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Impact of Student-Centered Learning Techniques on College Student Engagement and Outcomes

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ABSTRACT

This study examines whether student-centered learning (SCL) techniques enhance engagement and academic performance among college students. A quasi-experimental design was employed, involving two groups of students enrolled in the same course. The treatment group was exposed to a curriculum incorporating various SCL techniques, such as problem-based learning, collaborative group projects, class discussions, debates, flipped classroom activities, and student-led presentations. In contrast, the control group received traditional lecture-based instruction covering the same course content. Data were collected through pre-course and post-course surveys, continuous assessments, tests, and academic performance records. Percentage analysis and independent sample t-tests were used for data analysis. Findings revealed that, compared to the traditional lecture group, students in the SCL class demonstrated higher engagement, improved academic achievement, and greater motivation to learn. These results suggest that SCL techniques are a valuable approach for educators to enhance student learning outcomes.

1. Introduction

College education is undergoing a significant transformation as institutions shift from traditional lecture-based instruction to Student-Centered Learning (SCL). Traditional methods often limit student engagement to less than 5% of classroom time, whereas SCL emphasizes active participation, critical thinking, and collaborative learning. This pedagogical shift positions students not as passive recipients of knowledge, but as active constructors of their own learning.

Research in contemporary education highlights that SCL techniques can significantly enhance student motivation, foster deeper engagement, and improve academic performance. These approaches accommodate diverse learning styles through varied instructional strategies, promote critical thinking through analytical activities, and build essential 21st-century skills such as digital literacy, communication, and collaborative problem-solving. The integration of technology and innovative assessment methods further strengthens SCL environments, creating dynamic learning ecosystems that adapt to students' needs in real time.

The present study investigates the comparative effectiveness of SCL techniques versus traditional lecture-based instruction in college-level economics education. Specifically, it examines whether implementing strategies such as collaborative debates, think-pair-share activities, digital content creation, and social media-enhanced learning leads to measurable improvements in academic achievement, student engagement, and overall satisfaction.

This research addresses several key questions:

- Do SCL techniques result in significantly higher academic achievement

compared to traditional teaching methods?

- How do students respond to technology-integrated learning approaches in terms of engagement and satisfaction?
- Which specific SCL strategies are most effective in developing critical thinking and communication skills within economics education?

By employing rigorous statistical analysis and comprehensive pre- and post-course assessments, the study aims to provide empirical evidence supporting the effectiveness of student-centered pedagogical approaches in higher education.

1.2 Review of Literature

Student-centered learning (SCL) has emerged as a transformative pedagogical approach, shifting the focus from instructor-led delivery to active student participation. Scholars increasingly recognise its positive influence on student engagement and academic success. According to Freeman et al. (2020), active learning strategies, particularly those that decentralise the teacher's role, lead to improved performance across STEM and social science disciplines. Building on this, a meta-analysis by Zhou and Lee (2021) found that techniques such as problem-based learning (PBL), flipped classrooms, and peer instruction significantly enhance not only cognitive outcomes but also students' intrinsic motivation and sense of ownership in learning.

Recent empirical studies continue to support these findings. For instance, Johnson et al. (2022) examined flipped classrooms in higher education and reported increased attendance, class participation, and higher-order thinking among students compared to those in traditional lectures. Similarly, Singh and Kumar (2023) investigated the impact of collaborative group projects in undergraduate economics courses, noting a 15% improvement in student performance

on conceptual assessments. The effectiveness of SCL techniques such as debates and student-led discussions has also been documented. Rahman and Subramanian (2021) found that structured academic debates encouraged deeper content engagement and critical thinking, particularly among students who were previously disengaged.

Moreover, SCL has shown promise in improving emotional and behavioural engagement. A study by Kim and Reeves (2024) using pre- and post-course surveys revealed that students in courses incorporating SCL methods reported higher satisfaction and self-efficacy. These students were more likely to report feeling “heard” and “valued” in the classroom environment. The alignment of SCL with constructivist theories of learning, where knowledge is co-constructed through interaction, further explains these positive trends (Brown, 2020).

Despite these advantages, implementation challenges exist. Faculty may resist transitioning from lecture-centric models due to time constraints and lack of training (Garcia & Al-Karim, 2022). Nevertheless, when supported institutionally, the use of blended methods—combining lectures with SCL strategies—has proven to be a feasible and effective compromise (Nguyen et al., 2021).

In summary, the growing body of literature supports the assertion that SCL techniques positively impact college student engagement and academic outcomes.

With evidence from diverse disciplines and settings, it is clear that integrating SCL into higher education is not just a pedagogical trend but a data-driven imperative for fostering meaningful learning.

1.3 Objectives of the Study

This study aims to achieve the following objectives:

1. To compare student engagement levels in a course utilising SCL techniques with a course using traditional lecture-based instruction.
2. To evaluate the academic performance of students enrolled in an SCL course compared to a traditional lecture course.
3. To analyse the impact of SCL techniques on student motivation to learn.

2. Materials and Methods

This study employed a quasi-experimental design. Two groups of college students enrolled in the same course participated. The experimental group (60 students from 2023-24 batch) received.

Instruction using a curriculum that incorporates various SCL techniques, such as problem-based learning activities, collaborative projects, class discussions, debates, flipped classroom approaches, and student-led presentations. The control group (60 students from 2019-20 batch) received the same course content delivered through traditional lecture-based instruction.

Data collection includes pre-course (Entry Behaviour Test) and post-course surveys (feedback) that assessed student engagement and motivation. Continuous assessments, tests, and final course grades were used to measure academic performance. By comparing data between the two groups, the study aimed to evaluate the effectiveness of SCL techniques in enhancing student engagement and academic outcomes. The collected data was represented in the form of tables for further analysis. Percentage analysis was used to analyse the student engagement and motivation. independent sample t test was conducted to investigate the effectiveness of student-centered learning.

(SCL) techniques. The null hypothesis (H₀) assumed no difference in average marks obtained by students between the control and experimental groups. The alternative

hypothesis (H1) proposed a significant difference.

3. Results and Discussions

The study involved a control group receiving traditional lecture-based instruction and an experimental group experiencing the chosen SCL techniques. A pre-course oral assessment was conducted for the control group. Students had one minute to introduce themselves in English and were evaluated using scores (max: 10 points) for confidence, time management, sentence structure, and grammar. The results showed an average level of public speaking skills, with 49 out of 60 students scoring between 4 and 6 (average).

Table 1. Pre-Course Oral Assessment Results (Control Group)

Performance Level	Number of Students	Percentage (%)
Below Average	11	18
Average	49	82
Total	60	100

However, 11 students scored lower (below average), highlighting areas for improvement in confidence, grammar, and sentence-making. A pre-course survey was conducted for the experimental group using SCL technique to gauge students' awareness on various topics.

Table 2. Pre-Course Survey Results (Experimental Group)

Survey Item	(%)	Description
Regular News Channel Viewers	75%	Students who regularly watch news

Social media Understanding & Usage	90%	Students who understand and use social media
Online Course Awareness	75%	Students aware of online courses
Online Learning Challenges Awareness	25%	Students familiar with online learning challenges

The survey (Table 2) found that a majority (75%) of the students regularly watch news channels. Additionally, a high proportion (90%) of the students understand the purpose of social media and are already users. Interestingly, 75% of the students were aware of online courses, but they were not yet familiar with the specific challenges associated with online learning for instance, lack of motivation, lesser attention span, too many distractions, lack of technology facilities, and health issues. These findings suggest that students come into the course with a strong foundation in news consumption and social media use but may need more support in understanding the challenges of online learning.

Specific SCL techniques were employed (Table 3) for teaching-learning for the experimental group of students based on the pre-course survey analysis, and the course content along with the learning objectives. The techniques included: A lively debate on news bias actively engaged students in critical analysis. By dissecting the potential biases within news sources, students learned to evaluate information more rigorously. This newfound skepticism is crucial for economics, where data interpretation and understanding different perspectives are essential skills. The debate likely sparked their curiosity to seek out diverse viewpoints

and question the underlying assumptions presented in economic news, making them

more informed and discerning consumers of economic information.

Table 3. SCL Techniques Implementation

SCL Technique	Activity Description	Primary Learning Outcome	Skills Developed
Debate Activity	News bias analysis and discussion	Critical thinking	Analysis, argumentation
Think-Pair-Share	Talk show discussion activity	Communication skills	Public speaking, confidence
ENVOY Method	Economics journal exploration	Research skills	Collaboration, presentation
Blog Creation	Economic concept blogging	Content creation	Writing, explanation
Social Collaborative Learning	WhatsApp status sharing	Social media engagement	Digital communication
Newsletter Creation	Economic news compilation	Information synthesis	Writing, summarization

Table 4. Teaching Method Comparison

Aspect	Control Group (Traditional)	Experimental Group (SCL)
Teaching Method	Lecture-based with PowerPoint	Student-centered activities
Student Engagement	5% of lessons	High engagement throughout
Assessment Type	Summative (exams, quizzes)	Formative (continuous)
Learning Style Accommodation	Limited	Diverse approaches
Real-time Feedback	Minimal	Continuous monitoring

A Think-Pair-Share activity on talk shows fostered communication skills by having students develop arguments (Think), practice explaining them to a partner (Pair), and then share with the class, boosting confidence and public speaking abilities (Share).

The ENVOY Method actively engaged students in finding the journals related to economics research. Divided into groups, they identified an e-journal, explored its

purpose, and discussed its relevance to their studies. A rotating leader system fostered collaboration as students

presented their findings to each other. Finally, random questioning by the teacher reinforced their understanding of the e-journals and key economic concepts.

Blog Creation activity: Students created blogs to learn and communicate better. Writing blog posts about economic ideas helped them

understand these concepts more deeply. It also made them better at explaining complex things in a clear and simple way – a skill that's important for success in economics and many other areas. Social Collaborative Learning: An innovative approach to teaching the power of social media to college students involved using WhatsApp status. The class focused on the topic of "Women in the 21st Century." Students actively participated by sharing their opinions as WhatsApp statuses. This fostered discussion and exchange of ideas as students saw and commented on each other's posts, mirroring real-world social media engagement. This SCL technique helped students understand the impact of social media on spreading awareness and sparking conversations on important issues. Creating a newsletter served a purpose beyond simply delivering news. It provided valuable learning experiences for the students. Firstly, by crafting clear explanations of economic concepts for the newsletter, students solidified their own

understanding of the material. Secondly, the act of communicating these ideas effectively refined their writing skills. Finally, the task offered practice in finding and summarizing important economic information. This multi-faceted activity ultimately contributed to a deeper grasp of economics, stronger communication skills, and sharper critical thinking—all essential tools for success in the field.

In contrast, the control group received traditional lecture-based instruction. This involved lectures using PowerPoint presentations, demonstrations by the facilitator, and group discussions on assigned topics.

followed by concluding presentations. While valuable for conveying information, traditional lectures had limited student engagement (only 5% of the lessons were taught by engaging students) and did not cater to diverse learning styles. Traditionally, lecture-based teaching often relied on

summative assessments like exams and formative assessments like descriptive tests and quizzes. These evaluations helped in understanding the student's final understanding of the material but missed the process of learning. In contrast, student-centered learning techniques incorporated formative assessments throughout the learning journey. Think-pair-share activities, blog creation, and debates provided instructors with real-time insights into student comprehension and areas that needed to be revisited. This allowed for adjustments during the course (Table 4), fostering a more dynamic and responsive learning environment.

An independent sample t-test was conducted to investigate the effectiveness of Student-Centered Learning (SCL) techniques. The null hypothesis (H_0) assumed no difference in average marks obtained by students between the control and experimental groups. The alternative hypothesis (H_1) proposed a significant difference. Since the P value is less than 0.05, null hypothesis is rejected.

Table 5. Statistical Analysis Results

Parameter	Value	Interpretation
Test Used	Independent Sample t-test	-
P-value	< 0.05	Statistically significant
Null Hypothesis (H_0)	Rejected	Significant difference exists
Score Difference	19.104 points	The SCL group scored higher

The results (Table 5) also revealed that students in the experimental group, exposed to SCL techniques, scored an average of 19.104 points higher compared to the control group. This suggests that SCL techniques might be beneficial for improving student performance. Students expressed satisfaction with the instructor's use of engaging and

technology-based teaching methods, according to the post-course survey.

Table 6. Post-Course Survey Results (Student Satisfaction)

Satisfaction Measure	(%)	Category
Innovative Teaching Practices	83%	High Satisfaction
ICT Usage in Classroom	73%	High Satisfaction

Table 6 depicts that the majority of the students (83%) rated the faculty highly in innovative teaching practices, suggesting they found the methods engaging and effective. Similarly, nearly half (73%) appreciated the use of Information and Communication Technologies (ICT) in the classroom, indicating these tools aided their learning. This positive feedback highlights the effectiveness of the faculty's approach, which combines student-centered learning with technology to create a stimulating learning environment.

4. Conclusion and Recommendations

This study provides compelling evidence that Student-Centered Learning (SCL) techniques can significantly enhance college student learning. Students exposed to SCL activities, such as debates, collaborative projects, and blog creation, demonstrated a deeper understanding of the material and achieved higher academic performance compared to those in a traditional lecture setting. Furthermore, SCL fostered a more engaging learning environment, as evidenced by student satisfaction with the instructor's innovative teaching methods and technology use. These findings highlight the potential of SCL to revolutionize college education by promoting student engagement, critical thinking, and ultimately, academic success. Future research can explore the long-term impact of SCL techniques and investigate best

practices for tailoring these approaches to diverse learning styles and disciplines.

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