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Bloom's Taxonomy "Apply" Level and Generative AI

The proliferation of Generative Artificial Intelligence (GAI) tools is reshaping how the world approaches nearly every task, with changes likely to accelerate as these tools become more diverse and powerful. Rightfully, academics are questioning how to most productively deal with the changing technological landscape in higher education. Beyond worries about academic integrity and whether the work students submit is their own, there are legitimate questions about what learning is still foundational to the tasks required of humans in the workplace, and what would be better outsourced and automated. The following breakdown of GAI and Human Skills associated with Bloom's "Application" level of learning, and possible means of both assessing student learning and incorporating GAI into assignments may provide insight into how to your course should change in the GAI era. Please remember that Microsoft Copilot in the Edge Browser is the only approved GAI tool on our campus.

Application

This level of Bloom's taxonomy is associated with using knowledge and understanding in novel situations. It inherently involves problem solving, recognition of when, where, why, and how to employ methods and ideas, and demonstrating the use of concepts in real-world scenarios.

GAI tools that are trained with specific processes and procedures can apply them to new data or contexts. However, it requires data and predictability, and is not good at intuitive leaps or engaging in creative problem-solving.

Humans are much more adept at solving unfamiliar. We can recognize when to apply specific methods and ideas, and when those methods or ideas are not working or are not sufficient for a given problem. Being able to solve problems that do not conform to training parameters is a more uniquely human skill.

Action Words	**Assessment Techniques and GAI Cheat Potential :1 (hard) -5 (easy)**	**GAI-Integrated Assignments**
Apply, Demonstrate, Solve, Use, Implement, Execute, Solve, Draw, Instruct, Interview, Prepare, Produce, Relate, Show, Solve, Change, Act, Determine, etc.	• **Problem-solving tasks**: Assign tasks that require students to apply learned concepts to solve problems. This could be mathematic problems, scientific problems, or real world-scenarios. GAI-Cheating Potential: 1 if it occurs under supervision. 5 if take-home. GAI is particularly good at solving-well-defined problems. • **Role-playing exercises**. Have students participate in role-playing exercises in which they apply their knowledge in a simulated real-world scenario. GAI-Cheating Potential: 2. GAI can provide information and suggestions *a priori*, it cannot participate in the role-playing, and it cannot respond to contextual nuances. • **Project-based assignments**. Assign projects that require students to apply what they've learned to create something new, such as a model, a research paper, or a presentation. GAI-Cheating Potential: 3.5 AI can gather information and structure the project, but specific application of knowledge and creativity are driven by the student. • **Experiments**. In a controlled setting, have students conduct experiments that require the application of learned theories or concepts. GAI-Cheating Potential: depends on how much out of class preparation students are allowed. If none, 1. If some prep time is allowed, 2. GAI can provide guidance on how to approach the experiment, but conducting the experiment requires hands-on work.	• **Problem Solving Exercises.** Students can prompt GAI to generate a variety of problems related to the course content, then apply their knowledge to solve these problems. This can expose students to a wider variety of problem types than an instructor may be able to. • **Simulations**. GAI can generate simulations of real-world scenarios related to course content. Students can apply their knowledge in these simulated environments to improve upon the initial work of the GAI, submitting a list of prompts and modifications as well as outputs. This involves critical thinking on the part of the student, assessment of GAI output, and furthering understanding. • **GAI assisted project assignments**. Allowing students to use GAI in producing a project can elevate their overall performance in the assignment. Consider constructing the assignment so that students keep a record of prompts and responses, and to appropriately cite how the GAI was used. You may limit GAI use to the brainstorming or drafting stages, or as a final check of writing.

References and Reading

Anderson, L. W. and Krathwohl, D. R., et al (Eds..) (2001) *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Allyn & Bacon. Boston, MA (Pearson Education Group)

Bowen J.A., and C. E. Watson. 2024 *Teaching with AI*. Johns Hopkins University Press, Baltimore

Jackson, N. 2023. Using Bloom's to Decipher AI's Effect on Education. Linkedin.com.

Moffet, E. 2023. Advancing Meaningful Learning in the Age of AI: How Oregon State ECampus revisited Bloom's Taxonomy to help educators navigate the increasing prevalence of AI tools. Oregon State University ECampus News.

Saraf, V. 2023. What Bloom's Taxonomy Can Teach Us About AI. GettingSmart.com.