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Effects of Flipped Classroom Instructional Models on Senior Secondary School Students Attitudinal Change: Implications for Sustainable Development

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Abstract

This study investigated the comparative impact of Group-based and Standard-inverted flipped classroom models on the attitudes of senior secondary students toward the national values component of Civic Education in Cross River State. Adopting a rigorous 2x2 pre-test/post-test quasi-experimental factorial design, the study integrated gender as a critical mediating variable to determine pedagogical universality. The study's population encompassed 4,414 SS1 students from 95 public secondary schools within the Calabar Education Zone. From this group, a sample of 160 students, from 4 intact classes, was drawn using a combination of purposive and simple random sampling techniques. This sample was randomly divided into two equal groups of 80, with the Group-based model consisting of 44 females and 36 males, and the Standard-inverted model comprising 43 females and 37 males. Data collection was facilitated by the National Values Attitude Scale (NVAS), which achieved a high reliability index of 0.94 via Cronbach Alpha statistics, after validation by three experts. Analysis of Co-variance (ANCOVA) was employed to test three null hypotheses at a 0.05 level of significance. The results demonstrated that both the Group-based and Standard-inverted models significantly enhanced student attitudes, though no statistically significant difference was found between the two specific models. Furthermore, the findings indicated that gender had no significant influence on student attitudes, and the interaction effect between the flipped models and gender was not statistically significant. Ultimately, the research concludes that both flipped classroom models are effective, gender-neutral tools for fostering positive attitudes toward national values in Civic Education.

Keywords: Group-Based Flipped Model, Standard-Inverted Flipped Model, National values, Civic Education, Students' Attitude, Gender.

Introduction

The necessity of investigating the impact of instructional strategies on learning outcomes is underscored by a persistent decline in expected behavioral changes among learners. Civic Education serves as a cornerstone of the secondary school curriculum, primarily aimed at facilitating the acquisition of knowledge, attitudes, and skills essential for individual, communal, and national development (Adeyemi, 2019). As a structured curricular initiative, it is designed to nurture young minds in national values through the school system.

Through the employment of effective instructional approaches, schools must cultivate principles of ethical behavior defined by the nation's value system. According to Kayode-Olawoyin (2017) and Abdu-Raheem and Olorunda (2019), the desired outcome of this process is a positive attitudinal shift, equipping students to provide practical solutions to social problems through proper civic conduct. Consequently, Civic Education upholds fundamental principles such as orderliness, integrity, nationalism, and respect for constituted authority. While effective values instruction should theoretically produce socially responsible students, there is an evident exponential increase in moral decadence and delinquent behavior among secondary school students in Cross River State, Nigeria. This trend is manifested in vices such as truancy,

bullying, cultism, examination malpractice, and general criminality (Ndifon et al., 2023; Edwin et al., 2025).

This worrisome state has attracted concern from various stakeholders, including parents and government officials, who advocate for value-related education as a strategic solution. Values are fundamental to shaping acceptable behavior and driving progress in all human societies (Oluwagbohunmi, 2017). They serve as indispensable principles that define a moral code and a frame of reference for right conduct (Yusuf & Adika, 2017). Munisa (2021) defines national values as desirable civic and democratic qualities that stand in opposition to behaviors generally condemned by society. Ultimately, a nation's value system is the summation of acts and attitudes that a people consider worthy of strict adherence to promote socioeconomic development (Osalusi & Ajayi, 2021).

The importance of values to national development lies in their ability to encourage credibility, hard work, and patriotism (Munisa, 2021). Although these values are explicitly articulated in the national constitution (FRN, 2014), the primary challenge remains the successful transmission of these ideals to the younger generation. The lack of effective civic education and patriotic orientation has led to significant disorientation within schools and the larger society (Ikwuka et al., 2020).

Addressing value-related issues among secondary school students requires a commitment to value reorientation rooted in the ideals of Civic Education (Yusuf & Adika, 2017). Despite efforts to make the subject compulsory (FRN, 2014) and the introduction of various enrichment activities; such as seminars, inter-school debates, and site-seeing trips (Abdu-Raheem & Olorunda, 2019), negative attitudinal dispositions persist (Edwin et al., 2025). Many students continue to view Civic Education as intellectually unchallenging or irrelevant to their academic trajectory, leading to poor attendance and disregard for instructional materials. The inadequacy of traditional instructional approaches also suggests a critical need for digital and contextual pedagogies. Innovative methods that leverage modern technology, such as the combination of social media and flipped classroom models, may offer a solution to inspire positive attitudinal changes.

Furthermore, it is essential to determine whether these new approaches produce uniform results across different demographics. Gender remains a critical mediating variable. Previous literature suggests that gender significantly influences how students engage with various pedagogical strategies (Godpower-Echie & Ihenko, 2017; Ikwuka et al., 2020; Johnson et al., 2025). While studies consistently show the effectiveness of flipped classroom strategies in learning outcome, it is not empirically clear, which strategy would do better in the case of attitudinal change towards Civic Education, especially where gender serves as a moderating variable. Therefore, this study seeks to explore the effects of flipped classroom models on students' attitude toward national values in Civic Education. Specifically, the study seeks to test the following null hypotheses:

Ho1: There is no significant difference in the mean attitude rating of students taught national values with group-based flipped model and those taught with standard-inverted flipped model.

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Ho2: There is no significant difference in the mean attitude rating of male and female students to national values

Ho3: There is no significant interaction effect of the flipped models and gender on students' attitude in national values.

Literature Review

The flipped classroom on WhatsApp

WhatsApp messenger is an instant messaging application with features for transferring data including textual content, images, and audio and video files. It is one of the few resources that can be used for education content delivery. Studies reveal that WhatsApp groups facilitate the communication between students and teachers thereby cultivating a trustworthy environment and increasing the interest of the students in learning activities (Pedro et al., 2018). The writers upheld that WhatsApp improves hands-on-assignment and active learning, motivation, decision making, efficiency and time organization. It is for these features that it was recommended for this research as a platform for flipping the class. WhatsApp is available for IOS and android versions, and almost all smart mobile phones use WhatsApp in daily message sharing (O'Malley et al., 2015; Nitza & Roman, 2016).

There has been notable growth in the use of mobile phones or smart phones a few years past. Statistic reveal that more than half of the world's population (5.22 billion) people worldwide use mobile phones (Iram & Nauman, 2022). The authors also reported that smart phones constitute 92.6% internet usage. Young people are reported to show more preference in the use of smartphones to access the internet. With an average of 4 hours spent daily on a smartphone, (88.4%) is dedicated to social networks and (90.7%) is dedicated to communication and instant messaging, these are active features in WhatsApp (Nitza & Roman, 2016). Although research has accounted for 87% of WhatsApp usage among college students and 13% among middle school students (Johnson & Udo, 2020; Iram & Nauman, 2022), there is still need to investigate how flipping the class on the WhatsApp platform can inspire change of attitude towards the national values component of civic education in Calabar Education Zone, a cosmopolitan area where most secondary school students have access to WhatsApp either through their own personal mobile phones or parents/guardians.

Group-Based Flipped Classroom Model

The Group-Based Flipped Classroom prioritizes collaborative learning by shifting direct instruction to pre-class videos, allowing in-class time for students to work in small teams of 3–5 on specific assignments. This model emphasizes teamwork, peer review, and active discussion, which are essential for engaging students with both their peers and the instructor (Brown, 2016; Pengyue et al., 2020). Through the utilization of cooperative learning strategies, the approach fosters group support and mutual responsibility, which has been shown to improve content retention, communication skills, and self-direction while reducing power differentials within the classroom (Hyun et al., 2017; Lewis et al., 2018).

Beyond academic gains, this pedagogy could also serve as a catalyst for positive attitudinal change and the development of civic values. Small group interactions encourage honest dialogue regarding honesty and tolerance, while the experiential nature of cooperative tasks reinforces the importance of

unity, obedience to rules, and social responsibility (Romero & Angeles, 2023). Furthermore, democratic processes within the groups, such as electing leaders, highlight values of representation and merit, and teaching students to appreciate healthy social structures over negative influences, help in fostering the traits of an orderly, law-abiding citizen.

Standard-Inverted Flipped Classroom Model

The Standard-Inverted Flipped Model, often called the traditional flipped classroom, reverses the conventional learning cycle by delivering lecture content at home and moving "homework" to the classroom (Ezeudu & Gbendu, 2020). Students prepare by watching videos before class, allowing the session to begin with targeted questions and answers, and brainstorming to clarify difficult concepts (Ozdamli & Asiksoy, 2016). While this model can sometimes lead to a rowdy atmosphere or favor more outspoken students, its individualized nature promotes core values like self-reliance, honesty, and accountability, as students must take personal responsibility for their pre-class tasks (Uhwe et al., 2021).

Beyond academic structure, this model builds self-efficacy and independence, which can protect students from negative social influences, by increasing their academic confidence. The segmented stages of the model encourage orderliness, while in-class activities reinforce democratic principles like freedom of speech and equality (Uhwe et al., 2021). Ultimately, both the group-based and standard models are selected for their ability to increase interactive time, address individual emotional and learning needs, and transform class time into an active environment where students apply knowledge to real-life situations (Ezeudu & Gbendu, 2020).

National Values in Nigeria

The behavioural patterns of the citizens of Nigeria with respects to the nation's cherished values is very critical to its existence, survival and progress. The Nigerian values are associated with her people`s life, life-style, language, culture, spirituality, habits, customs, traditions, history and the future of the nation (Kayode-Olawoyin, 2017; Munisa, 2021). As a multi-cultural nation divided along ethnic and linguistic lines, threatened by disunity and primordial interest, she esteems the values of belief in the worth and dignity of every human being, honesty, integrity, personal freedom, equity, justice for all, discipline, integrity, dignity of labour, religious tolerance, patriotism, self-reliance, sense of responsibility, respect for rule of law/due process, equal rights under the law and the idea of government by representation and consent. She seeks to inculcate these virtues and principles in younger generation to mitigate the many social ills among them. It is hoped that effective value transmission will bring about expected behavioural changes and reduce the problem of corruption, insecurity, poverty, secessionist agitations and moral decadence across the populace, paving the way for progress, unity and national integration (Oluwagbohunmi, 2017; Akpan & Okoro, 2018; Osalusi & Ajayi, 2021). However, the major setback to national value integration is the inability to demonstrate these core values by many Nigerians, indicating the need to take a systematic approach towards national value transmission and integration through the school system.

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Attitude Towards National Values/Civic Education

Attitude is a significant variable that determines academic outcomes. It is the sum of all the emotions and feelings experienced during the learning phase of the studied subject (Hussain, et al, 2021). The authors added that it has been conceptualized in line with the cognitive, affective and behavioural components. A positive attitude to national values and Civic Education can influence positive behaviour in line with value principles. Attitude makes for object appraisal which refers to how one can summarize the positive and negative attributes of objects in our social world. By this, attitude helps people to approach things that are beneficial to them and avoid things that are not. When students are instilled with positive attitude, they will be equipped with understanding to make positive choices and healthy decisions when faced with negative pressures. As an educational policy, attitudinal change is the major purpose for the introduction of civic education (Yusuf & Adika, 2017). The difference between the purpose and the present reality indicates a pedagogical gap. Instructional goals in this regard should employ teaching methods that will make for effective learning for the development of positive attitude to the subject. The flipped classroom models under consideration present effective learning strategies as they replace traditional lectures with more engaging activities, helping students find personal value and relevance in the subject matter.

Gender

Gender has continued to be an important variable in research that is found to influence differences in attitude among students in academic activities (Johnson et al., 2024). Conceptualized as the range of physical, biological, mental and behavioural characteristics differentiating the feminine and masculine population (Hameed & Aseel, 2014). It is an important personal variable attributed for the existing differences in the functioning and attitude of male and female students in learning (Godpower-Echie, & Ihenko, 2017). The socio-cultural differences between girls and boys are the major reason for examining learning in relation to gender (Johnson et al., 2025).

Socio-cultural factors define gender expectations and can influence attitude with specific behaviours often considered masculine or feminine (Ikwuka et al., 2020). Though gender distinction may not account for the negative attitude to national values as both male and female students exhibit similar attitudinal dispositions, however, it is not clear if gender can influence positive attitudinal dispositions when exposed to flipped classroom models.

Research Method

Ethical Considerations

Primarily, the researchers sought and obtained approval from the research and ethics committee of the University of Calabar, to execute the study. They further obtained a formal letter from the head of Curriculum and Teaching Department, University of Calabar, to participating schools' principals. This was in addition to the informed consent forms which the various heads of the

schools had to fill and sign alongside the participating students. The purpose of the research was clearly explained to the participants, and they were further assured of strict confidentiality and anonymity.

Design and Procedure

The methodology for this study anchored on quasi-experimental factorial research design, specifically utilizing a pre-test and post-test 2x2 non-equivalent groups design. This design was selected for its suitability in evaluating educational interventions within naturalistic settings, thereby enhancing both the ecological validity and the generalizability of the findings (Cook, 2019). The target population encompassed all 4,414 Senior Secondary Class One (SS1) students across 95 public secondary schools within the Calabar Education Zone of Cross River State.

Selection of the study sample followed a multi-stage process involving purposive and simple random sampling. Initially, two Local Government Areas were selected from the seven within the zone, and four schools were subsequently identified from the 26 public secondary schools in the Calabar metropolis. These schools were randomly assigned to the two experimental conditions. Consequently, Government Secondary School Akim and NYSC Demonstration Secondary School were designated as Experimental Group 1, receiving the group-based flipped model, while Government Secondary School State Housing and WAPI Secondary School formed Experimental Group 2, receiving the standard-inverted flipped model. The final sample consisted of 160 students, comprising 73 males and 87 females. Specifically, the group-based model included 80 students (36 males, 44 females), and the standard-inverted model similarly included 80 students (37 males, 43 females).

The instructional intervention focused on five critical topics within the Civic Education curriculum: Integrity, Citizenship Education, Characteristics of Democracy, Orderliness, and Cultism. These topics were purposively selected because their contents articulate the core national values directly linked to student attitudinal dispositions. To deliver the instructional packages, both experimental groups utilized WhatsApp via mobile devices. This platform was prioritized due to its user-friendly interface and the students' existing familiarity with the application in relation to other instant messaging services.

Data collection was executed through a researchers-developed instrument titled the National Values Attitude Scale (NVAS). The NVAS was structured into two components: Section A addressed relevant demographic information, while Section B comprised 26 items measured on a modified four-point Likert scale ranging from Strongly Agree to Agree, Disagree and Strongly Disagree. To ensure the instrument’s psychometric integrity, it was validated by a panel of nine experts; three each from the fields of Psychology, Social Science, and Educational Measurement.

The reliability of the scale was further established through Cronbach's Alpha, which yielded a high coefficient of 0.94.

The administration of the instrument followed a rigorous protocol where the pre-test was provided before the intervention, and the post-test, featuring a rearranged item order to control for memory effects, was administered afterward. Following data sorting and coding, the results were analyzed using the IBM Statistical Package for Social Sciences (SPSS) version 23. The null hypotheses were tested at a .05 level of significance using Analysis of Covariance (ANCOVA). This statistical technique was employed to control for pre-existing differences among the intact classes, reduce error variance, and precisely determine both the main effects of the instructional models and the interaction effects of flipped classroom models and gender on students' attitudes towards national values.

Flipped Classroom Intervention

The instructional intervention was based on the Analysis, Design, Development, Implementation and Evaluation (ASSURE) Model (Branson et al., 1975), thus:

Analysis (A) - In this initial phase, the research team appraised the learners' demographics (age, class) and their current attitudes toward Civic Education (CE) values like Integrity, Citizenship, and Orderliness. This step identified the gap between their current state and the desired attitudinal outcomes. It also assessed students' access to technology (phones, iPads) in their cosmopolitan environment, confirming that both flipped models are technically feasible.

Design (D) - The design phase translated the analysis into a blueprint. This involved drafting the storyboard for the CE instructional media and defining measurable objectives that reflect the desired attitudinal changes. Here, the instructional strategy was mapped out:

- Group-based: Designing cooperative tasks and group structures (3–5 members).
- Standard-inverted: Designing individual accountability measures and whole-class brainstorming prompts.

Development (D) - This stage involved the actual creation of the materials. The storyboard was converted into audio-visual instructional media to ensure the content aligned perfectly with CE objectives. Text materials and practical written questions were developed to accompany the videos. Additionally, the lead researcher conducted training for facilitators on the specific mechanics of both the group-based (collaboration) and standard-inverted (facilitation) flipped strategies.

Implementation (I) - The intervention was rolled out via a WhatsApp broadcasting group, thus:

- Pre-class: Students in both experimental groups received and watched the video at home, completing written tasks to ensure compliance.
- In-class (Group-based): The classroom was organized into small groups for peer-to-peer knowledge sharing and collective problem-solving.

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- In-class (Standard-inverted): The teacher led a whole-class discussion, using questions and answers to address individualized learning needs and foster academic self-confidence.

Evaluation (E) - The final phase measured the effectiveness of the flipped models by comparing pre-test and post-test data. This evaluation determined how the strategies influenced students' attitudes toward national values. Based on the analysis of these results, the researchers could draw appropriate conclusions and make recommendations on the instructional strategies/media and the dynamics for future implementations to address such academic demands.

Results

The study results are presented as follows:

Ho1: There is no significant difference in the mean attitude rating of students taught national values with group-based flipped model and those taught with standard-inverted flipped model.

Table1: ***Analysis of Covariance (ANCOVA) of the difference in the mean attitude rating of students taught national values with group-based flipped model and those taught with standard-inverted flipped model***

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared (η^2_p)	Dec.
Corrected Model	2148.014[a]	4	537.004	2.562	.041	.062	
Intercept	71470.623	1	71470.623	340.944	.000	.687	
PretestAtt	1981.394	1	1981.394	9.452	.002	.057	
Group	32.555	1	32.555	.155	.694	.001	NS
Gender	155.947	1	155.947	.744	.390	.005	NS
Group * Gender	.135	1	.135	.001	.980	.000	NS
Error	32491.979	155	209.626				
Total	1530589.000	160					
Corrected Total	34639.994	159					

Note: df= Degree of Freedom, F= F-ratio, Sig.= Significant/probability value, Dec.= Decision, NS = Not Significant, S = Significant

Result in Table1 shows that there is no significant difference ($p<.05$) in the mean attitude ratings of students taught national values of the civic education curriculum using group-based flipped model and those taught with standard-inverted flipped model, ($F(1, 159) = .155$, $p = .694$, $\eta^2_p = .001$). This is because the associated probability (Sig.) value of .694 is greater than 0.05 level of significance at which the result is being tested. Thus, the null hypothesis one (HO_1) which stated that there is no significant difference ($p<.05$) in the mean attitude ratings of students taught national values of the civic education curriculum using group-based flipped model and those taught with standard-inverted flipped model is not rejected. Additionally, the effect size difference ($\eta^2_p = .001$), indicates that only 0.1% variance exists between the mean attitude ratings of students taught using the two instructional

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models. Therefore, inference drawn is that there is no significant difference between the effects of group-based flipped model and standard-inverted flipped model on students' attitude towards national values component of the Civic Education.

Ho2: There is no significant difference in the mean attitude rating of male and female students to national values.

Result in Table 1 also revealed that there is no significant difference ($p<.05$) in the mean attitude rating of male and female students in national values component of civic education curriculum, F (1, 159) = .744, p = .390, η^2_p = .005). This is because the associated probability (Sig.) value of .390 is greater than 0.05 level of significance at which the result is being tested. Hence, the null hypothesis two (HO_2) which stated that there is no significant difference ($p<.05$) in the mean attitude rating of male and female students in national values component of civic education curriculum is not rejected. Furthermore, the effect size of (η^2_p = .005) denotes that 0.5% variance exists between the mean attitude rating of male and female students in national values component of civic education curriculum. To this end, the inference drawn is that gender has no significant influence on students' attitude towards national values component of civic education curriculum.

Ho3: There is no significant interaction effect of the flipped models and gender on students' attitude in national values.

Result in Table 1 also shows ANCOVA analysis of the interaction effect of flipped model and gender on students' attitude towards national values component of the civic education curriculum. The result shows that the interaction effect of flipped models and gender on students' attitude in national values component of the civic education curriculum is not statistically significant (F(1, 159) = .001, p = .980, η^2_p = .000). This is because the associated probability (Sig.) value of .980 is greater than 0.05 level of significance at which the result is being tested. Therefore, the null hypothesis three (HO_3) which stated that there is no significant interaction effect of flipped models and gender on students' attitude towards national values component of the civic education curriculum is not rejected. Besides, the effect size difference (η^2_p = .000), indicates that there is no variance in the mean attitude ratings of students due to the interaction effect of flipped classroom models and students' gender. For this reason, inference drawn is that the interaction effect of flipped models and gender on students' attitude towards national values component of the civic education curriculum is not statistically significant.

Discussion of findings

The findings of this study demonstrated that there is no significant difference between the effects of the group-based flipped model and the standard-inverted flipped model on students' attitudes toward national values within the civic education curriculum. This outcome corroborates previous

reports indicating that improving student dispositions is a primary benefit of flipped classroom strategies, as these models render the learning experience more interactive and enjoyable (Sekercioglu & Yunkul, 2021). The absence of a statistically significant variance between the two models suggests that the efficacy of the intervention lies in the fundamental principles of the flipped classroom, specifically, pre-class engagement with content and active in-class participation, rather than a specific structural variation (Hung, 2015). Consequently, well-structured flipped environments can successfully mitigate students' anxiety and resistance to new learning methods, thereby fostering a more positive ethical and social outlook (O'Flaherty & Phillips, 2015).

Furthermore, the study's results align with research outcomes that indicate a significant positive effect of group-based flipped models on social attitudes and communication skills across various disciplines (Eryilmaz & Cigdemoglu, 2018). These findings add credibility to a growing body of literature which asserts that exposure to flipped classroom strategies significantly enhances the mean attitude ratings of students (George & Osuafor, 2023; Nja et al., 2022; Ezeudu & Gbendu, 2020; Sekercioglu & Yunkul, 2021). The success of these models is largely attributed to the positive social interactions and collaborative tasks inherent in the group-based approach, which foster a supportive environment conducive to favorable subject-matter perception. These instructional models effectively trigger and sustain a positive attitudinal shift toward national civic ideals by immersing students in academic activities that align with their preferred values and ideas.

The study further reveals that gender does not exert any significant influence on students' attitudes toward the national values component of the Civic Education curriculum, suggesting that gender is not a primary determinant of attitudinal outcomes in this context. This finding aligns with the assertion by O'Flaherty and Phillips (2015) and Ikwuka et al. (2020) that flipped classrooms enhance learning attitudes by fostering engagement and interactivity for both male and female students alike. Furthermore, the results resonate with the research of Ruhan (2019) and, George and Osuafor (2023), who observed that gender was not a significant factor in the attitudes of students exposed to innovative pedagogical strategies. Ultimately, while individual interests and previous experiences may vary slightly, these factors do not reach statistical significance, reinforcing the conclusion that flipped classroom interventions are gender-neutral in their capacity to shape positive dispositions toward national values.

In terms of the interaction effects, the study found out that interaction effect of flipped models and gender on students' attitude towards national values component of the civic education curriculum is not statistically significant. This result aligns with the findings of Hung (2015) and Romeo and Angeles (2023), who emphasized that the inherently engaging nature of flipped classrooms fosters positive attitudes for all students regardless of gender; as well as the research of Ezeudu and Gbendu (2020) and George and Osuafor (2023) which reported no significant interaction effects between instructional approaches and gender on student attitudes in Geography and Chemistry,

respectively. The absence of a significant interaction effect highlights the inclusive nature of flipped classroom frameworks, suggesting that their capacity to promote positive academic experiences is broadly applicable and effective for an entire student cohort.

Conclusions

Following the findings of this study, it was concluded that both flipped models have positive effects on students' attitude, gender had no significant influence on this outcome, and the interaction effects of flipped models and gender on students' attitude were not statistically significant, indicating the universal applicability of flipped classroom models. Therefore, flipped classroom instructional models are effective in improving students' attitudes towards the national values component of Civic Education when properly implemented.

Recommendation

Based on the finding of this study, the following recommendations were put forward:

1. The government and school management should make provision for in-service professional development and support for teachers to ensure they are well-equipped to implement flipped classroom models effectively.
2. Schools and educational authorities should invest in the necessary technological infrastructure to support the implementation of flipped classrooms, including access to digital devices and internet connectivity.
3. Curriculum designers should integrate flipped classroom models into the curriculum, emphasizing the benefits of active and collaborative learning approaches.
4. Federal and state ministries of education should develop policies that support and promote the adoption of flipped classroom models, recognizing their positive impact on student outcomes.

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