



Stony Brook University

Beyond Bloom's: Exploring Different Taxonomies for Assessment

Office of Educational Effectiveness
October 1 & 3, 2024

Workshop Facilitators



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Workshop Objectives

- Differentiate between the major taxonomies and frameworks related to teaching, learning, and assessment.
- Select a taxonomy that resonates most with your academic discipline and teaching/assessment philosophy.
- Apply the concepts from your preferred taxonomy to your program learning objectives and assessment plans.



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Establishing Foundations: Educational Taxonomies 101

Taxonomies 101: Clearer Goals, Better Learning

A structured framework to classify learning objectives, skills, or knowledge into different levels of complexity or mastery. Used to inform curricular, instructional, and assessment design processes.

- Rooted in behavioral and educational psychology
- Importance of “*well-defined learning processes that generate observable, measurable results*” (Barkley & Major, 2022, pp. 54).
- Supports backward design principles by ‘beginning with the end in mind’
- Promotes equity by making the implicit goals of the educational experience explicit to all learners
- Foundational component of the program assessment process ([Articulating Goals & Objectives](#))

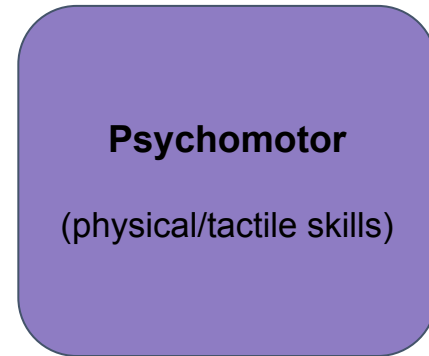
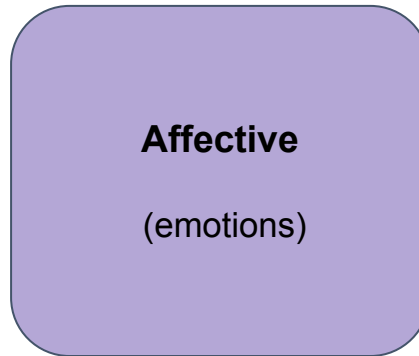
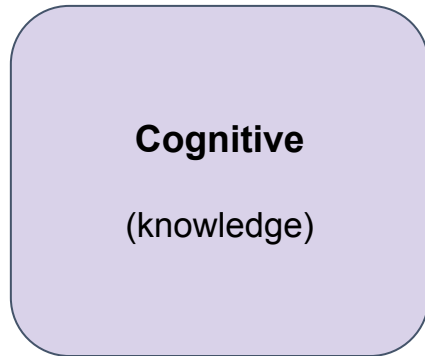


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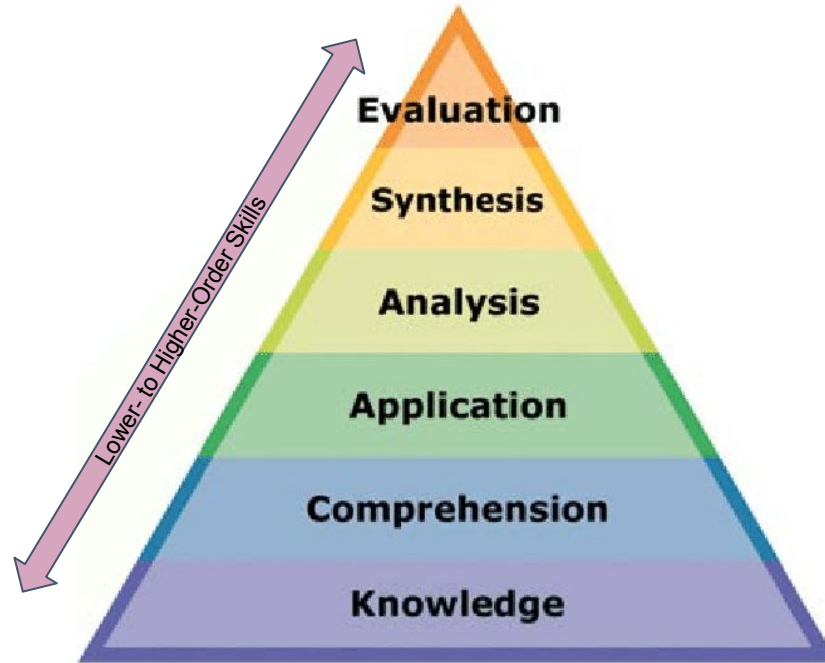
Establishing Foundations: What's Bloom's, again?

Bloom's (Original) Taxonomy

- Established in 1956 by Benjamin Bloom, educational psychologist, et al.
- Hierarchical structure, often depicted as a pyramid
- Moves from 'lower-order' skills at base to 'higher-order' skills at peak
- Includes three domains:



Bloom's Taxonomy (Cognitive Domain)



Bloom's Taxonomy

Cognitive



Affective



Psychomotor



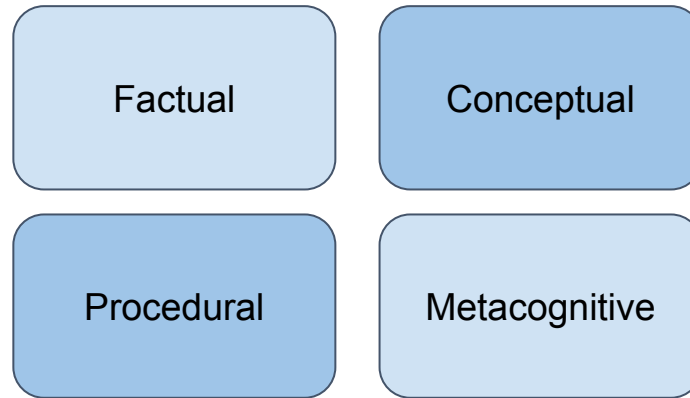


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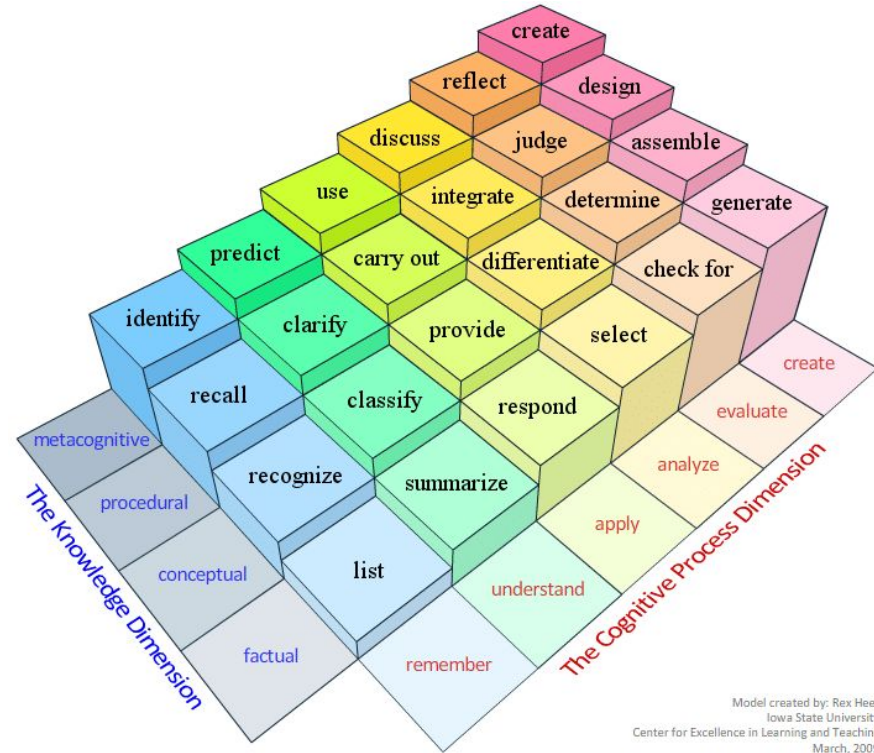
Bloom's 2.0: The Remix

Anderson & Krathwohl's Revised Taxonomy

- Revised in 2001 by Lorin Anderson & David Krathwohl
- Shifted language from inactive nouns to active verbs to better reflect students' cognitive processes
- Can be depicted as a pyramid or 2-D intersectional model
- Repositioned 'knowledge' as a foundation for the hierarchy with four dimensions:

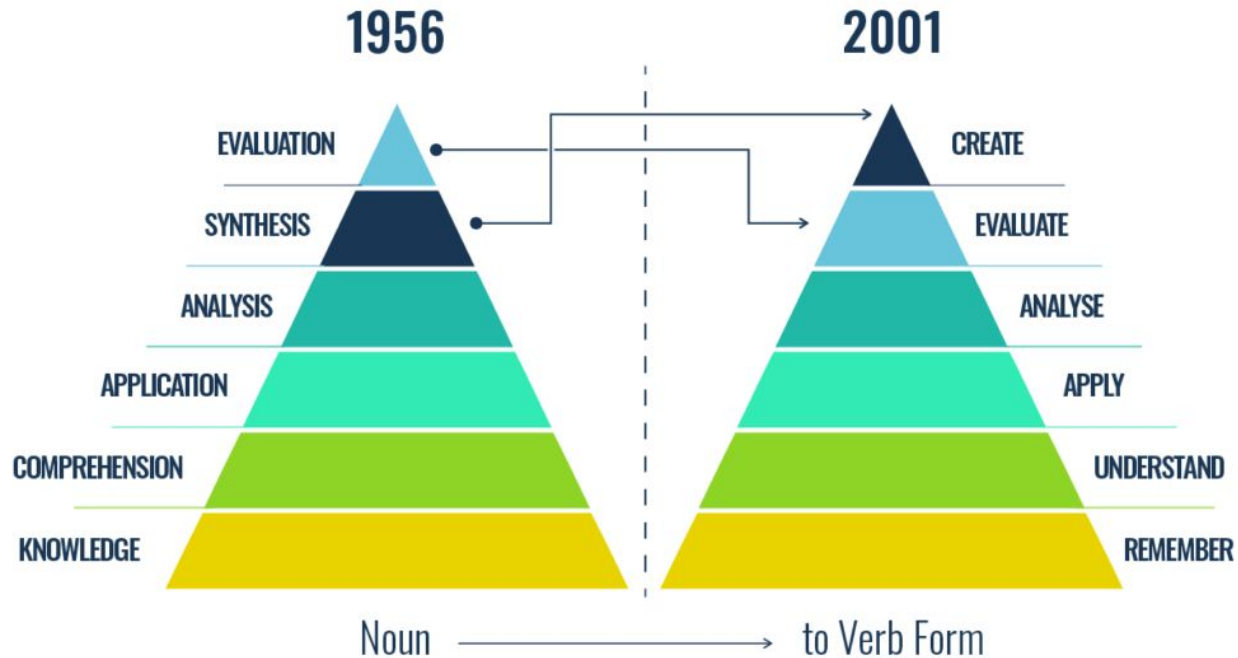


Anderson & Krathwohl's Taxonomy



Model created by: Rex Heer
Iowa State University
Center for Excellence in Learning and Teaching
March, 2009

Original & Revised Bloom's Comparison



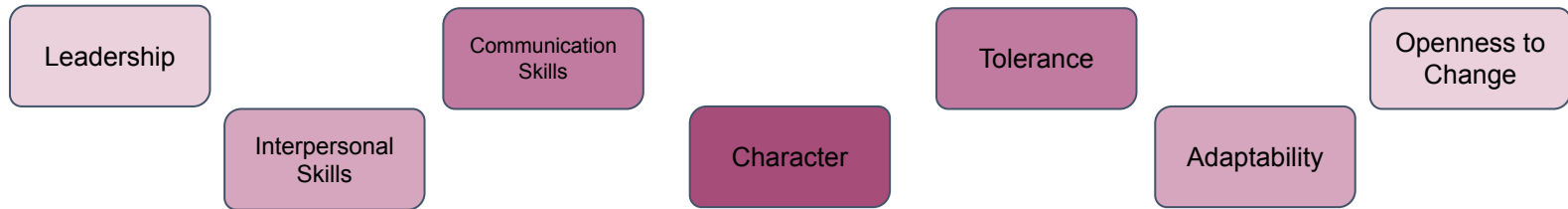


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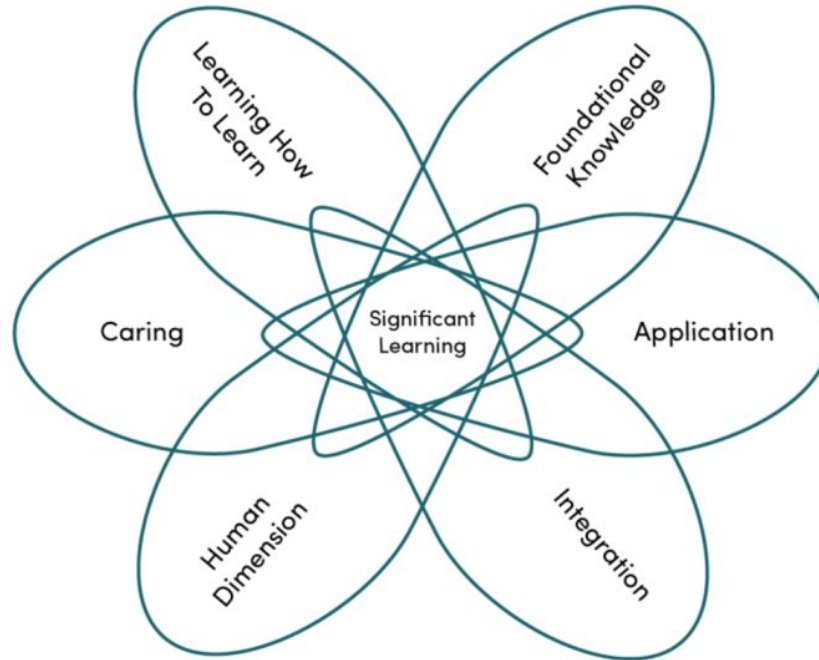
Fink's Taxonomy of Significant Learning

Fink's Significant Learning Taxonomy

- Developed by L. Dee Fink, a teaching and learning consultant, in 2003
- Derived from conversations with **students** on what **they** considered 'significant learning experiences'
- Wanted a taxonomy that was meaningful to both teachers and students
- Relational and cumulative in nature rather than hierarchical
- Aims to address skills and values beyond the cognitive domain:



Fink's Significant Learning Taxonomy



Adapted from Fink 2013

Fink's: Six Significant Learning Categories

1. **Foundational Knowledge:** Understanding and remembering information, ideas, perspectives as the basis for other kinds of learning.
2. **Application:** Applying knowledge to real situations through critical thinking, creativity, and problem-solving. Making use of the foundational knowledge attained.
3. **Integration:** Making connections between ideas, learning, and life experiences. Putting things into context.
4. **Human Dimension:** Exploring personal/social implications of learning; learning about oneself and others.
5. **Caring:** Developing feelings, interests and values that make the learner care about their learning and prompt interest in continued/deeper learning.
6. **Learning How to Learn:** Becoming a better, more self-directed, more effective learner; improving metacognition.

Fink's Taxonomy of Significant Learning

	Foundational Knowledge	Application	Integration	Human Dimension	Caring	Learning How to Learn
Definition	Recall and demonstrate understanding of information and ideas.	Demonstrate skills. Engage in critical, practical and creative thinking.	Perceive connections between ideas, experiences, disciplines and realms of life.	Gaining a new understanding of themselves and others. Determine personal and social implications.	Acquire new interests, feeling or values about what they are learning.	Learning about the process of their particular learning and learning in general.
Actions	<ul style="list-style-type: none"> • Remember • Recall • Identify • Explain • Predict • Describe • Define • Summarize • Recognize • Arrange • Indicate • Classify 	<ul style="list-style-type: none"> • Use • Critique • Manage • Solve • Assess • Judge • Do [skill] • Imagine • Analyze • Calculate • Coordinate • Communicate 	<ul style="list-style-type: none"> • Connect • Identify the interaction between • Relate • Compare • Contrast • Integrate • Identify the similarities between • Determine the cause 	<ul style="list-style-type: none"> • Interact with others • Compare viewpoint • Discuss (world events) • Identify the impact • Plan (a change) • Determine (why actions occurred) • Advocate • Collaborate • Support • Resolve • Share 	<ul style="list-style-type: none"> • Get excited about • Prepare to • Increase interest • Value • Reflect • Change • Adjust (beliefs) • Commit • Develop (a plan) • Explore • Express • Pledge 	<ul style="list-style-type: none"> • Develop (a plan) • Identify resources • Construct knowledge about • Frame useful questions • Analyze • Inquire • Reflect • Research • Self-assess • Self-monitor

Adapted from Fink, L. D. (2013). *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*. San Francisco: Jossey-Bass.



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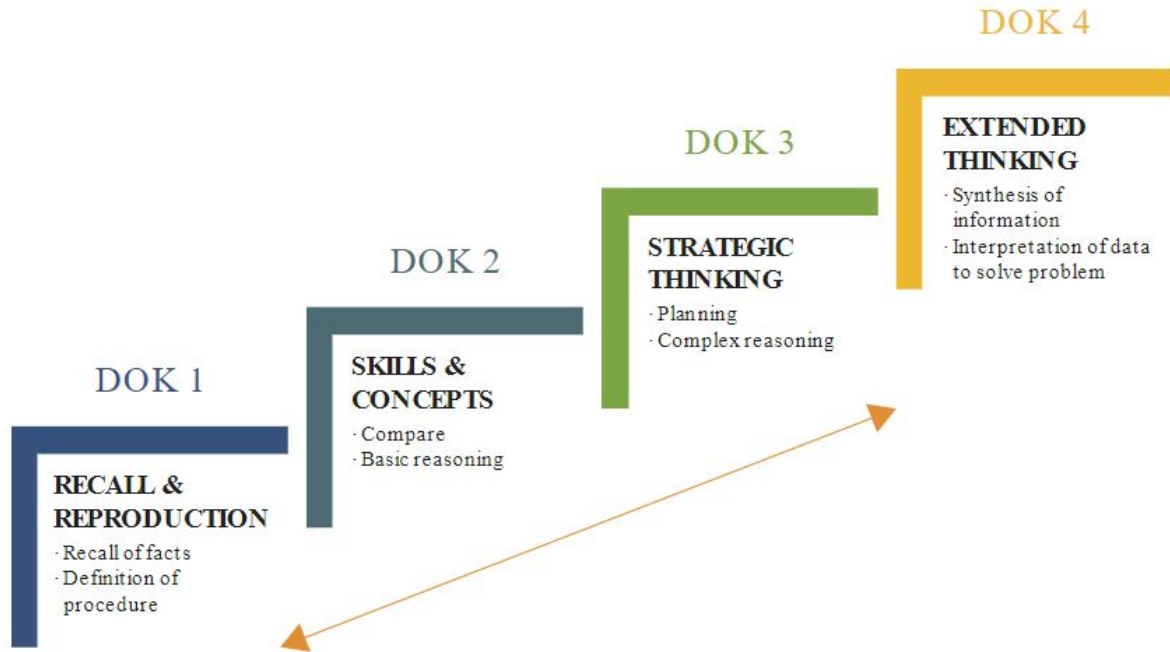
Webb's Depth of Knowledge (DoK) Framework

Webb's Depth of Knowledge Framework

- Developed by Norman Webb, educational researcher and psychologist, in 1997
- Classifies activities/assessments according to rigor and cognitive complexity required to complete a task
- Intended to align instructional activities to appropriately challenging assessments
- Users four levels, often depicted as ascending steps on a staircase
- 'Depth' relies more on the context of the PLO than the specific verb used (notably NOT a 'taxonomy')

Bloom's Taxonomy	Webb's DoK
<i>What kind of thinking is needed to complete the task?</i>	<i>How deeply do you need to understand the content to complete the task?</i>

Webb's Depth of Knowledge Framework



Webb's DoK: Providing Context

PLO: "Identify"

"Identify the structure and function of the mitochondria."

DoK Level 1:
Recall & Reproduction

Requires student to recall information about cellular composition and function.

Identify trends from the data set that demonstrate the impact of carbon emissions on global warming and support carbon reduction policies.

DoK Level 3:
Strategic Thinking

Requires student to identify trends, analyze data, and apply understanding to justify a policy position.

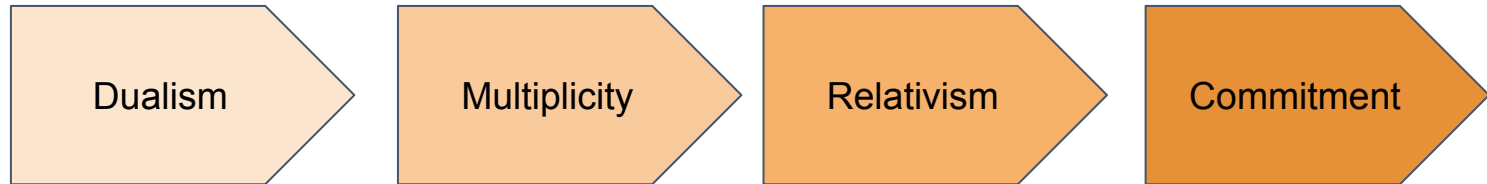


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Perry's/Baxter-Magolda's Stages of Undergraduate Cognitive Development

Stages of Undergraduate Cognitive Development

- Framework developed by educational psychologist, William Perry (1968); refined by education researcher, Marcia Baxter-Magolda (1992)
- Focuses on development of **intellectual**, **ethical** skills and the formation of a **personal identity**
- Most effective in disciplines that are abstract or open to interpretation: arts, literature, philosophy
- Includes 4 main 'positions' that students pass through toward cognitive maturity



Stages of Undergraduate Cognitive Development

Position 1: DUALISM

Simplicity,
Certainty

Absolutisms

Black & White

Good & Bad

True & False

Instructors are
all-knowing

Position 2: MULTIPLICITY

Multiple Opinions,
All Equally Valid

Uncertainties Exist
but can be
Resolved

Cognitive
Discomfort

Instructors/Experts
Don't Know
Everything

Position 3: RELATIVISM

Knowledge=
Contextual

No singular 'truth'

Comfort with
Ambiguity

Opinions can be
Evaluated with
Evidence,
Reasoning

Position 4: COMMITMENT

Complexity

Create/Adopt
Informed Opinions

Modify/Reassess
commitments with
Evidence,
Reasoning
(Growth!)

Applying the Stages of Undergraduate Cognitive Development

Use the framework to design PLOs that align to the target level of cognitive complexity, or design rubrics that assess student progress toward more advanced critical thinking skills.

Dualism	Multiplicity	Relativism	Commitment
<ul style="list-style-type: none">● Recall● Define● Identify● Label● List	<ul style="list-style-type: none">● Summarize● Compare● Contrast● Interpret● Discuss	<ul style="list-style-type: none">● Analyze● Evaluate● Differentiate● Justify● Critique	<ul style="list-style-type: none">● Defend● Reflect● Select● Integrate● Synthesize● Create



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More Taxonomies to Explore

More Taxonomies to Explore

SOLO Taxonomy

(Structure of Observed Learning Outcomes)

5 Levels from 'Prestructural' to 'Abstract' Thinking

Marzano's Taxonomy of Educational Objectives

The Self | Metacognitive
Cognitive | Knowledge

Barkley & Major's Learning Goal Inventory:

<https://bit.ly/3JrYBfU>

The Learning Goals Inventory (LGI) is a survey tool with a three-fold purpose:

- 1 - to help college teachers focus and articulate their goals for student learning in their individual courses,
- 2 - to help college teachers locate appropriate Learning Assessment Techniques that they can use to help assess how well students have achieved the learning goals, and
- 3 - to provide a starting point for discussions about teaching and learning goals among colleagues.

The LGI has four parts:

- 1 - Course Information,
- 2 - Learning Goals Rating Scale,
- 3 - Learning Goals Self-Assessment, and
- 4 - Responder Characteristics.

Completion of the LGI should take approximately 10-15 minutes

Complete [the survey](#) for personalized feedback on your course/program learning goals



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Wrap Up & Resources

Summary & Poll



- **Bloom's (Original) Taxonomy** *Traditional Hierarchy*
- **Bloom's (Revised) Taxonomy** *Action-oriented Hierarchy*
- **Fink's Taxonomy of Significant Learning** *Relational, interactive, cumulative*
- **Webb's Depth of Knowledge** *Depth is contextual*
- **Perry/Baxter-Magolda's Stages of Undergraduate Cognitive Development** *Journey toward informed opinions & advanced critical thinking*

Takeaways

- Taxonomies/Frameworks are organizational tools - not prescriptions!
- Not all learning is necessarily linear or hierarchical.
- The context of your discipline matters.
- Regardless of your chosen approach, selecting measurable, action-oriented verbs is key to leveraging taxonomies for assessment.

Further Reading & Resources

Anderson, L. W., & Krathwohl, D. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.

Barkley, E.F. & Major, C.H. (2022). *Engaged teaching: A handbook for college faculty (1st Edition)*. Social Good. (ISBN-13: 979-8985774207).

Biggs, J. & Tang, C. (2009). *Teaching for Quality Learning at University: What the Student Does*. (3rd ed.) pp.76-80.

Fink, L. D. (2013). *Creating significant learning experiences: an integrated approach to designing college courses* (Revised and updated edition). San Francisco: Jossey-Bass.

Nilson, L.B. (2010a). Outcomes-centered course design. In L.B. Nilson, *Teaching at Its Best: A Research-Based Resource for College Instructors, 3rd Edition* (pp. 17-31). John Wiley & Sons.

Nilson, L. B. (2010b). Understanding your students and how they learn. In L.B. Nilson, *Teaching at Its Best: A Research-Based Resource for College Instructors, 3rd Edition* (pp. 3-16). John Wiley & Sons.

Post-Workshop Challenge

- Review the list of Program Learning Objectives for your area:
<https://www.stonybrook.edu/commcms/oeo/objectives/index.php>
- Select an alternate educational taxonomy and improve a PLO with this approach.



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Questions & Discussion

ASSESSMENT WORKSHOPS

OFFICE OF
EDUCATIONAL
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2024



Join OEE for its Fall 2024 workshop series on best practices and innovations in assessment! Register at the QR code below.

- Reframing Assessment with UDL in Mind
Sept. 16 at 11am & Sept. 17 at 2pm
- Beyond Bloom's: Exploring Different Taxonomies for Assessment
Oct. 1 at 1pm & Oct. 3 at 10am
- Leveraging AI in Assessment
Oct. 17 at 10:30am & Oct. 21 at 12pm
- Why Assessment Works: Evidence Based Examples
Nov. 11 at 11:30am & Nov. 12 at 2pm
- Including the Student Voice in Assessment
Nov. 21 at 11:30am & Nov. 22 at 2pm



OFFICE OF EDUCATIONAL EFFECTIVENESS ASSESSMENT SYMPOSIUM 2024

TAKING THE FEAR OUT OF ASSESSMENT



ZACH JUSTUS, PhD

KEYNOTE SPEAKER
Director of Faculty Development
Professor, Communication Studies
California State University, Chico

Join the assessment fright fest!
Featuring presentations on the
challenges of authentic assessment in
the age of AI, and industry perspectives
on graduates' essential skills.



SCAN ME



9:00 AM - 2:30 PM
STUDENT UNION
BALLROOM



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Thank you!

EducationalEffectiveness@stonybrook.edu
