The HyFlex of Blended Learning:
Popular Frameworks for Powerful Learning

Curtis J. Bonk, IST Professor
Indiana University
cjbonk@indiana.edu; http://curtbonk.com/

1

Poll: Have you ever taken or taught a blended learning or HyFlex course?

a. **Yes many.**
b. **Yes, just a couple.**
c. **No, but I taught one or more technology enhanced ones.**
d. **No but I am willing to try.**
e. **No and I like it that way.**

2

Blended Learning

Face-to-Face Learning   Blended Learning   Online Learning

3

Myth: Blended learning is easy to define.
Myth: Blended learning is hard to define.
Blending Online and F2F Instruction

"Blended learning refers to events that combine aspects of online and face-to-face instruction" (Rooney, 2003, p. 26; Ward & LaBranche, 2003, p. 22)

4

Historical Emergence of Blended
(Graham, 2006)

5

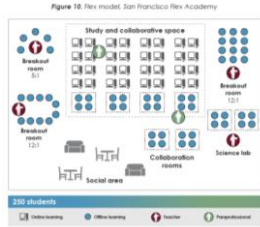
Myth: There is a best model of blended.
AMA Special Report, Effectively Implementing a Blended Learning Approach
(Steven Shaw & Nicholas Igneri, 2006)

Source: American Management Association, AMA at Work

6

Blended Model. Flex
(curriculum primarily online with instructors available FTF)

7

June 17, 2021
How can higher ed move blended learning forward?
Jessca Rowland Williams, eCampus News
https://www.ecampusnews.com/2021/06/17/how-can-higher-ed-move-blended-learning-forward/

8

June 17, 2021
Planning for a Blended Future:
A Research-Driven Guide for Educators
https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future/

9

June 17, 2021
Planning for a Blended Future:
A Research-Driven Guide for Educators
https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future/

10

June 17, 2021
Free Book:
Hybrid-Flexible Course Design
https://edtechbooks.org/hyflex

11

Fall 2021
Hybrid Modality: HyFlex Teaching
https://instructionalcontinuity.georgetown.edu/pedagogies-and-strategies/hybrid-hyflex-teaching/
In a HyFlex course, courses are delivered both in person and online at the same time by the same faculty member. For any given class meeting, some students might participate in person, while others might participate at the same time online, made possible by a combination of cameras, microphones, displays, and other technology in the classroom.

12

Fall 2021

Hybrid Modality: HyFlex Teaching

https://instructionalcontinuity.georgetown.edu/pedagogies-and-strategies/hybrid-hyflex-teaching/

HyFlex (a term coined by Brian Beatty) stands for a combination of "hybrid," meaning alternating between face-to-face meetings and remote interactions, and "flexible," meaning students move between these participation options.

13

14

Clearly…
Learning is Changing!

15

Education 3.0…Education 20/20

"In Education 3.0, classrooms would move away from lectures, such as this one, to having class time be spent on discussions and projects, using digital technology."
(Per Wikipedia: https://en.wikipedia.org/wiki/Education_3.0

16

Now What is Education 4.0?

"Innovation-producing education. Learn more in: Development of Individual Agency within a Collaborative, Creative Learning Community"

http://www.igi-global.com/dictionary/education-40/41755
https://thinc.in.th/engadmission/education4.html (Chula Engineering)

17

Education 20/20

18

---

20 New Roles of the Instructor

Course Ambassador
Captain
Consumer Advocate
Curator
Counselor
Cook   Change Catalyst
Conductor   Concierge
Comedian
Camping Trip Guide
Coach
Consultant   Course Expedition Leader   Collaborator
Community Organizer   Chemist
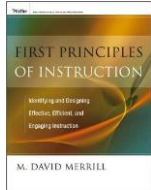Cultivator   Care Giver
Colleague

19

20
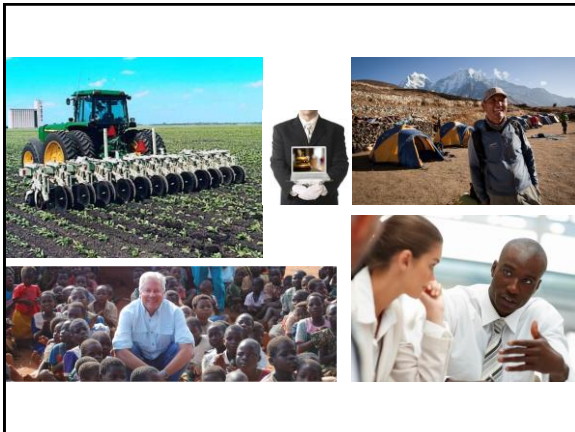
21

Merrill's First Principles of Teaching/Instruction
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html

Integration	Activation
Problem/Task	
Application	Demonstration

The First Principles Four Phase Cylce of Instruction

FIRST PRINCIPLES OF INSTRUCTION

M. DAVID MERRILL

22

Bonk's 20 "Last" Principles of Instruction
(LAST = Learning Activation System Template)
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
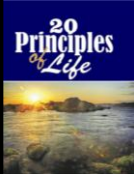
Choice and Options
Support and Feedback
Flexibility   Nontraditional Learning
Spontaneity   Passion and Inspiration
Convenience
Organization   Relevance and Meaningfulness
Collegiality
Sharing   Trial and Error (i.e., it is ok to fail)
Cheerfulness and Optimism
Purpose and Vision   Expanded Resources
High Expectations
Human Connectedness   #20 ???
Empowerment and Autonomy   Cognitive Apprenticeship

23

Bonk's Last Principles of Teaching/Instruction (Education 4.0?)
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
http://www.applicadthai.com/articles/education-4-0/

20 Principles of Life

Education 4.0

24

4

2025: AI, AI, AI, AI...
AI in Higher Ed News

25

2025: AI, AI, AI, AI...
AI in Higher Ed News

26

January 30, 2025
Digital Education Council Global AI Faculty Survey
Digital Education Council
https://www.chronicle.com/newsletter/teaching/2025-01-30

27

January 30, 2025
Digital Education Council Global AI Faculty Survey
Digital Education Council
https://www.chronicle.com/newsletter/teaching/2025-01-30

28

Sources
Teaching with AI
https://openai.com/blog/teaching-with-ai
https://cybernews.com/academy/news/teaching-with-ai-openais-new-teachers-guide/

29

November 23, 2023
TextGenEd: An Introduction to Teaching
with Text Generation Technologies
WAC Clearinghouse
https://wac.colostate.edu/repository/collections/textgened/

TextGenEd: An Introduction to Teaching with Text Generation Technologies. Co-editor with Annette Vee and Carly Schnitzler. *Writing Across the Curriculum Clearinghouse*, 2023.

30

July 23, 2023

101 creative ideas to use AI in education,
A crowdsourced collection

Chrissi Nerantzi, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023).
101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software].
Zenodo. https://doi.org/10.5281/zenodo.8355454
https://www.chronicle.com/article/how-will-artificial-intelligence-change-higher-ed

101 Creative ideas to use AI in education

59 Empowering student-led case study discussions with ChatGPT-generated prompts

31

32

MOTIVATION

GOAL   VISION   ADMIRE   SUPPORT   TEAMWORK   MENTOR   PERFORMANCE   SUCCESS
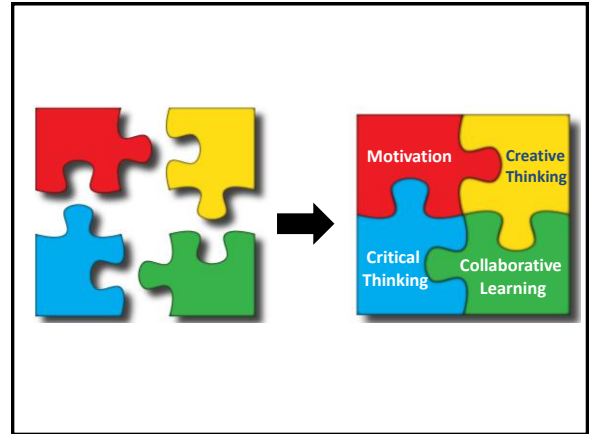
33

Motivation Research Highlights
(Jere Brophy, Michigan State University)

1. **Supportive**, appropriate **challenge**, **meaningful**, moderation/optimal.
2. Teach **goal** setting and self-reinforcement.
3. Offer **rewards** for good/improved performance.
4. Novelty, **variety, choice**, adaptable to interests.
5. Game-like, **fun**, fantasy, curiosity, suspense, active.
6. Higher levels, divergence, dissonance, **peer interaction**.
7. Allow to create finished **products**.
8. Provide immediate **feedback**, advance organizers.
9. Show intensity, **enthusiasm**, interest, minimize anxiety.
10. Make content **personal**, concrete, familiar.

34

Intrinsic Motivation

"…**innate propensity to engage one's interests and exercise one's capabilities, and, in doing so, to seek out and master optimal challenges**

(i.e., it emerges from needs, inner strivings, and personal curiosity for growth)

See: Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* NY: Plenum Press.

35

Introducing the TEC-VARIETY Framework
http://tec-variety.com/
http://tec-variety.com/TEC-VARIETY-Chinese.pdf

Tone/Climate
Encouragement, Feedback
Curiosity

Variety
Autonomy
Relevance
Interactive
Engagement
Tension
Yields Products

ADDING SOME TEC-VARIETY

CURTIS J. BONK   ELAINE KHOO

36

September 2022
Commonwealth of Learning
Khoo, E., & Bonk, C. J. (2022). *Motivating and Supporting Online Learners*. Burnaby, BC, Canada: Commonwealth of Learning. **Free book available: http://hdl.handle.net/11599/4481 and free course available: https://colcommons.org/welcome/coursedetails/8; https://www.colvee.org/**

37

September 23, 2022
Motivating and Supporting Online Learners
https://colcommons.org/my-course

38

MOTIVATION

39

January 13, 2022
1. Tone/Climate:
A. Course Introductions
(R678) https://padlet.com/cmsmeltz/h6zbzpdfos6x19l
(R511) https://padlet.com/sunseol/b1yr49ljxwc6smkc

40

April 11, 2022
1. Tone/Climate: B. Warm-Up Exercises: What do you know about XYZ…? (in Jamboard)
https://jamboard.google.com/d/1kutzcHHUzi7oGATqL1zQmae9MfKuoURhtCGQqm_8M1Q/viewer?f=3

41

September 24, 2020
1. Tone/Climate: C. Breakout Rooms
How Do You Make Zoom Breakout Rooms Less Boring?, Expectations, Share a link, Introductions
Bonni Stachowiak (Columnist), Ed Surge
https://www.edsurge.com/news/2020-09-24-how-do-you-make-zoom-breakout-rooms-less-boring

42

7

August 21, 2023
1. **T**one/Climate:
D. ChatPDF: Generate Questions for Guest Speakers
https://curtbonk.com/R622_online_syllabus_Fall_2023.htm

Option: We are reading... "Exploring Interactions in a Synchronous Hybrid Language" Class (by Dr. Chaoran Wang). Input one or more assigned articles from guest(s) into ChatPDF and have it generate questions. Ask those questions during session.

Here are three example questions you may have about this PDF file:
▷ What are the six emergent patterns of interaction found in the classroom video recordings?
▷ How does hybrid instruction differ from the rural school's pedagogical tradition and classroom culture?
▷ What is the updated framework proposed by the author for understanding the complexities inherent in interactions within hybrid learning spheres?
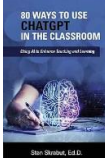
Chat with any PDF

43

August 15, 2023
1. **T**one/Climate:
E. AI Generated Ice Breakers
25 applications in teaching and assessment
Seb Dianati & Suman Laudari, Charles Darwin University
https://www.timeshighereducation.com/campus/chatgpt-generative-ai-25-applications-teaching-and-assessment

1. **Tone/Climate: A. Develop Ice-Breaker or Team Building Exercises.**
A.Act as if it is the first day of class and use proven and effective rapport-building exercises for students to create a sense of community.
B.Develop a series of questions for online students to engage in the class at the same time as I am delivering the class in a physical classroom.

44

September 4, 2021
1. **T**one/Climate: F. Ice Breakers in Jamboard
https://jamboard.google.com/d/1NAAPUgs9nd2Zv_VLwjYO5aHeln4kphQ-dbQ5BREDqgc/viewer?f=7

Write down something that epitomizes your personal motto or life theme?

45

September 8, 2023
2. **E**ncouragement, Feedback:
A. Exam Preparation
https://cybernews.com/academy/news/chatgpt-your-new-academic-mentor/

1. The program **can review course material, create a tailored study schedule**, summarize and condense information, provide past exam questions, and even offer helpful tips that might make studying easier.

2. By providing the specific areas of study, ChatGPT can help familiarize you with your chosen topic.

3. ChatGPT can explain concepts, **summarize key points**, generate practical questions, and help you review quizzes and assessments.

46

August 31, 2023
2. **E**ncouragement, Feedback:
B. Translation Assistance to Improve Writing and Conversation Skills
https://openai.com/blog/teaching-with-ai

Dr. Anthony Kaziboni, the Head of Research at the University of Johannesburg, **teaches students who mostly don't speak English outside of the classroom**. Kaziboni believes that command of English is a tremendous advantage in the academic world, and that misunderstandings of even small details of English grammar can hold back students from recognition and opportunity. **He encourages his students to use ChatGPT for translation assistance, to improve their English writing, and to practice conversation.**

47

July 23, 2023
101 creative ideas to use AI in education,
2. **E**ncouragement, Feedback:
C. Generating Feedback Poetry
Chrissi Nerantzi, Sandra Abegglen, Marianna Karatsiori, & Antonio Martinez-Arboleda (Eds.). (2023).
101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software].
Zenodo. https://doi.org/10.5281/zenodo.8355454
(University of Leeds, Univ. of Calgary, and Univ. of Macedonia)

01 Generating feedback poetry

48

8

July 23, 2023
101 creative ideas to use AI in education,
2. Encouragement, Feedback:
D. AI Generated Art-Based Feedback
Zenodo. https://doi.org/10.5281/zenodo.8355454

49

August 15, 2023
ChatGPT and generative AI: 25 applications
3. Curiosity, Intrigue, Unknowns:
A. Provide YouTube Summaries
https://www.timeshighereducation.com/campus/chatgpt-and-generative-ai-25-applications-teaching-and-assessment

50

March 7, 2022
3. Curiosity, Intrigue, Unknowns:
B. Brainstorming in Padlet
https://padlet.com/basdogan2/ywl19ct98styolbw

51

July 8, 2022
3. Curiosity, Intrigue, Unknowns:
C. Multimedia News
Dinosaur discovered in Argentina suggests why many
prehistoric predators had small arms
Wyatte Grantham-Philips, USA TODAY
https://www.usatoday.com/story/news/world/2022/07/08/new-dinosaur-species-argentina-meraxes-gigas/10011585002/

52

June 7, 2023
4. Variety, Novelty, Fun, Fantasy:
A. Learn new words through images
by making suggestions for things to
add or change
https://fltmag.com/discovering-the-potential-of-bing-chat-for-language-learning/

53

February 16, 2024
4. Variety, Novelty, Fun, Fantasy:
B. Text to Video Generation
OpenAI's Video Generator Sora
Tony Ho Tron, The Daily Beast
https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying

54

February 16, 2024
OpenAI's Video Generator Sora Is Stunning and Utterly Terrifying
Tony Ho Tron, The Daily Beast
https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying

55

October 2, 2021
4. Variety, Novelty, Fun, Fantasy:
C. Reverse Brainstorming in Jamboard
https://jamboard.google.com/d/1uf5b2OJdvciFVlO5qhaIxuGCLQ3xP-mlGPvF7kdjKA4/viewer?f=5

56

August 14, 2023
30 ChatGPT Prompts For Language Learners
Natalia Álvarez-Morillo, Carnegie Learning
4. Variety, Novelty, Fun, Fantasy:
D. AI Chatbots as language teaching assistants
https://www.carnegielearning.com/blog/30-chatgpt-prompts-language-learning/

1. How do I use the [verb tense] in [target language]?
2. I'm struggling with [grammar topic]. Can you provide some guidance?
3. How do I form questions in [target language]?
4. I need help with the correct word order in [target language].
5. Could you provide some examples of [grammar rule] in sentences?

57

5. Autonomy, Choice:
A. Reflect on Podcasts and Webcasts

58

August 21, 2023
5. Autonomy, Choice:
B. Brave People Option:
Scholar Essay
https://curtbonk.com/R511_online_syllabus_fall_2023.htm

• **Brave People Option:** Have ChatPDF, ChatGPT, or another generative AI tool or platform generate a 2,000-3,000 word **summary or essay of a scholar**. Next, write a 2-3 page single-spaced reflection paper, review, or critique of that scholar and incorporate a couple of quotes and aspects of what generative AI produced.

59

August 21, 2023
5. Autonomy, Choice:
C. Brave People Option:
Book Review
https://curtbonk.com/R511_online_syllabus_fall_2023.htm

Brave People Option: Put a PDF of the chosen book or books into ChatPDF, ChatGPT, or other generative AI tool or platform and have it do a **critique or a book review** on it. Next, write a reflection paper, review, or critique of what generative AI produced. A mini-glossary of personal definitions for 20-25 key terms and concepts found in this book might be included in an appendix at the end of the review.

60

February 14, 2022
6. Relevance, Meaningfulness:
A. Questions for Guests in Jamboard

61

6. Relevance, Meaningfulness:
B. Expert, Researcher, or Live Author Interviews and Discussions

62

October 16, 2021
6. Relevance, Meaningfulness:
C. AMA (Ask Me Anything) in Jamboard

63

February 28, 2022
6. Relevance, Meaningfulness:
D. Past, Present, and Future Panels

64

November 27, 2021
6. Relevance, Meaningfulness:
E. Guest Chats Playlists, R511, Fall 2021

65

February 7, 2022
7. Interactive, Collaborative:
A. Team Article Summaries in Jamboard

66

October 5, 2023
7. Interactive, Collaborative:
B. Book Summary Comparison
Kevin McCullen, an associate professor of computer science at the State University of New York at Plattsburgh
Machines of Loving Grace: The Quest for Common Ground Between Humans and Robots, by John Markoff
https://www.chronicle.com/newsletter/teaching/2023-10-05

- A freshman seminar about AI and robotics. **Students work in groups to outline and summarize the first three chapters.** Then he **showed them what ChatGPT** had produced in an outline.
- "Their version and ChatGPT's version seemed to be from two different books," McCullen wrote. "ChatGPT's version was essentially a 'laundry list' of events. Their version was narratives of what they found interesting. The students had focused on what the story was telling them, while ChatGPT focused on who did what in what year." The chatbot also introduced false information, such as wrong chapter names.
- Found it "soulless."

67

June 3, 2020
7. Interactive, Collaborative:
C. Collab Annotation and Group Reading (Perusall)
How to Do Collaborative Annotation and Group Reading in Perusall for Online or Blended Classrooms
EdTech with Adam: **https://www.youtube.com/watch?v=edb9IECompA**
https://perusall.com/

68

August 31, 2023
7. Interactive, Collaborative:
D. Role Playing Challenging Conversations
https://openai.com/blog/teaching-with-ai

Dr. Helen Crompton, Professor of Instructional Technology at Old Dominion University, encourages her education graduate students to use ChatGPT as a stand-in for a particular persona—like a debate partner who will point out weaknesses in their arguments, a recruiter who's interviewing them for a job, or a new boss who might deliver feedback in a specific way.

Last month, educational psychologist Ronald Beghetto asked a group of graduate students and teaching professionals to discuss their work in an unusual way. As well as talking to each other, they conversed with a collection of creativity-focused chatbots based on ChatGPT…at Arizona State University (ASU). Beghetto prompts the bots to take on various personas to encourage creativity — for example, by deliberately challenging someone's assumptions. One student discussed various dissertation topics with the chatbots

69

July 12, 2023
8. Engagement, Involvement:
A. Analyze AI Bias
Daniel Stanford's Substack
https://danielstanford.substack.com/p/incorporating-ai-in-teaching-practical?r=bejrw&utm_campaign=post&utm_medium=web

Example Activity: Analyze examples of bias in AI output.

- **Example prompt: Write a scene in a movie script where people in specific professions interact** (e.g., a doctor/nurse, pilot and flight attendant).
- **Student reflection question: What gender did AI assign to each role?** How did this reinforce or contradict common stereotypes?
- **Additional example assignment: Analyze how AI handles racial or gender representation** depending on prompt wording. See examples at **bit.ly/bias-in-ai-images**.

70

July 12, 2023
8. Engagement, Involvement:
A. Analyze AI Bias
Daniel Stanford's Substack
https://danielstanford.substack.com/p/incorporating-ai-in-teaching-practical?r=bejrw&utm_campaign=post&utm_medium=web

71

April 4, 2024
Teaching with AI: A Practical Guide to a New Era of Human Learning (2024)
8. Engagement, Involvement:
B. Blogging and Journaling
Jose Antonio Bowen and C. Edward Watson
https://www.press.jhu.edu/books/title/53869/teaching-ai

Record weekly course reflections in a blog or a journal. Then have students get feedback from both a peer and ChatGPT. Have students write one or more reflections on the difference on feedback offered. Or ChatGPT could create weekly blog posts to compare to.

72
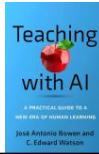
Slide 73

April 4, 2024
Teaching with AI: A Practical Guide to a New Era of Human Learning (2024)
8. Engagement, Involvement:
C. Human vs. AI
Jose Antonio Bowen and C. Edward Watson
https://www.press.jhu.edu/books/title/53869/teaching-ai

Ask students to write a paragraph, article abstract, short paper, poem, lecture summary of key points, etc. both with and without AI. Next share the artifact with a partner. Each person attempts to identify the human and AI elements. Finally, they discuss how either draft document could be improved.

73
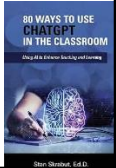
Slide 74

February 10, 2023
80 Ways to Use ChatGPT in the Classroom
Stan Skrabut, Ed.D.
8. Engagement, Involvement:
D. List Generator Discussions
https://www.amazon.com/80-Ways-Use-ChatGPT-Classroom/dp/B0BVC8MXJV

Have ChatGPT or any other generative AI tool generate a list (e.g., ice breakers, student paired interview questions, book or article recommendations, course guidelines or objectives, course objectives, etc.) and then engage students in small group and then whole class discussions.

74
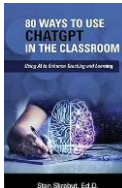
Slide 75

February 10, 2023
80 Ways to Use ChatGPT in the Classroom
Stan Skrabut, Ed.D.
8. Engagement, Involvement:
E. Language Conversation Partners
https://www.amazon.com/80-Ways-Use-ChatGPT-Classroom/dp/B0BVC8MXJV

Generative AI might also translate articles and blocks of text into the target language. Next have students work in teams to improve the drafts through rewriting and discussion.
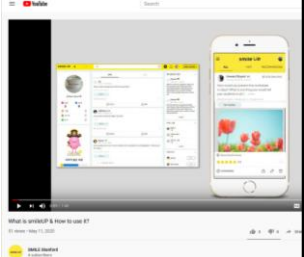
75

Slide 76

May 11, 2020
9. Tension, Challenge, Controversy, etc.:
A. What is smileUP & How to use it?
SMILE, Stanford
https://www.youtube.com/watch?v=pblU8sSALWo

76

Slide 77

May 11, 2020
9. Tension, Challenge, Controversy, etc.:
A. What is smileUP & How to use it?
SMILE, Stanford
https://ask.smile.stanford.edu/
https://www.youtube.com/watch?v=pblU8sSALWo

Specifically, SMILE will be used to assess student's critical thinking and GPT 3.5 to provide constructive feedback to the questions. Accordingly, students will be given access to SMILE (https://ask.smile.stanford.edu/) to ask questions of their own. SMILE will rank the student's question from level 1 (i.e., the most basic) to level 5 (i.e., the most critical) based on its breadth and depth and its analytical nature using the Bloom Taxonomy criteria. 50 or more questions and write a reflection report on the breadth and depth of the response of ChatGPT.

77

Slide 78

11. Kim, P., Wang, W., & Bonk, C. J. (provisional acceptance). Generative AI as a coach to help students enhance proficiency in question formulation: Just ask SMILE. *Journal of Educational Computing Research*.

Following the launch of the generative AI Web application, Ask.SMILE, for evaluating the level of questions asked, 2,559 educators generated 25,973 question-feedback sets over a three-month period; an average of over 10 questions generated per participant.

Figure 1. Example of asking a Level 1 question (i.e., remembering) and system feedback in the Ask.SMILE system

Figure 2. Example of asking a Level 2 question (i.e., understanding) and system feedback in the Ask.SMILE system

78

Slide 79:

May 11, 2020
9. Tension, Challenge, Controversy, etc.:
A. What is smileUP & How to use it?
SMILE, Stanford
https://www.youtube.com/watch?v=pblU8sSALWo

Personalize question rubric for GPT-3.5

Ask a question

With the help of GPT-3.5, your question will be evaluated on a rubric from Level 1 to Level 5 aligned to Bloom's Taxonomy

What will it take for North and South Korea to be reunified?

Submit question

Great job! This is a level 5 question. It involves speculation and uncertainty about the future reunification of structure, indicating that there are certain conditions or factors that need to be fulfilled for the reunification

Reunification of North and South Korea is a complex and sensitive issue, and there are several factors that w could contribute to the reunification are:

1. Diplomatic negotiations: Engaging in sustained diplomatic dialogues between both Koreas, as well as inv

2. Trust-building measures: Building trust and confidence between the two nations through various means, to-people interactions.

3. Security concerns: Addressing security concerns from both sides, ensuring the protection of the interests

4. Economic integration: Establishing mechanisms for economic integration and harmonization of policies t

79

Slide 80:

Kim, P., Wang, W., & Bonk, C. J. (in press for 2025). Generative AI as a coach to help students enhance proficiency in question formulation. *Journal of Educational Computing Research*.
https://doi.org/10.1177/07356331251314222
Following the launch of the generative AI Web application, Ask.SMILE, for evaluating the level of questions asked, 2,559 educators generated 25,973 question-feedback sets over a three-month period; an average of over 10 questions generated per participant.

Table 2: Question Level Statistics

	Value	Percent
Number of Observations (N)	25,973	100%
Level 1 Remembering Questions	7,073	27.2%
Level 2 Understanding Questions	4,401	16.9%
Level 3 Applying Questions	2,574	9.9%
Level 4 Analyzing Questions	3,832	14.9%
Level 5 Evaluating/Creating Questions	8,093	31.1%
Mean Level of Questions	3.056	
Standard Deviation (SD)	1.627	

80

Slide 81:

Kim, P., Wang, W., & Bonk, C. J. (in press for 2025). Generative AI as a coach to help students enhance proficiency in question formulation. *Journal of Educational Computing Research*.
https://doi.org/10.1177/07356331251314222
Following the launch of the generative AI Web application, Ask.SMILE, for evaluating the level of questions asked, 2,559 educators generated 25,973 question-feedback sets over a three-month period; an average of over 10 questions generated per participant.

Table 3: Cross-tabulation of Average Level and First Level of User Questions Generated

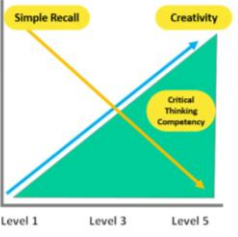|	Average Question Level					
First Level	1	2	3	4	5	Total
1	486	208	176	45	0	915
2	13	247	110	78	1	449
3	0	29	152	58	0	239
4	0	23	39	242	14	318
5	0	15	76	117	430	638
Total	499	522	553	540	445	2559

81

Slide 82:

May 11, 2020
9. Tension, Challenge, Controversy, etc.:
B. What is smileUP & How to use it?
SMILE, Stanford
https://www.youtube.com/watch?v=pblU8sSALWo

SMILE is connected to ChatGPT to give feedback and guidance. Have student experiment to see who can ask Level 4 and Level questions. Professor Trang Phan fosters critical thinking by having her education students at Fresno State ask the same question and phrase differently every time and **reflect on the authenticity, accuracy, trustworthiness, and the ethical and moral nature of the responses**. And also record the level of question according to SMILE.

82

Slide 83:

9. Tension, Challenge, Controversy, etc.:
C. Virtual Sharing Walls Competitions
e.g., Padlet (A collaboration and discussion board)
August 27, 2021, What is Education 3.0?
https://padlet.com/basdogan2/ywl19ct98styolbw

PADLET #1: Education 3.0

83

Slide 84:

October 5, 2023
10. Yields Products, Goals:
A. Support for Job Applications and Resumes
Grace Heneks, a lecturer in the English department at Texas A&M University
https://www.chronicle.com/newsletter/teaching/2023-10-05

Students were asked to work with ChatGPT in a technical professional-writing course and a writing about literature course. In both courses, she says, students were underwhelmed by the product. In the technical writing course, students used **ChatGPT to write job-application materials, such as cover letters and resumes.** Most of them, she wrote, found that the chatbot actually created work because, even with multiple prompts, the writing did not have much personality and was repetitive. The same held true in her writing course when she used ChatGPT in class and also when students reviewed a ChatGPT-generated essay.

84

April 23, 2020
10. Yields Products, Goals:
B. Student Generated Timelines, Taxonomies,
and Concept Maps (Sutori, xtimeline, Preceden, Timeline.js,
TimeLineCurator, Time Mapper, etc.)
http://timeglider.com/t/50843d8903a48008?min_zoom=1&max_zoom=100
https://time.graphics/line/356a1211435318430fa1741b50d7552c

85

September 3, 2017
10. Yields Products, Goals:
C. Mindmap Recaps of Online Discussions
Mindmap of Week 2 of R511
https://bubbl.us/Mjg2MzMxOC84MjYzNjcuL2UyODQzMqQNTQ2YzQwZDImNDE3ZWE3OWYwMm3mYTI3-X

86

**Poll: Any light bulbs going off in
you head so far?**

a. **Yes definitely...many of
them...pop...pop...pop!**
b. **Yes, several times.**
c. **Yes maybe!**
d. **Not yet (but hopefully soon...)**
e. **Nope. Darn it my brain is not
working today.**
f. **There's no hope with this idiot
presenting.**

87

Make Commitments:
Stop and Share in Chat Window:
Which principle(s) of TEC-VARIETY will you use?

Tone/Climate
Encouragement, Feedback
Curiosity

Variety
Autonomy
Relevance
Interactive
Engagement
Tension
Yields Products

88

The R2D2 Model:
Read, Reflect, Display, Do...

89

**Question: How can technology
address diverse learner needs?**

90

The R2D2 Model

1. **Read (Auditory and Verbal Learners)**
2. **Reflect (Reflective Learners)**
3. **Display (Visual Learners)**
4. **Do (Tactile, Kinesthetic, Exploratory Learners)**

91

1. Auditory or Verbal Learners

- **Auditory and verbal learners prefer words, spoken or written explanations.**
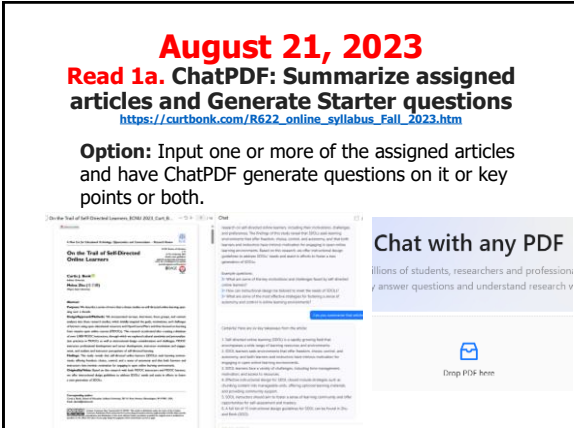
92

August 21, 2023
Read 1a. ChatPDF: Summarize assigned articles and Generate Starter questions
https://curtbonk.com/R622_online_syllabus_Fall_2023.htm

Option: Input one or more of the assigned articles and have ChatPDF generate questions on it or key points or both.
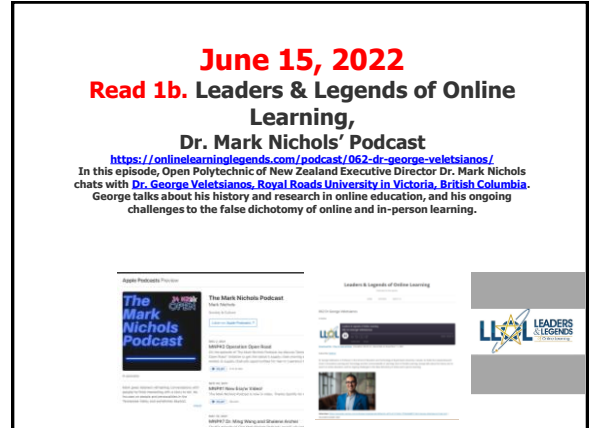
93

June 15, 2022
Read 1b. Leaders & Legends of Online Learning,
Dr. Mark Nichols' Podcast
https://onlinelearninglegends.com/podcast/062-dr-george-veletsianos/
In this episode, Open Polytechnic of New Zealand Executive Director Dr. Mark Nichols chats with Dr. George Veletsianos, Royal Roads University in Victoria, British Columbia. George talks about his history and research in online education, and his ongoing challenges to the false dichotomy of online and in-person learning.

94

Silver Lining for Learning

95

Pedagogical Uses of Podcasts

1. Replace some course readings.
2. Podcast reenactments.
3. Use of podcasts to back up different sides of debates or to start debates.
4. Remix episodes and explore themes and common issues.
5. Support asynchronous discussion.
6. Add multimedia component to student papers.
7. Interview the podcast hosts and guests.
8. Identify new discoveries and trends in the field.
9. Favorite podcast show competitions.
10. Supplement class lectures or presentations.

96

Pedagogical Benefits of Podcasts
(Palenque, 2016, Journal of Instructional Research)

1. Promotes active listening.
2. Expands vocabulary.
3. Support active, social, and creative aspects of learning.
4. Provides opportunities for reflection.
5. Aligns with self-paced and independent learning.
6. Helps chunk learning and connect to what you know.
7. Fosters audience awareness and social cognition
8. Potential for audio feedback to learners.
9. Provides alternative to reading.
10. Fosters planning skills.

97

January 20, 2016
Read 1c. Text to Audio
(e.g., Speechify; https://www.hsalfrank.com/speechify)

98

---

2. Reflective and Observational Learners

• Reflective and observational learners prefer to reflect, observe, view, and watch learning; they make careful judgments and view things from different perspectives

99

September 4, 2021
Reflect 2a. Venn Diagrams in Jamboard
https://jamboard.google.com/d/1uf5b2OJdvciFVlO5qhaIxuGCLQ3xP-mlGPvF7kdjKA4/viewer?f=5

100

Reflect 2b. Big Issue Reflections and What-If Reflections
(Big Questions Online (BQO))
(e.g., Can a Living Creature Be as Big as a Galaxy?)
https://www.bigquestionsonline.com/

101

Reflect 2c.
Online Role Play or Debate
(e.g., documentary production)

• Controller/Executive Director/CEO/Leader	• Artist/Idea Person/Visionary/Muse	• Optimist/Open-minded/Idealist
• Connector/Relator/Linker/Synthesizer	• Planner/Predictor/Guesser/Flowcharter	• Robotic/Information Dumper/Spock-like
• Decider/Judge/Settler	• Organizer/Starter/Founder/Initiator	• Absent Minded/Stumpler/Dense/Aimless
• Devil's Advocate/Critic/Censor	• Questioner/Ponderer/Protester	• Coach/Facilitator/Inspirator/Trainer
• Reflector/Thinker/Speculator/Observer/Watcher	• Adventurer/Discoverer/Explorer/Traveler	• Guide/Mentor/Teacher/Scaffolder
• Warrior/Debater/Arguer/Conqueror/Bloodletter	• Mediator/Negotiator/Compromiser/Peacemaker	• Humanitarian/Do Gooder/Fund Raiser
• Idea Squelcher/Biased/Preconceiver	• Watchdog/Evaluator/Measurer	• Funny/Humorous/Comic/Witty
• Slacker/Slough/Slug/Surfer Dude	• Creative Energy/Inventor/Generator/Brainstormer	• Advisor/Responder/Helper/Tutor
		• Worldly/Wiseperson/Sage/Guru/Spiritual Leader

Example 2: Scaffolding…in the form of structuring the online environment and engagement e.g. reflective roles, self-coding, timely-engagement of instructors or otherwise you have "serial monologues."

102

November 25, 2021
Reflect 2d. Interpreting Interactive Graphs and Infographics
ARK Invest
https://ark-invest.com/articles/portfolio-construction/equity-market-cap-associated-with-innovation/

Innovation Platform Enterprise Value from 2020 – 2030

2020
$14 Trillion

2030
$210 Trillion

Compounded Annual Rates of Growth
27%
39%
39%
60%

103

November 23, 2023
Reflect 2e. Translating Policy Document into Plain English (TextGenEd)
Timothy Laquintano, Lafayette College
https://wac.colostate.edu/repository/collections/textgened/professional-writing/translating-a-policy-document-into-plain-english/

This assignment asks **undergraduate students to translate a complex policy document into plain English and then compare their output to the output of a large language model asked to do the same task.** Students critically compare the semantic choices and sacrifices they made during the translation with the meaning lost during the machine translation, which attunes them to the risks and benefits of LLM output. It can be adapted to most disciplines and course levels.

104

3. Visual Learners

• **Visual learners prefer diagrams, flowcharts, timelines, pictures, films, and demonstrations.**

105

July 23, 2023
101 creative ideas to use AI in education,
Display 3a. Rewriting with AI Image Generators
Chrissi Nerantzi, Sandra Abegglen, Marianna Karatsiori, & Antonio Martinez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software]. Zenodo. https://doi.org/10.5281/zenodo.8355454
(University of Leeds, Univ. of Calgary, and Univ. of Macedonia)

106

September 4, 2021
Display 3b. PMI in Jamboard
https://jamboard.google.com/d/1Kj1vX4iXa2RgES0H58laB_cW-LieoEUzMDDFj88eP00/viewer?f=4

107

June 7, 2023
Display 3c. Bing Chat for stories, plays, poems, images, etc.
Users can easily write a prompt to create an image directly in the chat. OpenAI's DALL·E (it can also be used at bing.com/create). Users can create as many images as they would like for free.
https://tesl-ej.org/pdf/ej107/int.pdf

108

Slide 109

March 31, 2022
Display 3d. Short Educational Videos:
Anchored Instruction/Macrocontext
TEDE, BBC News, and New York Times
https://www.ted.com/ and https://www.youtube.com/c/BBCNews/featured

109

Slide 110

November 21, 2022
TED Talks Education
https://www.ted.com/about/programs-initiatives/ted-talks-education

110

Slide 111

March 29, 2022
Display 3d. Guest Expert Chats
R511 Week 11 Questions and Answers With Dr. Thiagi
(1 hour, 15 minutes)
Single Camera View: https://youtu.be/4OGhwJSaFAo
Multiple Camera View: https://youtu.be/EssDmqU030g

111

Slide 112

Ten Pedagogical Uses of Shared Online Videos

1. Pause and Reflect
2. Key Concept Reflections
3. Video Anchor or Starter
4. Video Capstone or Ending
5. Online Weekly Content Previews and Discussions

112

Slide 113

More Uses of Shared Online Videos

6. Rank or Evaluate Anchor Archives
7. Student Anchor Creator Competitions
8. Concept or Technology Demonstrations
9. Anchor Video Debates
10. Anchor Creator Interviews

113

Slide 114

Display 3e.
Collaborative Web and PDF Annotation Tools
Hyothes.is (Free): https://web.hypothes.is/
Note Anywhere: https://www.youtube.com/watch?v=g4AJeowd4Ho
Adds virtual sticky notes to webpages

114

19

April 30, 2020
Display 3f. Word Clouds:
Week 2 and 5 (13 and 14)
https://www.wordclouds.com/

115

July 23, 2023
101 creative ideas to use AI in education,
Display 3g. Rewriting with AI Image Generators
Chrissi Nerantzi, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023).
101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software].
Zenodo. https://doi.org/10.5281/zenodo.8355454
(University of Leeds, Univ. of Calgary, and Univ. of Macedonia)

116

February 15, 2024
Soro
AI Generated Videos Just Changed Forever
Video (12:01): https://youtu.be/NXpdyAWLDas

117

February 16, 2024
OpenAI's Video Generator Sora Is Stunning and Utterly Terrifying
Tony Ho Tron, The Daily Beast
https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying

Prompt: Photorealistic closeup video of two pirate ships battling each other as they sail inside a cup of coffee.
OpenAI

118

February 16, 2024
OpenAI's Video Generator Sora Is Stunning and Utterly Terrifying
Tony Ho Tron, The Daily Beast
https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying

Prompt: Animated scene features a close-up of a short fluffy monster kneeling beside a melting red candle. The art style is 3D and realistic, with a focus on lighting and texture. The mood of the painting is one of wonder and curiosity, as the monster gazes at the flame with wide eyes and open mouth. Its pose and expression convey a sense of innocence and playfulness, as if it is exploring the world around it for the first time. The use of warm colors and dramatic lighting further enhances the cozy atmosphere of the image.
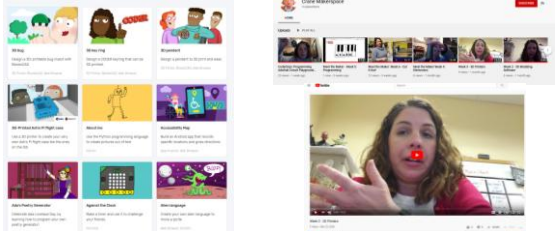OpenAI

119

4. Tactile/Kinesthetic Learners

- Tactile/kinesthetic senses can be engaged in the learning process are role play, dramatization, cooperative games, simulations, creative movement and dance, multi-sensory activities, manipulatives and hands-on projects.

120

20

April 23, 2020
Do 4a. Demonstration Videos
Crane Makerspace, Tina Closser
https://www.youtube.com/channel/UCbeWfFd9q7pZ0JMBl9TBt5w?view_as=subscriber
https://sites.google.com/view/cranetech/home
https://projects.raspberrypi.org/en/projects

121

November 5, 2024
Do 4b. AI Video Generation (Synthesia)
AI in Education Tutorial (Claudio Pinto)
Final Projects R546 Fall of 2024
https://share.synthesia.io/45b37421-90a3-4180-b855-8b8565763201 (Synthesia)
#1 AI video platform. Create professional looking videos in 140+ languages. Pick a template, choose between 230+ diverse avatars, and type your text.
Synthesia is a synthetic media generation company that develops software used to create AI generated video content. It is based in London, England.

122

February 19, 2023
Do 4c. Generate images and have students draft stories
DALL·E: An "Intelligent" Illustrator for your Language Classroom
https://fltmag.com/dall%c2%b7e/

- **Ask DALL-E to generate culturally-specific images** and then have students research and explain why the image does or does not fit the reality in the context of the target culture.
- **Ask DALL-E to generate images based on idioms or proverbs** as part of a lesson on them.
- **Have students give prompts** to DALL-E and then revise the prompts, analyzing why one prompt may have worked better than another or given a different result.

123

February 4, 2023
Do 4d. Create Class Glossaries
ChatGPT for language learning – All the prompts you need
Theodosis Karageorgakis, Educraft
https://educraft.tech/chatgpt-in-the-language-learning/

Glossaries

We could also ask ChatGPT to generate a glossary for the online course.
Let's build up on the previous prompt.

Now, I want you to create a glossary of the 10 most common phrases taxi drivers need. Use simple language (A1 level) to explain the various phrases.

124

Poll: Which pedagogical model or framework do you prefer?

- **a. TEC-VARIETY**
- **b. R2D2**
- **c. Neither**
- **d. Both**
- **e. I will try to create some unique combo of the two.**

125

Poll: How many ideas did you get from this talk now?

1. **0 if I am lucky.**
2. **Just 1.**
3. **2, yes, 2...just 2!**
4. **Do I hear 3? 3!!!!**
5. **4-5.**
6. **5-10.**
7. **More than 10.**

126

Chat Window Sharing:
Three Words from this Session…?
e.g., "I am happy!" and…
"minions are happy!"

127

We are entering a jumping off point…

128

Remember…
"I cannot do this alone."
"I cannot do this alone."
"I cannot do this alone."
"I cannot do this alone."

I can't do this alone.

129

Any Questions or Comments?
Slides at: TrainingShare.com (go to "Archived Talks)
Papers: PublicationShare.com
Free book: http://tec-variety.com/
Free Course: https://colcommons.org/welcome/coursedetails/8
Curtis J. Bonk, IST Professor, Indiana University
Email: cjbonk@indiana.edu; http://curtbonk.com/

Free!   Free!   Free!   Not Free!

130