Designing Online and Hybrid Course Strategies to Engage Students Through Learning Outcome–Focused Activities

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Abstract

Assessing and ensuring meaningful student learning in online and hybrid courses has become increasingly complex with the proliferation of digital resources and generative AI tools. Traditional approaches to grading homework or monitoring resource use often shift attention away from deeper learning and toward grade anxiety or superficial compliance. This paper proposes a structured course design strategy that redirects students' focus to key learning outcomes while actively engaging them in the process of knowledge construction. The strategy integrates multiple components—ungraded but required homework, team-based solution presentations, guided peer reviews, unit assessments, research projects, and an in-person final test—each carefully aligned to emphasize conceptual understanding over rote completion. Homework assignments are structured to stimulate problem-solving and critical thinking without the pressure of grades, while rotating team presentations and peer evaluations foster accountability, collaboration, and deeper engagement with core concepts. Unit assessments provide formative checks on comprehension, and team-based research projects extend learning beyond the classroom through exploration of key papers and structured peer discussions. The culminating in-person exam ensures individual accountability and synthesis of learning across the course. By emphasizing reflection, peer feedback, and active participation, the proposed design strategy encourages students to prioritize comprehension of fundamental concepts rather than reliance on external tools. The framework demonstrates how online and hybrid courses can be structured to balance flexibility with rigor, ultimately creating a more meaningful, outcome-focused learning experience.

Keywords: assessments, learning outcome, online course, in-person hybrid

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Introduction

The rapid growth of online and hybrid learning has created both opportunities and challenges for higher education. While these modalities provide flexibility and accessibility, they also introduce new concerns regarding student engagement and authentic learning. With the increasing availability of generative AI tools such as ChatGPT, Copilot, and Claude, as well as a wealth of online resources, ensuring that students are not merely outsourcing their assignments but instead mastering essential concepts has become a critical issue. Traditional approaches to assessment—focused heavily on homework grades or strict monitoring—often shift students' priorities toward grades and compliance, rather than genuine understanding.

This paper presents a course design strategy that reframes assessment and engagement by directing students' attention to important learning outcomes. Rather than policing the use of external resources, the proposed strategy emphasizes concept mastery, active participation, and collaborative learning. The design consists of several interrelated components: homework assignments, team solution presentations, peer reviews, unit assessments, research projects, and a culminating in-person test. Together, these components create a system that balances flexibility with rigor and fosters deeper student engagement.

Homework Assignments

Homework plays a foundational role in reinforcing course concepts. However, instead of assigning grades to each homework problem, this strategy treats homework as a low-stakes but required learning exercise. Students are expected to complete and submit their work, but credit is tied not to correctness, but to participation in subsequent learning activities.

This approach lowers student anxiety about being "right" and reduces incentives to rely solely on external resources. The primary purpose of homework becomes self-reflection, practice, and preparation for team-based presentations. Students are encouraged to attempt problems thoughtfully, knowing they will have opportunities to discuss and refine their understanding with peers.

Team Solution Presentations

For each homework assignment, student teams are randomly formed and assigned to present solutions to the class. These presentations serve multiple functions: encouraging collaboration, requiring students to articulate reasoning, and fostering accountability. Teams are guided by clear expectations—each member must be familiar with the problems, able to contribute to the presentation, and prepared to answer peer and instructor questions.

Presentations are followed by structured class discussions. The instructor moderates, clarifies misconceptions, and encourages peer engagement. Afterward, teams revise their solutions based on feedback and submit a final version for the class repository. This iterative process reinforces key concepts, builds communication skills, and promotes shared ownership of learning.

Peer Review of Presentations

Peer review is a critical mechanism for ensuring active participation and deep reflection. During presentations, all students complete a structured peer review questionnaire designed to

highlight essential learning outcomes for the topic at hand. Unlike generic feedback forms, these peer review instruments are tailored to the specific concepts being taught and emphasize clarity, problem-solving, and conceptual depth.

The peer review process also teaches students how to critically evaluate both content and delivery. Results are compiled and shared with presenting teams, who use them to strengthen their final submissions. In this way, peer review promotes a feedback-rich learning environment while simultaneously reinforcing the intended outcomes of each lesson.

Unit Assessments

After completing a unit that includes lectures, homework, presentations, and peer reviews, students take a focused assessment. These assessments emphasize comprehension and conceptual mastery, rather than advanced problem solving. They are timed and limited to a single attempt, ensuring that students take preparation seriously.

By aligning assessments with learning outcomes, this component provides checkpoints for both students and instructors. It also reduces overreliance on external resources, as the design ensures that success depends on prior participation and engagement in course activities.

Research Projects and Presentations

To extend learning beyond the classroom, students participate in research projects that connect course concepts to real-world applications. Teams select a topic from a curated list, research a key paper, and prepare a multimedia presentation. Requirements include background explanation, analysis of methods and experiments, and facilitation of class discussion.

Along with the presentation, teams submit multiple-choice questions designed to assess peers' comprehension of their topic. This reinforces responsibility for teaching and learning as a shared endeavor. By engaging with cutting-edge research, students gain exposure to the broader field while strengthening presentation and collaboration skills.

In-Person Test

To balance the collaborative and online elements of the course, the design concludes with an in-person exam. This exam integrates problem-solving and essay-style questions, ensuring that each student demonstrates individual mastery of core concepts. Unlike other components, this test emphasizes independence, synthesis, and accountability.

Results and Observations

The performance results from implementing this approach in a senior-level computer science class of 60 students indicate that, overall, students prefer and perform better when they have access to online resources. Table 1 presents the average grades for each class component that contributed to the overall final performance. The individual assessment and in-person test result are shown in Figure 1.

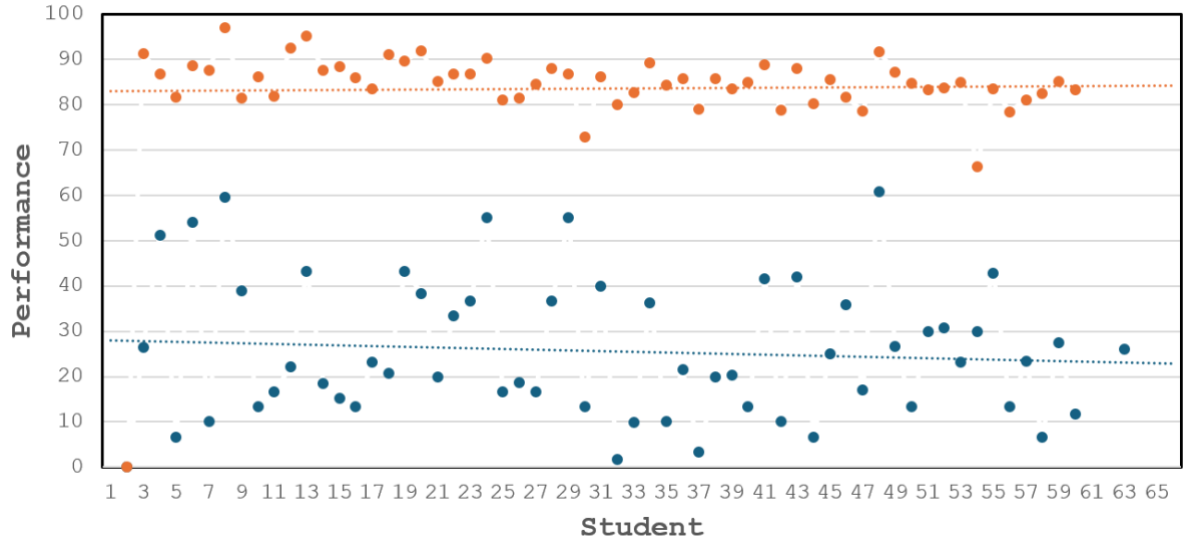
Table 1

Average Grades for Each Class Component Assessment

Course work component	Homework solution presentation (Teamwork)	HW peer reviews (Individual)	Unit assessments (Individual)	Lab assignments (Individual)	Research Presentation (Teamwork)	Research Peer Reviews (Individual)	In-person Test (Individual)
Average grade	99.5%	93%	94%	89%	93%	97%	26%

Figure 1

The Individual Assessment and In-Person Test Result



Conclusion

This course design strategy offers a holistic approach to addressing the challenges of online and hybrid education. By reducing emphasis on rote grading and redirecting attention to meaningful engagement, it encourages students to internalize key concepts rather than rely on external tools. The integrated components—ungraded homework, team presentations, peer reviews, unit assessments, research projects, and an in-person exam—work together to create a rich, outcome-focused learning environment.

Ultimately, this approach reframes assessment as an opportunity for growth and engagement, rather than a mechanism of control. In doing so, it provides a model for how online and hybrid courses can balance flexibility with rigor while preparing students for deeper learning and long-term success.