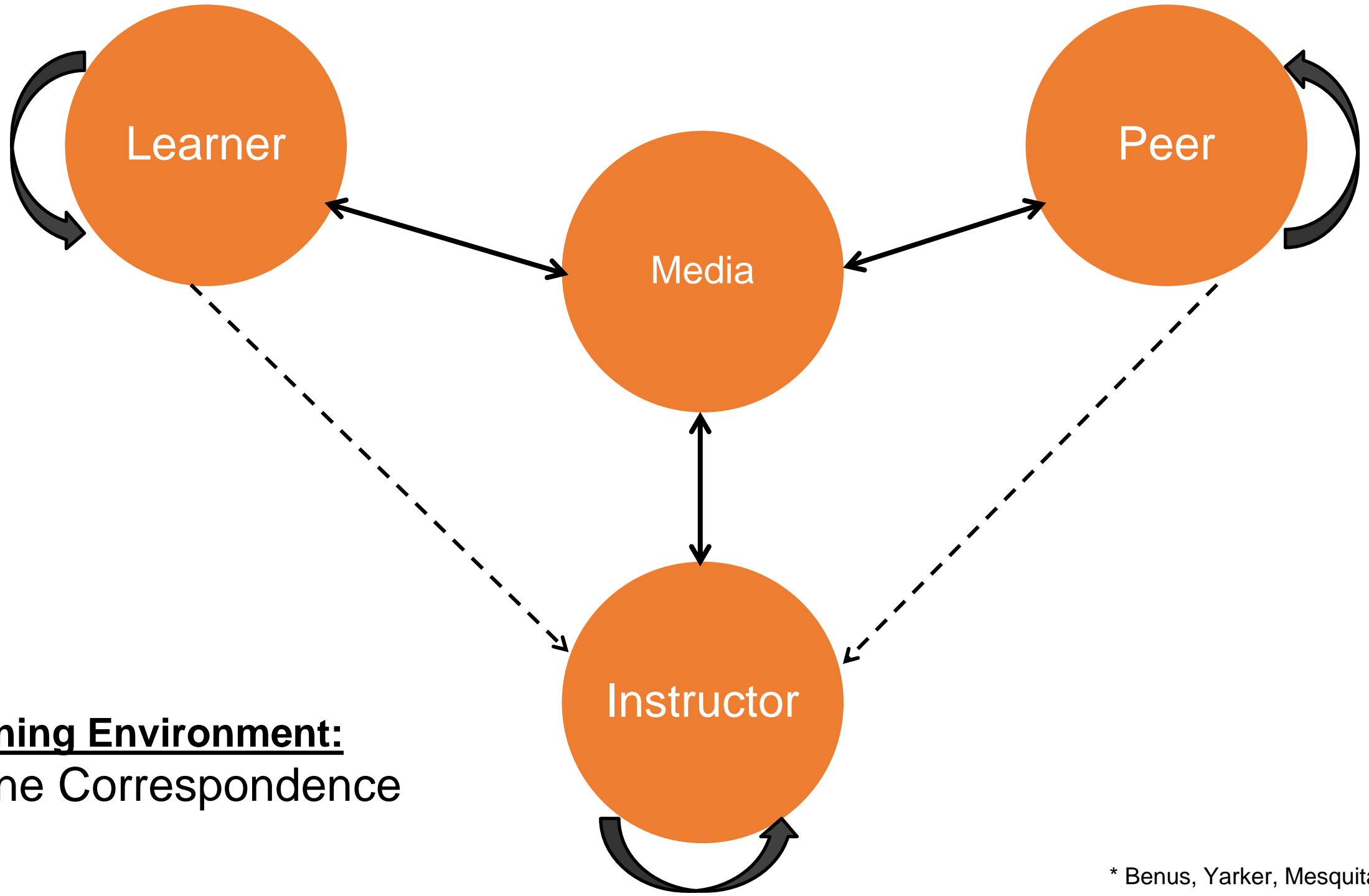
Kudos
Certificate of completion

http://ycommlearn.com/resources

Practical Session

Learning Environment Model

* Benus, Yarker, Mesquita (In Prep)

Learning Environment:
In-Person

* Benus, Yarker, Mesquita (In Prep)

Learning Environment:
Online Correspondence

* Benus, Yarker, Mesquita (In Prep)
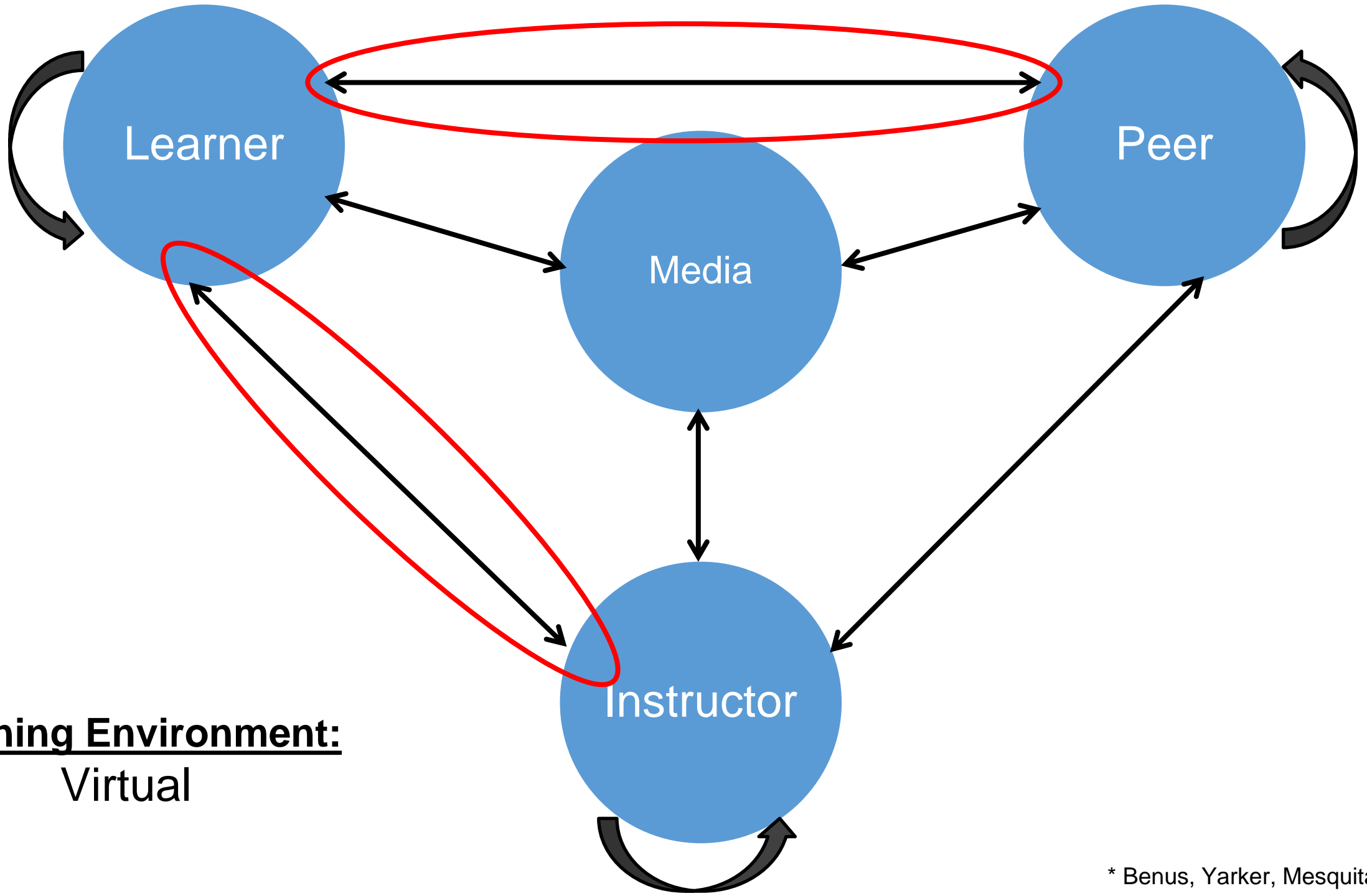
Learning Environment:
Virtual

* Benus, Yarker, Mesquita (In Prep)

Learning = Being part of an engaging community

- The peers are the lifeline of a learner's existence

  - ➤ Learners talking with their learning peers

  - ➤ Instructor talking with their instructional peers

  - ➤ Instructors are learners and learners are instructors

Peer

Discussion

- How would you make this interaction happen? Think about how you would use these in your course to help develop community.

    - Collaborative assignment (in or out of class)
        - Give a collaborative homework assignment that encourages student interaction

    1. Focused written discussion topics
        - Think of a concept students struggle with that could benefit from thoughtful discussion. How would you help students accomplish this activity?
    2. Critique/response to written work
        - Think of a concept students can think critically about, share ideas, and give peer feedback in response. How would you help students accomplish this activity?
    3. Small group talk that leads to better understanding of complicated topic
        - Think of a concept students struggle with that students could benefit from small group talk. How would you structure this activity?

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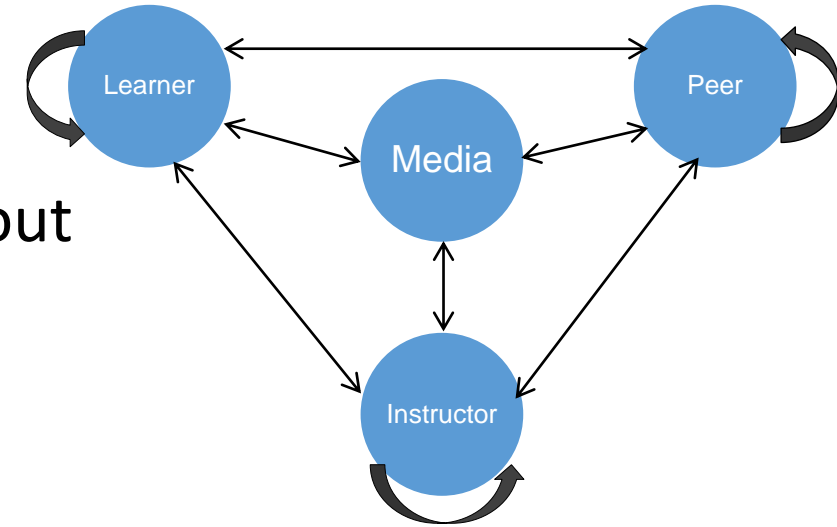
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