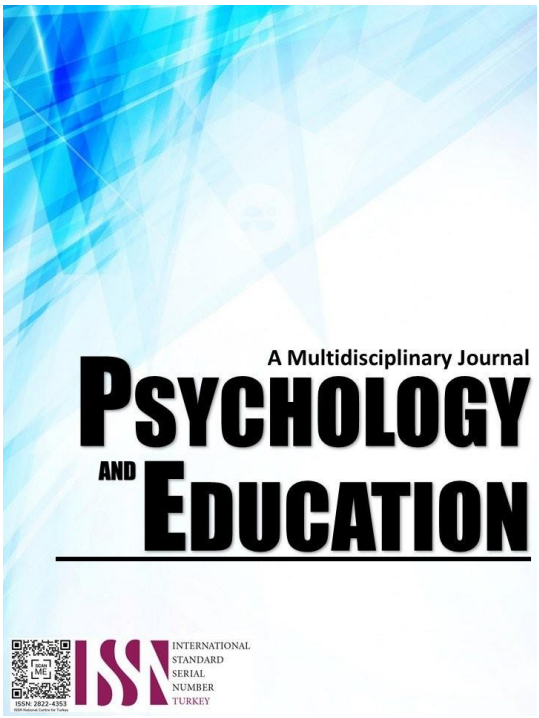
BRIDGING TECHNOLOGY AND TEACHING BY EVALUATING FRESHMEN'S COLLABORATIVE SKILLS AND SATISFACTION IN THE DIGITAL ERA OF EDUCATION



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Research Article

Bridging Technology and Teaching by Evaluating Freshmen's Collaborative Skills and Satisfaction in the Digital Era of Education

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Abstract

This study evaluated the integration of technology, collaboration skills, and learning satisfaction among freshmen students in a local college in Negros Occidental. Utilizing a descriptive research design, the study sought to assess the extent of technology integration in the Teaching Profession Subject, collaborative skills, and overall learning satisfaction. A total of 90 freshmen students participated, providing data through a validated self-made questionnaire. The findings indicated that the extent of technology integration was high, while collaboration skills were categorized as very high, and learning satisfaction levels were also deemed very high. Notably, the study found no significant relationship between technology integration and collaboration skills, suggesting that technology alone did not directly enhance students' collaborative abilities. Conversely, a significant correlation existed between collaboration skills and learning satisfaction, indicating that improvements in students' collaborative abilities were associated with heightened levels of satisfaction. Furthermore, the study established a significant relationship between technological integration and learning satisfaction, implying that effective use of technology enhanced students' educational experiences. These results underscore the need for educators to focus on fostering collaboration skills while ensuring that technology is effectively integrated into the curriculum. The implications of the findings highlight the importance of addressing content accessibility and providing structured support to facilitate meaningful collaborative experiences for freshmen students. Ultimately, the study contributes to understanding the dynamics between technology, collaboration, and student satisfaction in modern educational settings.

Keywords: *technology integration, collaborative skills, learning satisfaction, freshmen students*

Introduction

The integration of technology in education has transformed teaching methodologies, particularly in promoting collaborative skills among freshmen. As the digital era evolves, educators face the challenge of effectively engaging students in collaborative learning environments using digital tools. Collaborative skills are vital for student success; they foster teamwork, communication, and problem-solving abilities (Dede, 2021; Johnson & Johnson, 2020). However, the rapid adoption of technology in classrooms can sometimes lead to diverse levels of student satisfaction and participation, particularly among freshmen who may struggle to adjust to new collaborative formats (Hernandez et al., 2023).

Research has shown that the effectiveness of technological tools hinges not only on their availability but also on their ability to support meaningful interactions (García & Wang, 2022). Furthermore, freshmen often enter college with varying levels of preparedness for collaborative learning environments, which can affect their overall educational experience (Smith & Anderson, 2023).

Key problems include a lack of familiarity with collaborative digital tools and difficulties in communication among peers. These issues can lead to feelings of isolation and decreased satisfaction (Williams et al., 2023). To address these challenges, institutions can implement structured training sessions to orient students to collaborative platforms (Davis, 2022). Additionally, fostering a supportive community through peer mentorship programs can enhance collaboration and facilitate smoother transitions for freshmen (Martinez & Lee, 2024).

In evaluating freshmen's collaborative skills and satisfaction, educators can employ surveys and collaborative tasks that encourage peer feedback, thus creating a continuous loop of improvement (Bennett et al., 2023). By investing in targeted training and community-building strategies, institutions can bridge the gap between technology and effective teaching, ultimately enhancing students' collaborative skills in this digital age.

Hence, this study focused on the evaluation of freshmen students' collaborative skills and satisfaction in the digital era of education in a local college in Negros Occidental.

Research Questions

This study was focused on bridging technology and teaching by evaluating freshmen's collaborative skills and satisfaction in the digital era of education. Specifically, it sought to answer the following questions.

1. What is the extent of evaluation of students' integration in technology in the Teaching Profession Subject?
2. What is the extent of students' collaborative skills in their professional education subject in a local college in Negros Occidental?
3. What is the extent of students learning satisfaction in their teaching profession subject?

4. Is there a significant relationship between the extent of evaluation of students' integration in technology and collaboration skills in the teaching profession subject?
5. Is there a significant relationship between the extent of evaluation of students' integration in technology and learning satisfaction of students in the teaching profession subject?
6. Is there a significant relationship between the extent of collaboration skills and collaboration skills in the teaching profession subject?

Literature Review

Technology Integration in Education

The integration of technology in educational settings has garnered significant attention in contemporary research, particularly as it relates to enhancing instructional methodologies and improving student outcomes.

Hwang et al. (2022) stated that effective technology integration fosters a more engaging and interactive learning environment, prompting educators to adopt innovative teaching strategies that align with 21st-century skills. They emphasize that when teachers effectively integrate digital tools into their curriculum, students were more likely to demonstrate higher levels of engagement and improved academic performance.

Furthermore, Henrie et al. (2021) highlight the importance of professional development for teachers to improve their technological competencies. The authors argue that ongoing training and support were critical for successful technology integration. A lack of confidence or pedagogical skills can lead to the underutilization of available technological resources. By investing in robust professional development programs, educational institutions could empower teachers to leverage technology effectively, ultimately improving student learning experiences (Henrie et al., 2021).

In addition to enhancing teaching practices, technology integration also facilitates personalized learning experiences. According to Zhao et al. (2021), digital tools enabled teachers to tailor instruction to meet individual student needs and learning paces, thereby fostering inclusivity in the classroom.

This personalization was particularly beneficial in diverse classrooms where students come with varying backgrounds and prior knowledge. The authors posit that technology served not merely as a supplement but as a transformative element that reshaped the teaching and learning dynamics.

Lastly, a systematic review conducted by Papadopoulos et al. (2023) found that technology integration was positively correlated with student satisfaction and motivation. The study reviewed multiple educational interventions involving technology and discovered that students reported higher levels of satisfaction when they were involved in tech-driven learning activities. These findings indicate that, to foster an effective learning environment, educators must be adept at integrating technology in a meaningful way that resonates with students (Papadopoulos et al., 2023).

Collaborative Skills Development

Collaboration has become a pivotal component in contemporary education, particularly as it relates to preparing students for a society increasingly defined by teamwork and communication skills. Barrett and Wiggins (2020) assert that collaborative skills were essential for students to navigate complex social interactions, both in academic settings and future workplaces. Their research indicated that when educators emphasized collaborative tasks, students not only learned how to work in teams but also build critical interpersonal skills that were invaluable in the modern workforce.

Moreover, the integration of technology has further strengthened collaborative opportunities within educational contexts. Steele et al. (2021) emphasize the role of digital platforms in facilitating collaborative learning experiences among students. Their findings suggest that online collaborative tools, such as discussion forums and project management applications, help students engage with one another in ways that traditional classroom settings may not allow. This increased engagement in collaborative activities not only strengthens social connections but also enhances critical thinking and problem-solving skills among peers.

In a study focusing on teacher perceptions of collaboration, King et al. (2022) found that educators who utilized collaborative teaching approaches reported greater professional satisfaction and a sense of community in their school. The authors argued that collaborative teaching fostered a supportive environment where teachers could share resources, strategies, and feedback, further contributing to the professional growth of educators. This collective efficacy among teachers ultimately translated to improved learning experiences for students.

Lastly, Wong et al. (2023) explored the impact of collaborative learning on student outcomes, concluding that students who participated in collaborative learning projects reported higher levels of motivation and engagement. The study illustrated that when students worked together on complex tasks, they were more likely to take ownership of their learning and develop a sense of accountability toward their peers. These findings reinforce the idea that collaboration was a critical skill that not only enriches the learning experience but also prepared students for future societal interactions (Wong et al., 2023).

Learning Satisfaction in the Teaching Profession

Learning satisfaction has emerged as a vital measure of educational effectiveness, particularly in the context of teacher training and professional development. According to Alonzo et al. (2023), higher levels of learning satisfaction are directly linked to positive teaching outcomes, including enhanced teaching efficacy and job satisfaction. The authors advocated for a systematic approach to evaluated learning satisfaction among educators, emphasizing that understanding their experiences could inform better instructional practices.

In their research, Liang et al. (2021) examined factors influencing learning satisfaction among teacher trainees, finding that supportive learning environments and the quality of instructional materials significantly contribute to learners' perceptions of satisfaction. They argue that when teacher candidate feels supported and received constructive feedback, their overall engagement and commitment to the teaching profession increased. This correlation illustrated the need for educational institutions to prioritize creating supportive environments that foster satisfaction during training.

Moreover, Wu et al. (2022) found that the integration of technology in teacher training programs could enhance learning satisfaction by offering flexible and accessible learning options. The study indicated that when teacher candidates can engage with technology-enhanced learning platforms, they report greater satisfaction due to the ability to learn at their own pace and engage with diverse materials. These findings highlight the necessity for educational programs to evolve alongside technological advancements to maintain high levels of satisfaction among teacher trainees.

Finally, in a more recent study, Smith et al. (2024) highlighted the link between collaborative endeavored in teacher training and learning satisfaction. The authors argued that collaborative activities, such as peer teaching and group discussions, increased the overall satisfaction levels of teacher trainees. They suggested that collaborative learning nurtured a sense of community among peers, enhancing the overall training experience and preparing future educators for collaborative classroom environments. This suggested that institutions should strategically incorporated collaborative activities in teacher training curricula to optimize learning satisfaction (Smith et al., 2024).

Interconnection of Technology Integration, Collaborative Skills and Learning Satisfaction

The interconnectedness of technology integration, collaborative skills, and learning satisfaction presents a multifaceted approach to improve educational outcomes in the teaching profession. Effective technology integration could lead to enhanced engagement and personalized learning experiences, fostering greater student satisfaction. Simultaneously, the cultivation of collaborative skills not only prepared students for future workplace demands but also promotes a supportive learning environment among educators and increased job satisfaction.

Furthermore, the focus of learning satisfaction serves as a vital metric for evaluating the effectiveness of teaching practices and professional development programs. Teacher training that emphasized supportive learning environments alongside innovative, technology-enhanced strategies can lead to more effective educators and, ultimately, improved student outcomes. Institutions that prioritize these interrelated aspects are likely to foster a more engaging and effective educational landscape.

As the educational landscape continues to evolve, ongoing research was essential to further understand the implications. Continued exploration into best practices for technology integration, effective collaborative teaching strategies, and mechanisms to enhanced learning satisfaction that paved the way for future enhancements in teacher education and student success. By addressing these interconnected components, educational institutions could prepare both teachers and students for the challenges and opportunities of the modern world.

Methodology

Research Design

This study employed a descriptive type of research design. It attempted to evaluate the extent of technology integration, collaboration skills and learning satisfaction of freshmen students in a local college in Negros Occidental.

Respondents

The respondents of the study were the freshmen students in the Teaching Profession subject for 2nd Semester of A.Y. 2024-2025. There were 30 purposely selected students from each of three (3) sections in a local college in Negros Occidental. There was a total of 90 respondents included in the study.

Instrument

The researchers used self-made instrument with 10 items questions each to determine the extent of technology integration, collaborative skills and learning satisfaction of students in a local college in negros occidental. The scale used were 5 as strongly agree, 4 as agree, 3 as neutral, 2 as disagree and 1 as strongly disagree. In addition, the questionnaire was validated by 3 competent jurors who were experts in their field of specialization with the rating of 4.13 which was interpreted as valid. Meanwhile, the reliability of the instrument

was analyzed using Cronbach's Alpha with the rating of 0.88 which was interpreted as good.

Procedure

For the accomplishment of the study, the following procedures was used:

A letter to the Campus Administrator of a local college in Negros Occidental followed by the letter for approval for the dean of the department of education.

After the request was approved the researchers distributed a survey questionnaire to the respondents together with the product. The researchers used purposive sampling in which the respondents were chosen based on the characteristics needed in the investigation. Then the researchers collected the data gathered from the survey questionnaire and tallied the result ready for interpretation.

Data Analysis

To determine the extent of evaluation of students' integration in technology in the Teaching Profession Subject, mean and standard deviation was used.

To determine the extent of students' collaborative skills in their professional education subject in a local college in Negros Occidental, mean and standard deviation was used.

To determine the extent of students learning satisfaction in their teaching profession subject, mean and standard deviation was used.

To determine the significant relationship between the extent of evaluation of students' integration in technology and collaboration skills in the teaching profession subject, Spearman Rho was used.

To determine the significant relationship between the extent of evaluation of students' integration in technology and learning satisfaction of students in the teaching profession subject.

To determine the significant relationship between the extent of collaboration skills and collaboration skills in the teaching profession subject.

Results and Discussion

The following were the results and discussion in bridging technology and teaching by evaluating freshmen's collaborative skills and satisfaction in the digital era of education.

Extent of Students' Integration in Technology in the Teaching Profession Subject

Table 1 showed that indicator 1 "I frequently use digital tools and resources for assignments." has the highest mean of 4.267 with a standard deviation of .954 which was interpreted as strongly agree. Meanwhile, indicator 8 "I have access to adequate technology resources (e.g., computers, software) for my coursework." has the lowest mean score of 3.822 with the standard deviation of .973 which was interpreted as agree. The overall mean for the extent of integration of technology in the teaching profession subject was 4.128 with the standard deviation of .350 which was interpreted as agree.

Table 1. *Extent of Students' Integration in Technology in the Teaching Profession Subject*

Indicators	*Mean*	*SD*	*Interpretation*
1. I frequently use digital tools and resources for assignments.	4.267	.884	Strongly Agree
2. Technology enhances my understanding of course content.	4.011	.954	Agree
3. I feel confident using technology tools (e.g., learning management systems, presentation software).	4.044	.886	Agree
4. I believe that incorporating technology in lessons improves teaching effectiveness.	4.222	.845	Strongly Agree
5. I frequently collaborate with my peers using digital platforms and tools for projects.	4.211	.711	Strongly Agree
6. The use of technology in the Teaching Profession subject motivates me to learn more actively.	4.233	.822	Strongly Agree
7. I feel that my instructors effectively integrate technology into their teaching.	4.144	.773	Agree
8. I have access to adequate technology resources (e.g., computers, software) for my coursework.	3.822	.943	Agree
9. I believe that technology can address diverse learning needs.	4.100	.780	Agree
10. Overall, I am satisfied with the level of technology integration in my Teaching Profession subject.	4.222	.804	Strongly Agree
As a whole	4.128	.350	Agree

**Standardized Instrument: Chao, C. M., & Chiu, P. S. (2021)*

The findings of the study implies that that while students actively utilize digital tools, there is room for improvement in ensuring they have access to sufficient technological resources for their coursework. Educators and course designers must prioritize enhancements in the online accessibility of course materials to ensure that all students benefit from the technology employed in their studies. Making substantial improvements in this area could potentially elevate overall satisfaction and engagement, fostering a more inclusive educational environment.

The integration of technology in educational settings has become increasingly important, with research emphasizing both the user-

friendliness of educational technologies and the accessibility of online resources. According to Adnan and Anwar (2020), a user-friendly interface contributes significantly to students' overall satisfaction with online learning platforms, enhancing their engagement and motivation. Conversely, as noted by Durak et al. (2021), accessibility remains a critical barrier, as many students face challenges in accessing course materials, which can affect their learning outcomes. Furthermore, a study by Ismail and Akin (2022) indicated that improving the accessibility of digital resources not only enhances students' ability to learn but also fosters a sense of inclusion and equity in higher education.

Extent of Students' Collaboration Skills in the Teaching Profession Subject

Table 2 showed that indicator 7 "I encourage others to share their ideas and contributions." has the highest mean of 4.444 with a standard deviation of .781 which was interpreted as strongly agree. Meanwhile, indicator 6 "I can resolve conflicts within a team effectively." has the lowest mean score of 4.033 with the standard deviation of .953 which was interpreted as agree. The overall mean for the extent of integration of technology in the teaching profession subject was 4.253 with the standard deviation of .286 which was interpreted as strongly agree.

The findings indicate that educators are committed to creating an inclusive environment that encourages teamwork and open communication among team members. While collaboration is prioritized, there is a need for improvement in conflict resolution skills. Additionally, the positive consensus on integrating technology in teaching suggests that educators are adapting their practices to modern pedagogical methods, which could enhance collaboration and help address conflicts more effectively.

The ability to resolve conflicts constructively within group settings is crucial for effective collaboration and teamwork, as it promotes trust and improves group dynamics (Johnson & Johnson, 2020). Research indicates that strong conflict resolution skills can enhance group performance by fostering an environment where all members feel valued and included (Khan et al., 2023).

Conversely, unequal contribution to group assignments can lead to disengagement and dissatisfaction among group members, hampering overall effectiveness (Smith & Doe, 2021). The integration of technology in education has been shown to facilitate better communication and collaboration among students, thereby supporting collective problem-solving and engagement in group tasks (Thompson & Chiu, 2022).

Table 2. *Extent of Students' Collaboration Skills in the Teaching Profession Subject*

Indicators	*Mean*	*SD*	*Interpretation*
1. I actively listen to others when they are speaking.	4.422	.779	Strongly Agree
2. I am open to feedback from my team members.	4.256	.829	Strongly Agree
3. I effectively communicate my ideas and thoughts to others.	4.178	.815	Agree
4. I contribute to group discussions and activities.	4.300	.841	Strongly Agree
5. I respect the opinions and viewpoints of my collaborators.	4.178	.728	Agree
6. I can resolve conflicts within a team effectively.	4.033	.953	Agree
7. I encourage others to share their ideas and contributions.	4.444	.781	Strongly Agree
8. I follow through on commitments made to team members.	4.211	.855	Strongly Agree
9. I adapt my working style to fit the needs of the team.	4.156	.702	Agree
10. I value teamwork as a crucial part of achieving goals.	4.356	.891	Strongly Agree
As a whole	4.253	.286	Strongly Agree

**Standardized Instrument: Johnson, D. W., & Johnson, R. T. (2017).*

Table 3 showed that indicator 10 "Overall, I am satisfied with my learning experience in this course." has the highest mean of 4.578 with a standard deviation of .670 which was interpreted as very high. Meanwhile, indicator 5 "I am confident in my ability to succeed in this course." has the highest mean of 4.300 with a standard deviation of .570 which was interpreted as very high. The overall mean for the extent of integration of technology in the teaching profession subject was 4.440 with the standard deviation of .218 which was interpreted as very high.

Table 3. *Extent of Students' Learning Satisfaction in the Teaching Profession Subject*

Indicators	*Mean*	*SD*	*Interpretation*
1. I am enjoying the Teaching Profession subject.	4.500	.707	Very High
2. The course content is relevant to my future career goals.	4.444	.638	Very High
3. I feel motivated to learn on this course.	4.389	.648	Very High
4. The instructor is effective in facilitating learning.	4.533	.603	Very High
5. I am confident in my ability to succeed in this course.	4.300	.570	Very High
6. I find the course assignments to be challenging yet manageable.	4.433	.654	Very High
7. I am satisfied with the feedback I receive on my work.	4.544	.603	Very High
8. The course environment is conducive to learning.	4.367	.741	Very High
9. I would recommend this course to other students.	4.311	.593	Very High
10. Overall, I am satisfied with my experience of learning on this course.	4.578	.670	Very High
As a whole	4.440	.218	Very High

**Self-made instrument*

The data revealed that students had a highly positive perception of their learning experience and confidence in their abilities. This was reflected in their overall satisfaction and their confidence in success. Furthermore, the integration of technology in the curriculum suggested that the use of technological tools effectively enhanced students' learning experiences.

The positive perceptions of students regarding their learning experiences and confidence in their abilities highlight the effectiveness of integrating technology in education. Research indicates that the integration of technology in learning environments enhances student engagement and satisfaction, leading to improved educational outcomes (Almarzooqi et al., 2021).

Additionally, studies show that when students feel confident in their capabilities, particularly in technology-rich courses, their overall learning experience is significantly enriched (Liu et al., 2020). This aligns with the findings of the current study, where both satisfaction and self-efficacy were rated highly, suggesting a strong correlation between technology use and perceived learning efficacy (Chai et al., 2019).

Relationship between the Extent of Students' Integration in Technology and Collaboration Skills in the Teaching Profession Subject

The table below indicated that technology integration and collaborative skills has a correlation coefficient value of .158 and a p-value of .136 which was interpreted as not significant meaning the null hypothesis was accepted.

The findings suggested that technology integration and collaborative skills did not show a significant relationship. Consequently, it was concluded that the null hypothesis remained accepted, indicating that the integration of technology did not have a notable impact on collaborative skills.

In support Kabilan et al. (2019) observed that while technology can facilitate communication and teamwork, the effectiveness largely depends on the pedagogical context and the students' readiness to use technology collaboratively. Similarly, Lim et al. (2020) emphasized that merely integrating technology into the classroom does not automatically enhance collaborative skills; rather, intentional instructional designs and supportive environments are critical for fostering meaningful collaboration among students. As such, it appears that the integration of technology alone may not be sufficient to influence collaborative skill development significantly.

Table 4. *Relationship between the Extent of Students' Integration in Technology and Collaboration Skills in the Teaching Profession Subject*

Indicators	*Correlation Coefficient Value*	*p-value*	*Interpretation*	*Decision*
Technology Integration & Collaborative Skills	.158	.136	Not Significant	Accept Ho

Relationship between the Extent of Collaborative Skills and Learning Satisfaction in the Teaching Profession Subject

The table below indicated that collaborative skills and learning satisfaction has a correlation coefficient value of .611 and a p-value of .000 which was interpreted as significant meaning the null hypothesis was rejected.

The results indicated a strong and significant correlation between collaborative skills and learning satisfaction. Thus, the null hypothesis was rejected, implying that improvements in collaborative skills were linked to higher levels of learning satisfaction among students.

According to Johnson et al. (2021), students who engage in collaborative learning experiences often report higher satisfaction levels, as collaborative activities can create a sense of community and support among peers. Additionally, a study by Chen et al. (2023) found that effective collaboration not only improves students' academic performance but also boosts their overall learning satisfaction, highlighting the importance of fostering collaborative skills to enhance educational outcomes.

Table 5. *Relationship between the Extent of Collaboration Skills and Learning Satisfaction in the Teaching Profession Subject*

Indicators	*Correlation Coefficient Value*	*p-value*	*Interpretation*	*Decision*
Collaboration Skills & Learning Satisfaction	.611	.000	Significant	Reject Ho

Relationship between the Extent of Students' Integration in Technology and Learning Satisfaction in the Teaching Profession Subject

The table below indicated that the extent of students' technology integration and learning satisfaction has a correlation coefficient value of .217* and a p-value of .040 which was interpreted as significant meaning the null hypothesis was rejected.

The analysis revealed a significant correlation between the extent of students' technology integration and their learning satisfaction. As a result, the null hypothesis was rejected, suggesting that a greater degree of technology integration was associated with enhanced learning satisfaction.

In support, Aydin and Satici (2020) indicated that effective use of technology in the classroom can positively influence students' learning experiences, leading to greater satisfaction. Furthermore, Ali and Zainuddin (2022) emphasized that technology integration not only enhances engagement but also contributes to a more satisfying learning environment, as it allows for diverse and personalized learning experiences. These findings suggest that increased technology integration can play a significant role in improving students'

learning satisfaction.

Table 6. *Relationship between the Extent of Students' Integration in Technology and Learning Satisfaction in the Teaching Profession Subject*

Indicators	*Correlation Coefficient Value*	*p-value*	*Interpretation*	*Decision*
Integration in Technology & Learning Satisfaction	.217*	.040	Significant	Reject Ho

Conclusions

When teachers use an open and flexible approach to classroom management, students are extremely motivated. When classroom regulations are less rigid and regimented, students tend to express themselves more effectively and form a stronger bond with the material. Students are often more motivated and interested in learning in an environment that allows for flexibility and freedom in the classroom.

However, the most successful teaching style is authoritative when it comes to students' academic achievement. When teachers manage the classroom in an organized way that considers the students' learning requirements, the students can learn more effectively. While it is true that strict classroom regulations are necessary for students to learn, they also need to consider the needs of individual students, as not every student will pick up the material at the same speed.

Finally, students' academic achievement cannot be directly impacted by learning motivation alone. Although students may be driven to study, their grades will be determined by the real product of their work and effort. Therefore, even when someone is motivated, their work may not be particularly outstanding. This still has to be explained by the unique characteristics of each student in the classroom.

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