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AI-Facilitated Critical Thinking in an Undergraduate Project-Based Service-Learning Course

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The paper examines incorporating AI as a pedagogical approach to enhance students' critical thinking skills in a project-based service-learning course in international business. The literature reviews (1) service-learning in pedagogy to increase student learning, community-minded behavior, and personal reflection; (2) Bloom's Taxonomy as an assessment guide for higher order skills mastery; and, (3) Artificial Intelligence (AI) as a tool for developing enhanced critical thinking skills. An international business course is deconstructed and examined for lower and higher order skills usage, then reconfigured incorporating AI use in lower and higher order skills. The author concludes with recommendations for the use of AI in core level business courses as a method for increasing student engagement and critical thinking skills.

Artificial Intelligence (AI) is an important addition to pedagogy in academic disciplines; however, there has been resistance to the use of programs such as ChatGPT as universities restructure policies related to originality in writing and thought. The potential societal benefits and financial costs of AI have been touted and debated in public and corporate realms in recent years. OpenAI, the firm that developed ChatGPT, faced a legal threat from one of its founders, Elon Musk, for allegedly straying from its mission "to ensure AGI benefits all of humanity" by creating a for-profit model. (OpenAI, n.d.). Musk's attorneys withdrew the legal claim, although it may be reopened. (da Silva, 2024).

Universities have stood both at the front lines and in the fearful shadows of AI for some time, embracing the benefits for data analytics, yet keeping open education resources (OERs) at arm's length, despite the promise of collaborative learning and teaching. Similarly, many educators will recall the structured syllabus note that cautioned students about citing Wikipedia in a research paper, while acknowledging its prevalent use by students for a first look at unfamiliar information (Bayliss, 2013). Mesenguer-Artola et al. (2020) found that Wikipedia in conjunction with conventional methods of learning has positive perceived value, despite the reticence of academics to allow its use. Students, they found, considered Wikipedia reliable and comprehensive, particularly when multiple media sources were required to supplement learning.

Gray (2020) concedes the potential for AI to have profound impacts on education and the future of work, while educational institutions raise questions about accountability, trust, and fairness. Universities have found themselves lagging in faculty development on the topic of AI, and playing "catch-up" to connect graduate outcomes with industry expectations. Mearian (2024) highlights the concerns raised among global institutions about AI's potential negative outcomes on data privacy, the digital divide, job elimination, an unprepared workforce, and ethical challenges. Concern about the quality of AI's generative capability, accuracy, and depth of knowledge has driven much current research, justified by academic intent to use the best possible versions of generative AI tools. One such study by Raman et al. (2024) examines ChatGPT's literacy of the U.N. Sustainable Goals across three competency levels, and recommends enhanced competencies. Such specific investigation benefits universities whose accrediting bodies encourage societal impact focused on the measurement of the U.N. Sustainable Goals in curriculum.

The Chronicle of Higher Education (Caplan et al., 2023) polled twelve scholars and administrators about AI's potential to transform educational processes from admissions to academics, and opinions ranged from an assurance that universities will not close as a result of AI to the need for careful planning due to education disruptions. Academic thought leaders suggested that classrooms must become more deliberate and open to experience; academics must prepare for a fundamental shift in research; universities will become more efficient as AI helps control costs; education will be revitalized; and the gap between information transfer and knowledge production will grow. The researcher's university published a statement regarding the use of Artificial Intelligence, having sought faculty guidance regarding the use of AI in the classroom and the integration of AI with the university's originality software contract (Turnitin.com). In fall 2023, the university syllabus included the following statement:

> *[The university] supports and engages in scholarship and creative activities that advance knowledge and encourage students to utilize their skills, talents, and abilities as they pursue meaningful careers, lifelong learning, and service to God and others [University Mission Statement]. While we acknowledge the benefits and opportunities that Artificial Intelligence (AI) affords the learning community, we recognize the need and responsibility of students to learn and synthesize information individually. We also recognize the inherent risks the use of AI presents to cognitive development,*

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academic integrity, and data security. Therefore, where AI use is allowed in the academic setting, its use should be documented appropriately. (Mississippi College, n.d.)

The policy does not restrict the use of AI instructional methods, but requires appropriate documentation through the course syllabus, implying that its use should be supportive of the course objectives and, as such, measurable. This paper examines the deconstruction of a course-integrated service-learning project to incorporate AI and increase student achievement of higher-level goals.

Literature Review

Service-learning

Service-learning is a pedagogical approach designed to increase student learning through active service with a community partner, personal reflection, and skill application. Bringle and Hatcher (1996) define service-learning as an educational experience in which students participate in an organized service-learning activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility.

Eyler and Giles (1999) support the positive impacts that service-learning has on academic learning, with students self-reporting the following outcomes:

- Deeper understanding of course material
- Improved ability to apply material they learn in class to real problems
- Motivation to work harder
- Increased connection to the college experience through stronger ties to students and faculty
- Improved leadership skills
- Reduction in negative stereotypes and an increase in tolerance for diversity
- Deeper understanding of the complexity of social issues
- Increased sense of connection to the community
- Greater self-knowledge

Bringle and Hatcher (1996) note ten (10) types of activities for stakeholder groups in service-learning, broadly arranged as:

1. Planning
2. Awareness
3. Prototype
4. Resources
5. Expansion
6. Recognition
7. Monitoring
8. Evaluation
9. Research
10. Institutionalization.

The list serves as an organizational guideline for educational institutions developing service-learning programs with the goal of creating an organizational culture that embodies, sustains, and perpetuates service-learning among the four stakeholder groups: institution, faculty, students, and community. Berry and Workman (2007) ascribe community as a description for both the client (community partner) and the community at large, and note the value of service-learning as contributing to higher level learning.

Professors using SL pedagogy expect effort from their students that goes beyond classroom academic rigor, critical thinking, and reflection, to additionally include meeting a community need. Expected student outcomes include superior learning of core course material because of increased interest and engagement, and increased understanding of individual and corporate civic responsibility toward a multitude of stakeholders. (p.23)

Because service-learning can take many forms, developing appropriate assessment of the student service-learning experience in conjunction with the course objectives is an essential component of service-learning, and it distinguishes courses that are designated as service-learning from those that encourage or require service and offer credit for task completion.

Bloom's Taxonomy

One common form of evaluation in service-learning courses is reflection, which is considered to be a mid-to higher level application in Bloom's Taxonomy of Educational Objectives (Bloom's Taxonomy, 2024). The six major categories of Bloom's Taxonomy are: Level 1, Knowledge; Level 2, Comprehension/Understanding; Level 3, Application; Level 4, Analysis; Level 5, Synthesis; and, Level 6, Evaluation. At Level 3, Application, students should be able to demonstrate, give examples, apply, construct, interpret, investigate, and use. At Level 4, Analysis, students can successfully compare, contracts, analyze, differentiate, inspect, question, relate, solve, and test. Level 5, Synthesis, is observed in students who can design, integrate, propose, formulate, organize, and synthesize. Level 6, Evaluation, is achieved when students can assess, estimate, evaluate, choose, compare, contrast, decide, grade, judge, measure, rate, revise, score, select, value, and weigh.

The framework was revised in 2001 to create a more dynamic model: Level 1, Remember; Level 2, Understand; Level 3, Apply; Level 4, Analyze; Level 5, Evaluate; and, Level 6, Create. While the fundamental descriptions are translatable between both versions of the framework, the language of the revision is provided. Students achieving Level 1 (Remember) mastery should be able to recall facts and basic concepts. Mastery of Level 2 (Understand) is determined by one's ability to explain ideas or concepts. At Level 3 (Apply), students will be able to use information in new situations. Level 4 (Analyze) mastery is indicated by the ability to draw connections among ideas. At Level 5 (Evaluate), mastery is shown through the justification of a stand or decision.

Level 6 (Create) is achieved when a new or original work can be produced.

Eber and Parker (2007) point out that much classroom instruction occurs at the lower levels of student cognition as ordered in Bloom's Taxonomy, with concern about developing assessments that adequately measure achievement of the levels. Using Bloom's language as indicative of the level of instruction or activity can lead to a natural progression of assessment. They support the use of instructional feedback and rubrics to benefit students' understanding of learning measures.

Artificial Intelligence (AI)

The researcher opened a chatbot on 6/14/2024, and asked ChatGPT to describe the types of artificial intelligence and the capabilities of ChatGPT. It answered with the following (in under 20 seconds):

Artificial Intelligence (AI) can generally be categorized into three main types based on their capabilities and functionalities:

1. Narrow AI (Weak AI): This type of AI is designed and trained for a specific task or set of tasks. It excels in performing particular functions within a limited domain. Examples include virtual assistants like Siri or Alexa, recommendation systems like those used by streaming services, and chatbots like customer service bots. Narrow AI systems are proficient at their designated tasks but lack general intelligence and the ability to understand context beyond their programmed scope.
2. General AI (Strong AI): General AI refers to AI systems that possess human-level intelligence and can understand, learn, and apply knowledge across diverse domains, similar to how humans do. These systems would have the ability to reason, plan, understand natural language, perceive their environment, and perform a wide range of tasks at a human level or beyond. General AI remains largely theoretical and is yet to be achieved. Creating a truly general AI would require significant advancements in AI research and technology.
3. Superintelligent AI: Superintelligent AI surpasses human intelligence in virtually every aspect. It would possess cognitive abilities far beyond those of the smartest humans and could potentially outperform humans in every intellectual task, including scientific research, technological innovation, and problem-solving. Superintelligent AI is often a subject of speculation and debate, as its development raises profound ethical, societal, and existential questions about its impact on humanity.

As for ChatGPT, it falls under the category of Narrow AI. While it excels in understanding and generating human-like text based on the input it receives, its capabilities are limited to natural language processing and generation within the context of the vast amount of text it has been trained on. ChatGPT can engage in conversations, provide information, assist with tasks, and even exhibit some level of contextual understanding, but it lacks the general intelligence and self-awareness characteristic of General AI or the hypothetical capabilities of Superintelligent AI. (OpenAI, n.d.)

While debate remains regarding the appropriate use of AI, it is a proven powerful tool for academics. Additional studies have examined the use of chatbots in conjunction with Bloom's Taxonomy to increase student learning. Hultberg et al. (2024) acknowledge that the use of new technologies is necessary to increase student engagement and learning. Their study supports that AI can improve engagement, personalize learning, and provide instant feedback and assessment, while simulating real-world scenarios and helping students to overcome barriers to learning. Using Bloom's Taxonomy as one reference, Wu et al. (2023) develop a strategic decision-making framework for AI and machine-learning (ML) to develop higher -level learning in AI, with assessment and gap analysis of previous scholarly decision frames, noting the uncertainties for future decision frames. Mustafidah et al. (2022) review the Revised Bloom's Taxonomy and natural language processing using AI to determine the levels of cognition in student testing, expressing that "a good and correct, valid, and reliable learning assessment will reveal the level of achievement and actual learning conditions."

Other researchers have acknowledged the capabilities of AI in solving lower level learning activities, including Thanh et al. (202*), who acknowledge criticisms of Bloom's Taxonomy regarding its applicability across disciplines. Jaiswal & Arun (2021) examine the potential for AI-enhanced learning in India's education system with the goal of producing graduates who have skills related to "critical thinking, leadership, communication, and teamwork" as these are competencies demanded post-graduation. Furthermore, Jin et al. (2023) support the use of AI to complement self-regulated learning strategies. While their research reviewed techniques using AI to increase engagement among online learners, the concepts of motivation and effect, self-evaluation, and self-satisfaction are applicable in service-learning using AI-facilitated research. Baskoro et al. (2023) caution those who would use AI to improve students' critical thinking (CT) skills, stating that the tool can be misused, particularly if AI is used to replace exploration, suggesting students' creativity and criticality might be lessened.

Course Overview

The researcher is a tenured professor in their university's school of business in a southern state of the U.S. The school is AACSB-accredited and enrolls approximately 12% of the university's students in its graduate and undergraduate programs. The professor's teaching requirement includes both the graduate level international business leadership courses and the core survey of international business course, the latter of which is required for all students in the school's five undergraduate majors. This paper focuses on the revision of the undergraduate course, Global Dimensions of Business, to utilize AI to enhance student critical thinking.

As a 300-level, service-learning course, Global Dimensions of Business is offered in two sections during each of the fall and spring semesters. Junior-level students (60-89 semester hours) comprise the majority of those enrolled; however, the course has no pre-requisites, and it is not uncommon for sophomore-level students (30-59 semester hours), senior-level students (90 or more semester hours), and even freshman-level students (29 or fewer semester hours) to be enrolled. Ideally, students will have already taken macro and micro economics, finance, management, and marketing prior to enrolling in Global Dimensions of Business. However, the class routinely has students co-enrolled in those courses. Total annual enrollment across all sections of the course is approximately 125 students, averaging 57.3% in-state, 31.9% out-of-state, and, 10.6% international. Along the broad binary of masculine and feminine, some 43.4% of students historically identified as female; while the remainder identified as male.

To provide a meaningful experiential-learning environment for the range of students and to help reinforce the learning objectives, the professor developed a community partner relationship with a state development authority division whose primary role is promoting business exports, inward foreign direct investment, and the STEP Grant program (Small Business Administration, n.d.). The division consists of a director, the STEP Grant coordinator, several trade specialists, and several investment agents. Trade and investment focus areas include the top sectors (and related emerging clusters) in the state's recruitment focus: advanced manufacturing; aerospace and defense, agriculture, food, and beverage; automotive; distribution and logistics; and, forestry, energy, and chemicals. Industries in these sectors are dispersed throughout the state. (Mississippi Development Authority, n.d.). One advantage of this project-based service-learning course is its relatability for all students. While they are working with a state-specific agency, students must identify their own state, local province, district, or nation-state economic development agency for reference in their future work. Representatives of the community partner visit the class sections at least once during each semester and provide an overview of the agency and their roles, a detailed description of the relationship of international business to the state, and information about internships and employment opportunities.

Students in each section of the course self-select into teams of 4-5 individuals. As a team, the students choose one country to research during the term from among a list of available countries (those that have not been researched recently or countries that have had a significant change in trade circumstances), with the end goal to produce a business development briefing for in-state businesses seeking export partners, markets for their products and services, and potential locations for foreign direct investment. Students are encouraged to develop a creative team name, think critically, make recommendations based on their research, and work as a team with each member taking a leadership role across the semester. The project is detailed in a template, provided to each team through Google docs. Teams work on sections of the project in the shared drive with completed sections due along a timeline of every 2-4 weeks. Reliable sources of information are provided in the template, and the topics for each section coincide with material covered in the text and in class for that time period. The professor reviews and critiques project submissions and recommends edits immediately following submission. Class time is provided in the university's library or a collaboration-friendly classroom for student review and editing of each submission. The professor acts as a consultant to the teams during these edit sessions.

Following the submission of each project component, students complete an individual reflection assignment of between 200-300 words using a series of prompt questions focused on the team's time management, leadership, and collaboration as well as the individual's assessment of self, their contribution, and plans for future action. At the end of the semester, prior to the final exam, students formally present their project recommendations in a recorded presentation that can be forwarded to the community partner. The full, edited business development briefing for each team is also linked to the partner. They can use the reports to forward to small businesses who are traveling as part of the STEP program or need more information about prospective partner countries. The recommendation portion often provides the community partner with fresh perspectives and ideas without the risk or cost of a partner/client product.

Integrating Course Improvements

The professor reviews and alters the project template every semester to address changes in the global environment, partner needs, and student capacity. For example, post-pandemic projects have included an overview of the country's recovery efforts, migration, food insecurity, and a quick assessment of supply chain issues. The inclusion of more class time to work on the project resulted from post-pandemic observations and reflections indicating that students were struggling to connect with each other face-to-face, coupled with an increase in the percentage of students holding jobs outside of campus life. The service-learning partner is consulted more frequently for their needs so the resulting project is valuable to the partner and meaningful to the students. Additional trade-related practitioners visit class to help students engage and understand the impact of trade. Because the project is edited throughout the semester, most teams are able to produce a well-developed briefing that can be used as a portfolio example. Students are provided with suggested language to describe the project in their resumes. Still, keeping the assignment's tasks relevant in an AI-supportive economy is important as students develop their own understanding of the benefits and challenges of AI, while enhancing their critical thinking skills.

During spring 2023, students were given the option of using a specific AI program, OpenAI's ChatGPT, following its public deployment (Introducing ChatGPT, 2022). A university Writing Center representative visited both

sections to encourage student use of the tool, and the professor identified objectives related to the project research that were essential for the course's midterm and final exam. Outcomes of the trial were mixed. Three student teams chose to use ChatGPT for the research portions of their project. One team expressed gratitude for the opportunity due to constraints on their time as athletes, while members of another team expressed fear of not meeting the class objectives by using ChatGPT. That team abandoned their use of the tool by the second segment submission. The third team using ChatGPT remarked that it was easier to gather information and its use gave them more time for other class activities. GPAs of incoming students were not compared prior to the use of the tool, but midterm and final exam scores were compared as they are indicative of mastery of course material. Midterm exam scores for students who used ChatGPT for the first two segments of the project averaged 9 points below those of other students in the course. Final exam scores were approximately 14 points below the average in the course. These results indicated the tool has value to students, but its use bypassed activities deemed necessary for learning course material.

Students in the following two semesters were not offered the opportunity to use ChatGPT for their project, not because the resource is faulty but because adjustments were needed to the course to (1) reconfigure how objectives are met; (2) improve expertise with using ChatGPT in support of course objectives and critical thinking skills; and, (3) develop appropriate assessments.

Deconstructing and Reconstructing the Course

The course contains a balanced mix of lower and higher -level learning objectives. A pre-test and a post-test are administered through the textbook software as required assignments. The students are encouraged to complete the pretest as a measure of beginning knowledge. The post-test, while required for participation credit, results in full credit for completion. A small incentive (extra credit) is offered to students whose post-test score exceeds 65%, to discourage inattentive completion. The mid-term and final exams are the better assessments to judge attainment of the learning goals. The course requires completion of weekly class preparation (SmartBook) activities and participation. Both are graded weekly.

A comparison of the course content, its objectives, and the components of the project revealed a reliance on the research to help students with Level 1 learning activities such as: find, identify, label, list, know, and select. As the project progresses, Level 2 learning activities require examples, description, determination, discussing, explaining, interpreting, and summarizing. In both of the first two submissions, students are required to give information in their own words, summarize, and paraphrase. By the time the third submission is made (near the mid-point of the course), students are required to make use of information gathered, give generalized information based on their research, begin to plan a team-created evaluation, draw conclusions and infer. The practice of consistent individual reflection between team submissions reinforces Level 3 skills in assessment of self and others. Historically, 12% - 15% of teams produce projects that indicate learning at Level 5 (design, integrate, propose, formulate, organize, and synthesize), while a similar percentage remain in the Level 1 – Level 2 skills indication, struggling with decisions based on the learning. The remaining teams show ability to demonstrate, apply, and construct, based on their research. Teams whose projects show less integration of their research material toward a creative recommendation are often those whose time is more limited due to one or more working members of the team, members involved in club and sport activities, and lesser developed team dynamics (miscommunication, not knowing each other, lack of trust, or not having well-developed time management skills).

Over spring and summer 2024, the service-learning project was redesigned to require the use of ChatGPT as a research tool for the descriptive portions of the project, with introduction of the revised syllabus scheduled for fall 2024. The APA advice for describing the use of ChatGPT is provided as well as examples of citations and references to ChatGPT in APA format. Certain parts of the project require specific and timely information, and students are advised that they will be required to supplement information from ChatGPT with other reliable sources for more current or discrete information. Under the revised project students use ChatGPT to create sections of the project previously set aside for student research and writing. With each section a critical thinking application is added to the work to assure students have synthesized the information both individually and collectively. Table 1 (Topics and Tasks) illustrates the topical information collected by students, tasks to be accomplished, and the week the activity occurs or the assignment is due (based on a 15-week term). Specific weeks are established for guest speakers (GSs) and subject matter experts (SMEs). While not listed in the table, all class meeting times include discussion. Table 2 (Revision and Decision) reports the Bloom's Taxonomy assessment levels indicated in the original project and the revision, and the critical thinking application assigned for each section. Table 3 (Assignments, Activities, and Assessments) illustrates assignments, activities, assessments, and value to GPA in the revised course.

Discussion and Future Research

The application of AI in the service-learning course creates a more uniform product for the community partner, while engaging students in higher level learning. This is expected to have a number of outcomes related to the objectives of the course, supporting the positive impacts of service-learning noted by Eyler and Giles (1999) related to learning, application, motivation, connectedness, leadership, tolerance, and self-knowledge. Among the faculty member's expected outcomes are: (1) improved team dynamics as students are better able to manage time related to the completion of lower-level skills; (2) better synthesis of applications and models that students use

Table 1

Topics and Tasks

Activity	Topics/Tasks	Week
Pretest	Comprehensive topics	1
SME	Student Success Speaker	1
SME	Writing success, ChatGPT, APA format, Writing Center	2
Project Submission 1	Visa requirements, migration, poverty, hunger, food insecurity, geography, factors of production, population, map, imports & exports - SWOT	3
Reflection 1	Self, team, content mastery, process improvements	3
SME	Service-learning community partner	4
Project Submission 2	Political system, economic system, legal system, contract law, property rights, transnational issues, intellectual property protection, product safety & liability laws - TOWS	5
Reflection 2	Self, team, content mastery, process improvements	5
SME	Practitioner/Business Speaker	6
Project Submission 3	Economic development, economic measures: GDP, GNP, PPP, Gini Index, income distribution, HDI, innovation & entrepreneurship. Culture: values, norms, folkways, protocol, religion, education, Hofstede's Dimensions. – Industry Assessment	7
Reflection 3	Self, team, content mastery, process improvements	7
Midterm exam	Review and examination	8
Project Submission 4	Ethics: CSR, UN Sustainable Goals, employment practices, human rights, corruption, punishment for ethical violations; trade agreements & trade barriers, FDI, ease of entry – Country Assessment	10
Reflection 4	Self, team, content mastery, process improvement	10
SME	Practitioner/Business owner	11
Project Submission 5	Monetary considerations, foreign exchange, export assistance, supply chain, market decisions – Country Attractiveness Model	13
Reflection 5	Self, service, impact, engagement	13
Posttest	Comprehensive topics	14
Presentation	Team recommendation presentation	14
Final Exam	Comprehensive topics	15

Table 2

Revision and Decision

Sections	Bloom's, Original	Bloom's, Revision	Decision Exercise -Student Team
1	L1, L2	L1, L2, L3, L4	SWOT Analysis
2	L1, L2, L3	L1, L2, L3, L4	TOWS Matrix
3	L1, L2, L3	L1, L2, L3, L4, L5	Industry Assessment
4	L1, L2, L3	L1, L2, L3, L4, L5, L6	Country Assessment
5	L1, L2, L3, L4	L1, L2, L3, L4, L5, L6	Country Attractiveness Model

across the business curriculum; (3) more and better decision options for the service-learning partner; (4) higher student retention of course content; (5) greater integration of theoretical knowledge with practical skills; and, (6) graduates able to perform at higher levels in the workforce.

More research is needed to examine several areas related to the understanding and application of generative artificial intelligence tools in business courses that instruct in communication, management and leadership, research, and critical thinking. Among the lines of future research are:

1) the relationship between service-learning partner expectations and student outcomes associated with the application of AI;
2) the perceived student value of AI as a research tool

Table 3

Assignments, Activities, and Assessments

	Activity	Assessment	GPA %
Pre-Test		Individual score	.00
Project, Section 1	SWOT Analysis Exercise	Team score/rubric	.03
	Research Section Complete	Team score/rubric	.02
	Individual Reflection	Individual score/rubric	.02
Project, Section 2	TOWS Matrix	Team score/rubric	.03
	Research Section Complete	Team score/rubric	.02
	Individual Reflection	Individual score/rubric	.02
Project, Section 3	Industry Assessment	Team score/rubric	.03
	Research Section Complete	Team score/rubric	.02
	Individual Reflection	Individual score/rubric	.02
Midterm Exam		Individual score	.15
Project, Section 4	Country Assessment	Team score/rubric	.03
	Research Section Complete	Team score/rubric	.02
	Individual Reflection	Individual score/rubric	.02
Project, Section 5	Country Attractiveness Model	Team score/rubric	.03
	Research Section Complete	Team score/rubric	.02
	Individual Reflection	Individual score/rubric	.02
	Team Presentation	Team score/rubric	.05
Posttest			.00
Final Exam			.20
SmartBook		Individual Score	.15
Participation	Includes class engagement and completion of assignments/activities	Individual score	.15
			1.00

versus AI as a learning tool;

3) the use of AI as a tool for inclusivity in diverse team decision-making;
4) the impact of AI's use on student engagement in project-driven courses; and,
5) the disclosure of AI as a research tool in portfolio development.

The paper has detailed the incorporation of AI as a pedagogical approach to enhance students' critical thinking skills in a project-based service-learning course in international business. The course learning activities were examined for their relationship to the learning levels in Bloom's Taxonomy. Information gathering tasks that met Level 1 and Level 2 learning goals in the taxonomy were reassigned as ChatGPT tasks, and higher-level learning assignments were configured with each of five project team submissions to further enhance students' practice of critical thinking in a decision-focused project.

Educators considering the use of AI as a research tool in project-based courses should (1) have a clear understanding of reliable sources of information; (2) consider the dynamic connection of curricular materials with the application to service-learning through a deliverable project or community need as identified by the community partner; (3) illustrate to students the relationship of course materials and assignments to the project and their career applications; (4) develop relevant activities that reinforce course objectives and teach new concepts; and (5) provide meaningful opportunities for students to reflect on their learning and processes with the goal of developing critical thinking skills.

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