Asynchronous instruction: Making your teaching at a distance more effective

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About me…

- 8 Years at Skidmore College… I ‘get’ F2F instruction
- 12 years at SUNY Empire State College… I ‘get’ distance education
- 6 years as Editor of BAMBEd… I ‘get’ that pedagogy evolves
- 7 years at SUNY System Administration (64 campuses)… I ‘get’ the challenges and the tensions, and the OPPORTUNITIES!

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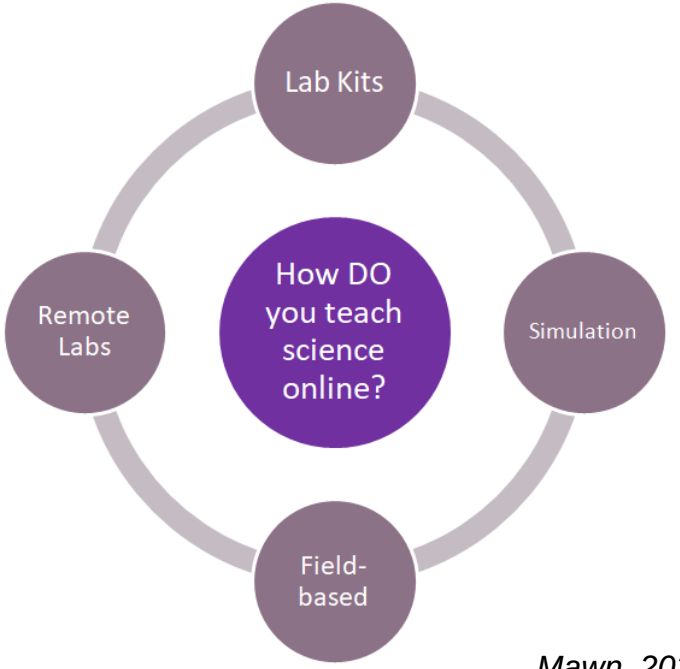
Reimagining Teaching and Learning via Remote Instruction

The $64,000 Question

- STEM skills – at the core are authentic learning, problem solving, quantitative reasoning, team work, etc.
- Lab and Lecture
- *How to deliver the learning, i.e., authentic and rigorous learning experiences that address relevant course objectives and learning outcomes?*



Mawn, 2020

Learning outcomes

- Which matters more -- what you know, or how you came to know it?
- Are there other ways to achieve those same outcomes?

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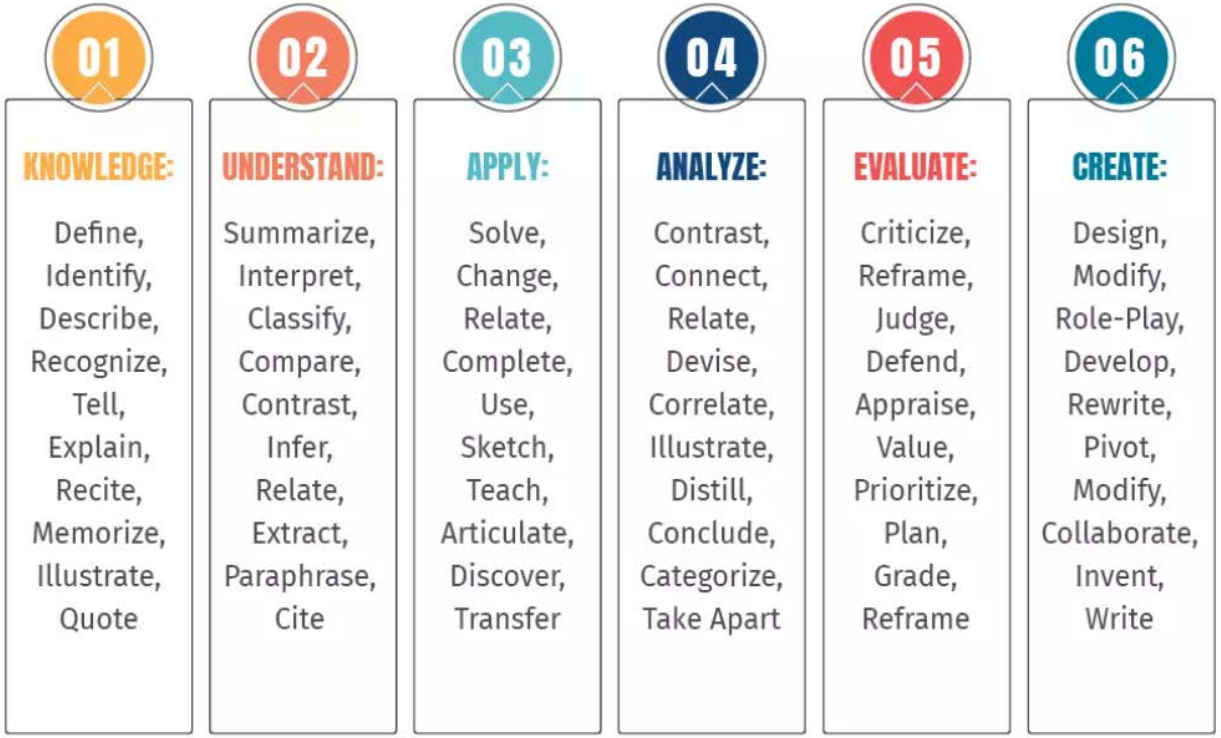
Bloom's Taxonomy… as verbs!

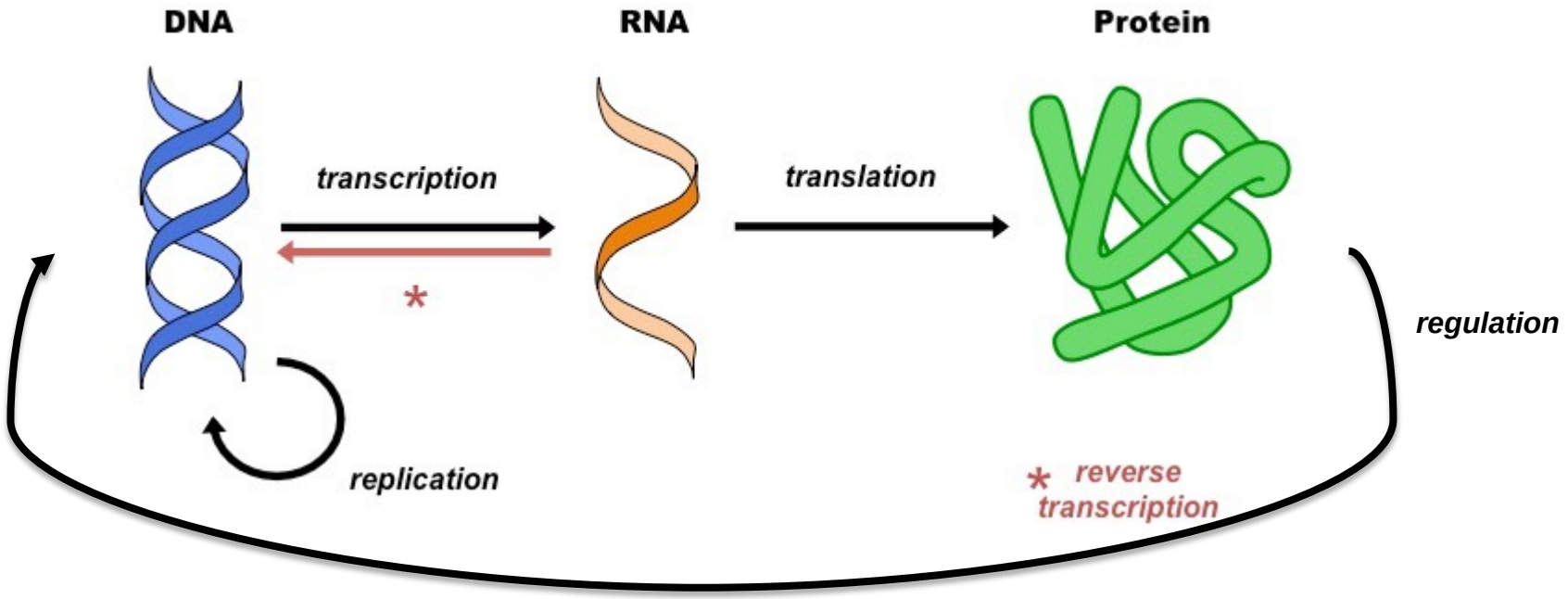


https://www.teachthought.com/critical-thinking/249-blooms-taxonomy-verbs-for-critical-thinking/

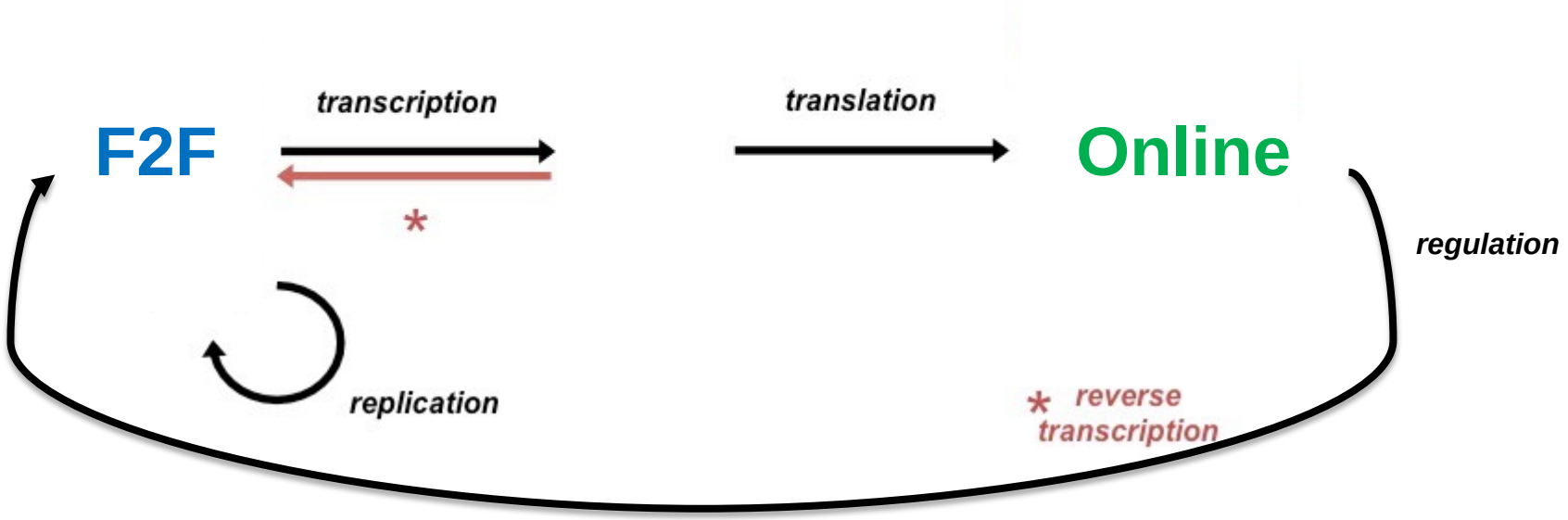
Value in ‘reimagining’?

- Face-to-face or Online – a false dichotomy?
- Moving your F2F course to online?
- Opportunity for translation, not transcription?
- If so, product of the translation will affect original template!

The Central Dogma of Molecular Biology



The Central Dogma of Molecular Biology *Pedagogy*



“It’s all about the learning outcomes!”

- Is this an opportunity to rethink lecture and laboratory learning, i.e., the goals and the means of teaching and learning?
- There’s no doubt that hands-on learning is an essential part of STEM education. How to preserve that when teaching at a distance?
- There are learning outcomes that have traditionally been delivered via a number of settings:
    - Field work (ecology, geology, engineering), wet labs (biology, chemistry), apparatus (physics, chemistry), circuitry (CS), robotics, etc.

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How do you define remote instruction?

- Consider which parts of a learning experience require a F2F instruction, versus other opportunities.
- For example, does it matter if prior to going into the field the instructions are given orally, written, email, LMS?
  - Does it affect the learning outcomes?
  - The key qualities are that students receive instruction, engage in the authentic learning exercise, and they receive timely help, guidance, formative feedback, and summative assessment.

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Might remote instruction have advantages?

- Rather than spending that time on data collection as is often done in a lab period…

In labs taught via remote instruction, students may be given the opportunity to spend more time on experimental design, data analysis and hypothesis generation and revision.

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Is remote learning necessary or sufficient?

- In some topics simulations (i.e., non-experiential learning) is **not sufficient**. For example, who wants to be a passenger in a car with someone who has only used a driving simulator?

- But, in others simulations are an **essential** part of learning a complex skill -- e.g., commercial pilots who do a significant part of their training in simulators.

High Quality Online Courses…

- Are not cheap… they require…
  - Time to develop
  - Team to develop
  - Faculty : Student
  - Regular updating
  - Time to teach
  - Ownership
- Are not necessarily an inexpensive way to “scale”
- Afford flexibility
  - Spend time mentoring, rather than teaching
  - Instead of a ‘sage on the stage’, be a ‘guide on the side’!

Course Design *by Design*

- Good curricular design does not occur by accident
  - Department chair -- Curricular manager
  - Instructor/Faculty -- Subject Matter Expert
  - Instructional Designer
    - Pedagogy Expert
    - Course Management System Expert

Fundamental Elements of Online Courses

- Synchronous vs. Asynchronous
- Video or text
- “Lectures” or “Mini-lectures”
- Instructor ‘presence’ – regular and timely!
- “Hub and Spokes” or “Circle”
- Discussions (with topic)
- Open forum Q&A
- Online ‘office hours’

SUNY Online Course Quality Review Rubric: "OSCQR"

- 50 Standards
- 6 areas
  - Overview and Information
  - Technology and Tools
  - Design and Layout
  - Content and Activities
  - Interaction
  - Assessment and Feedback

- https://OSCQR.SUNY.edu/

Resources

- Campus/system, e.g., SUNY Remote Learning Resources: https://innovate.suny.edu/covid19/
- Regional accreditors, e.g., Middle States: https://www.msche.org/covid-19/
- State education departments, e.g., NYSED:

  http://www.nysed.gov/college-university-evaluation/news/nysed-coronavirus-guidance-colleges-and-universities
- US Department of Education: https://www.ed.gov/coronavirus
- Program accreditors, e.g., ASBMB: https://www.asbmb.org/education/accreditation
- OSCQR -- The SUNY Online Course Quality Review Rubric: https://oscqr.suny.edu/
- BAMBEd -- Teaching in the Time of COVID – special issue:

  https://iubmb.onlinelibrary.wiley.com/doi/toc/10.1002/(ISSN)1539-3429.teaching-COVID-19

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