The Influence of Smart Learning Communities on Academic Performance and Engagement of Grade 9 Learners

Altea E. Ramos, Cherrie B. Malucay

Baguio City High School Governor Pack Road, Baguio City Baguio City Division

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ABSTRACT

This study investigated the influence of Smart Learning Communities (SLCs) on the academic performance and engagement of Grade 9 learners at Baguio City High School. It aimed to assess learners' experiences in SLCs, the degree of challenges they encountered, and the effectiveness of strategies used to support academic performance and engagement in a blended learning environment. A quantitative research design was employed, utilizing a validated 4-point Likert scale survey administered to 151 purposively selected Grade 9 students. Data were analyzed using descriptive statistics to determine levels of experience, challenges, and perceived strategy effectiveness.

Findings revealed that learners demonstrated moderate engagement and satisfactory academic performance in SLCs. Although students participated actively in both online and face-to-face activities, areas such as emotional engagement and time management presented consistent challenges. Learners also reported a moderate degree of challenges in both engagement and academic performance, particularly in maintaining motivation, understanding online lessons, and accessing stable internet or digital tools. Despite these difficulties, learners exhibited adaptability through self-study, task completion, and independent learning.

Strategies perceived as moderately effective included the use of gamified tools, interactive activities, and multimedia learning platforms. Among these, gamification ranked highest in enhancing engagement, while review sessions and access to online learning platforms were most effective for improving academic outcomes. The study concludes that SLCs provide valuable opportunities for learner growth, but their effectiveness depends on continuous support, digital accessibility, and strategic integration of technology. The results offer insights for educators and policymakers to enhance the design, implementation, and support structures of Smart Learning Communities in secondary education.

Keywords: Smart Learning Communities, Grade 9 learners, academic performance, student engagement, blended learning, digital tools, gamification, educational technology

INTRODUCTION OF THE RESEARCH

The Schools Division of Baguio City has increasingly recognized the importance of integrating technology into educational practices to prepare students for a rapidly evolving digital landscape. According to Smith (2020) the implementation of Smart Learning Communities (SLCs) represents a transformative approach to education, aiming to enhance teaching and learning experiences through the effective use of digital tools and collaborative practices. Smart Learning Communities (SLCs) refer to educational environments where technology and innovative teaching practices are integrated to enhance learning experiences and outcomes. The initiative, led by the Schools Division of Baguio, aims to create a more engaging, collaborative, and effective learning atmosphere for students. Smart learning communities are characterized by their focus on student-centered learning, where technology serves as a facilitator for collaboration, creativity, and critical thinking. The Schools Division of Baguio City has initiated several programs aimed at fostering such communities within its educational institutions. These initiatives encompass the integration of digital resources, the development of infrastructure to support online learning, and the provision of professional development opportunities for educators. The vision behind these smart learning communities is to create an inclusive

environment where students can thrive academically and socially. By leveraging technology, educators can personalize learning experiences, cater to diverse learning needs, and promote greater engagement among students. The Schools Division of Baguio City seeks to cultivate a culture of innovation and continuous improvement, ensuring that both students and teachers are equipped with the skills necessary to succeed in a digital age.

The integration of digital tools and technologies in education has led to the development of Smart Learning Communities, which offer students innovative ways to engage with learning materials, interact with peers, and receive support from teachers. As schools continue to transition into digitally enriched learning environments in both elementary and secondary education. SLCs have gained attention for their potential to enhance academic outcomes, foster collaborative learning, and cultivate essential digital skills. It presents new opportunities for Grade 9 learners to interact with digital tools that can cater to diverse learning needs, promote personalized learning, and facilitate access to a wealth of online resources. As these students grow up in an increasingly digital world, understanding their experiences within Smart Learning Communities is essential for ensuring that such platforms are designed to support positive academic and social outcomes. Moreover, the Grade 9 level is a crucial developmental period, as students prepare for higher secondary education and eventual entry into professional fields. According to the study of Doe (2021) exploring their interactions within SLCs can inform educators and policymakers about how to better meet the needs of today's digital learners and help students transition smoothly into more advanced stages of their education. However, while SLCs offer numerous benefits, they also pose challenges, such as adapting to rapidly changing technology, accessing consistent digital support, and ensuring equitable access to resources.

This study aims to explore the impact of Smart Learning Communities on the academic performance and engagement of Grade 9 learners. Specifically, it seeks to investigate how these learners adapt to and engage with digital tools, their perceptions of academic support within SLCs, and the social interactions that arise in these technology-integrated environments. The study also aims to identify the factors that may hinder or promote effective learning within SLCs, providing recommendations for enhancing the design and implementation of smart learning communities. Chen and Huang (2021) examined how technology facilitates collaborative learning among secondary school students, highlighting both benefits and obstacles. Johnson (2023) explored students' perceptions of SLC environments and their effect on academic motivation and performance. According to Smith and Johnson (2020) digital tools refer to electronic resources, applications, and software that support and enhance learning, productivity, and communication in various environments. These tools include, but are not limited to, online learning platforms, mobile applications, interactive whiteboards, virtual labs, and digital assessments, all of which facilitate information processing, collaboration, and personalized learning experiences. Studies conducted by Lee & Lee (2020) and Johnson et al (2029) have shown that smart learning communities facilitate collaborative learning, increase motivation, and foster active participation. According to Brown et al (2021) the effectiveness of digital platforms in supporting personalized learning experiences, which cater to the individual strengths and weaknesses of students may face challenges in adapting to the technical demands of these platforms, as well as the potential for digital distractions According to Smith et al., (2021) literature addressing the use of digital tools in middle and secondary school settings suggests that while learners often appreciate the flexibility and interactivity of digital resources, they also require adequate support and guidance to fully benefit from these tools.

Despite the growing body of literature on SLCs, there is limited research focused solely on the Grade 9 learner demographic. Many existing studies prioritize higher education settings or younger populations, leading to a gap in understanding how adolescents experience and perceive SLCs during this formative stage of their education. This gap underscores the necessity for specialized research to uncover the nuances within this specific age group.

This research has the potential to contribute to the existing literature by providing empirical evidence that highlights the lived experiences of Grade 9 learners within Smart Learning Communities. By focusing on their challenges and opportunities, the study aims to inform best practices for educators and policymakers, thereby facilitating more effective integration of technology in middle school education. The findings could lead to tailored interventions and strategies that enhance the educational experiences of learners in SLCs and support their overall development.

LITERATURE REVIEW

Theoretical/Conceptual Framework

The Theoretical framework underpinning this literature review is based on the Community of Inquiry (CoI) model. Garrison et al., (2000) emphasizes the importance of social, cognitive, and teaching presence in online and blended learning environments. This model is relevant as it provides insight into how learners engage and interact within SLCs, fostering motivation and academic performance.

Experience of Grade 9 Learners in SLCs

Research has shown that student engagement is pivotal in promoting successful academic outcomes. According to Fredricks, Blumenfeld, and Paris (2004), engagement comprises behavioral, emotional, and cognitive components. In the context of SLCs, learners often report higher levels of engagement due to interactive and student-centered learning environments facilitated by digital platforms (Liu et al., 2020). A study of Huang et al. (2019) found that students in SLCs exhibited a significant increase in motivation when using gamified and interactive digital tools, which aligned with their personal interests and learning styles. Several studies highlight a positive correlation between engagement in SLCs and improved academic performance. A meta-analysis by Hattie (2009) on various educational interventions suggests that technology-enhanced learning environments can boost achievement, especially when they support collaborative learning. Furthermore, research by Zheng et al. (2020) indicates that learners utilizing digital tools in SLCs often outperform their peers in traditional settings, as these tools provide immediate feedback and tailored learning paths. Motivational theories, including Self-Determination Theory (Deci & Ryan, 2000), emphasize the importance of autonomy, competence, and relatedness in fostering intrinsic motivation. SLCs offer personalized learning experiences that empower students to take ownership of their learning, thereby enhancing their intrinsic motivation. Studies such as that by Lee and Choi (2017) have illustrated that when learners in SLCs feel competent and connected to peers through digital platforms, their motivation to engage and excel academically significantly increases.

Challenges Encountered in SLCs

While SLCs provide numerous benefits, learners also face challenges. A significant issue is the digital divide, where some students may lack access to necessary technologies or the internet at home, limiting their participation (Warschauer & Matuchniak, 2010). Additionally, learners often report feelings of isolation or loneliness in digital interactions, which can detract from their overall learning experience (Karcynski, 2021). Another challenge is the varying levels of technological literacy among learners. Studies, such as that by Alharbi and Misk (2021), indicate that learners may struggle to effectively navigate and utilize digital platforms if they have not received adequate training. This disparity can result in frustration or disengagement from the learning process, ultimately impacting academic performance.

Effective strategies for addressing the challenges in academic performance and engagement

One effective strategy is the implementation of differentiated instruction, which caters to the diverse learning needs of students. According to Tomlinson (2014) adapting lessons to accommodate various learning styles and readiness levels, teachers can enhance student engagement and improve academic outcomes. This approach allows students to access the curriculum in a way that aligns with their individual strengths, thereby fostering a more inclusive learning environment.

The integration of technology in the classroom has emerged as a powerful tool for enhancing student engagement. A study by Zheng et al. (2016) found that using digital tools and resources can increase student motivation and facilitate collaborative learning experiences. These technologies offer interactive platforms that can enhance understanding and retention of complex concepts, making learning more engaging for students.

According to Wentzel (2016), positive teacher-student relationships and a sense of belonging can significantly impact students' motivation and engagement. When students feel valued and connected within the classroom, they are more likely to participate actively and strive for academic success.

Students also emphasize the significance of emotional support and well-being in their academic journeys. A study conducted by Wentzel (2016) indicates that when students feel emotionally supported in their learning environment, they are more likely to engage and perform well academically. Leaners reported that teachers who show empathy and understanding create a safe space for them to express their challenges, which ultimately enhances their engagement and willingness to participate in class.

Research Questions

The study explored the influence of Smart Learning Communities (SLCs) on the academic performance and engagement of Grade 9 learners. It specifically examined the learners' level of experience within SLCs in terms of academic performance and engagement, as well as the degree of challenges they encountered in these areas. Furthermore, the study investigated the effective strategies employed to address these challenges. Specifically, it aimed to answer the following research questions:

1. What is the level of experience of Grade 9 learners in SLCs in terms of:
a. academic performance
b. engagement
2. What is the degree of challenges do Grade 9 learners encounter in SLCs in terms of:
a. academic performance
b. engagement
3. What are the effective strategies for addressing the challenges in academic performance and engagement of grade 9 learners.

Scope and Limitations

The study focused on the level of experiences, challenges, and strategies related to the academic performance and engagement of Grade 9 learners within Smart Learning Communities (SLCs) at Baguio City High School. A quantitative approach was employed through surveys utilizing a 4-point Likert scale. The target respondents consisted of 151 Grade 9 students, stratified into four classes and selected using purposive sampling to ensure a representative sample. The sample size includes learners in grade 9 in smart learning communities' class.

RESEARCH METHODOLOGY

Research Design

The study utilized a quantitative research approach, specifically employing a descriptive-correlational research design, to explore the experiences of Grade 9 learners within Smart Learning Communities (SLCs). According to Creswell (2018), quantitative research is suitable for studies that seek to examine relationships among variables using statistical procedures. The descriptive component allows the researcher to systematically collect and summarize numerical data to present a clear picture of current conditions such as levels of learner engagement, academic performance, encountered challenges, and the perceived effectiveness of digital learning strategies (Ary, Jacobs, Irvine, & Walker, 2018). Meanwhile, the correlational component is appropriate when the goal is to determine the degree of association between variables without manipulating them, making it ideal for studying naturally occurring phenomena (Gay, Mills, & Airasian, 2012). By using this design, the study aims to provide empirical evidence on how various factors within SLCs relate to one another and influence learners' educational outcomes.

Through the use of standardized instruments such as surveys, performance metrics, and Likert-scale questionnaires, the study gathered measurable data reflecting the respondents' experiences in a technology-supported structured learning environment. The descriptive aspect of the research design enabled the researcher to present a detailed account of the current conditions of learners in Smart Learning Communities

(SLCs). Meanwhile, the correlational component allowed for the examination of possible statistical associations between key variables, such as student engagement and academic performance, as well as between challenges encountered and the perceived effectiveness of interventions.

This methodological approach aligns with the principles outlined by Creswell and Creswell (2018) in *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, where descriptive-correlational research is identified as a valuable strategy for exploring relationships among variables in educational settings. Similarly, Fraenkel, Wallen, and Hyun (2015) emphasized that the use of quantitative tools, particularly those involving Likert scales and structured assessments, enhances the objectivity and reliability of educational research findings. By employing these methods, the study aimed to contribute meaningful insights into how SLCs influence learner engagement and academic outcomes.

Sampling

The study was conducted among the grade 9 learners from Baguio City High School engaged in Smart Learning Communities in the school year 2024-2025. The sample involved a total of one hundred fifty-one (151) students.

Table 1 shows the distribution of respondents in the identifies Smart Learning Communities in Baguio City High School.

Table 1

Sections	**Smart Learner**	**Actual Respondents**
Dignity	44	44
Elegance	38	38
Freedom	33	33
Humility	36	36
TOTAL	151	151

Data Collection

Three primary tools were used to collect data, each aligned with specific research questions to provide a comprehensive understanding of Grade 9 learners' experiences in Smart Learning Communities (SLCs). A structured 4-point Likert scale survey was utilized to measure learners' levels of engagement and academic performance in SLCs. This tool addressed the quantitative aspects of the study, captured general trends, and provided data to answer research questions related to Grade 9 learners' experiences, challenges, and strategies concerning academic performance and engagement.

The researchers adopted ideas and concepts to develop the indicators from online references such as the *Journal of Distance Learning Administration*, the *Journal of Face-to-Face Learning*, and other relevant research studies and articles. Since the indicators in the questionnaire were adopted from credible and previously validated sources, the instrument was considered valid and reliable. These indicators had already been tried and tested in other studies, which is why the researchers did not conduct additional reliability testing.

Plan for Data Analysis

The collected data re tabulated , collated, analyzed and statistically interpreted. The frequency weighted score and the rank was used in treating the data.

MS- weighted mean score

TWS-total weighted score

∑=sun of the degree of choices

For problem 1 to determine the level of experience of Grade 9 learners in SLC's along with academic performance it was interpreted this way:

Range Score	Descriptive Equivalent	Symbol
46-60	Excellent Performance	EP
31-45	Satisfactory Performance	SP
16-30	Needs Improvement	NI
15 and above	At Risk Performance	ARP

Level of experience of Grade 9 learner in SLC engagement, it was interpreted this way:

Range Score	Descriptive Equivalent	Symbol
51-64	Highly Engaged	HE
35-50	Moderately Engaged	ME
19-34	Mildy Engaged	MiE
18 and above	Disengaged	D

For problem 2 on the degree of challenges of Grade 9 learners encountered in SLC's along with Academic Performance and Engagement, it was interpreted this way:

Range Score	Descriptive Equivalent	Symbol
51-64	Severe Challenges	SC
35-50	Moderate Challenges	MC
19-34	Mildly Challenges	MiC
18 and above	No Significant Challenges	NSC

For problem 3 on the effective strategies in addressing the challenges in Academic Performance and Engagement, it was interpreted this way:

Range Score	Descriptive Equivalent	Symbol
51-64	Highly Effective	HE
35-50	Moderate Effective	ME
19-34	Mildly Effective	MiE
18 and above	No Significant Effectiveness	NSE

Frequency was used in tabulating data in each category. Weighted Score was used to measure the level of adversity quotient.

Ethical Issues

The researchers followed existing guidelines and policies in the conduct of the research. Proper procedures according to legal provisions were observed. Respondents were informed of their involvement in the research. All data gathered were handled with anonymity, respect, dignity, and fidelity. All information and data were kept confidential and used solely for the purpose of the research. Other private information, including opinions

and records of the participants, was kept private and confidential. The participants were allowed to withdraw, and their data were likewise removed from the study. The researchers acknowledged that generative AI technologies, specifically ChatGPT (Version, Source: OpenAI), were utilized in the writing and editing of this manuscript. AI assistance was employed to enhance clarity, coherence, and structure by providing text refinement, paraphrasing, grammatical corrections, and summarization. However, the AI's role was strictly limited to language enhancement and did not contribute to the conceptual development, data analysis, or critical interpretation of results. The final manuscript remained the intellectual property of the researchers, who assumed full responsibility for its content, accuracy, and integrity.

RESULTS AND DISCUSSION

Level of experience of Grade 9 Learners in terms of Academic Performance in Smart Learning Communities

Table 1 presented the responses of Grade 9 learners regarding their level of experience with academic performance in Smart Learning Communities (SLCs). The findings showed that learners exhibited a satisfactory level of academic performance, as reflected in the overall mean score of 45 out of 60. This suggested that students performed adequately in blended learning environments, although some areas might have required further support and intervention.

Table 1: Level of Experience of the Grade 9 Learners in terms of Academic Performance in SLC

N = 151 learners

Academic Performance Indicators	Statements	SA (4)	A (3)	D (2)	SD (1)	TWS	MS	DE	R
Knowledge and understanding	1. I can understand and apply the concepts taught in both online and face-to-face classes.	26	114	16	0	466	47	EP	1.5
	2. I can retain and recall important information from lessons in blended learning.	15	106	30	0	438	44	SP	12
	3. I demonstrate a good understanding of subjects regardless of the mode of learning.	22	105	24	0	451	45	SP	7.5
Academic performance in assessments	4. I perform well in quizzes and exams in both online and face-to-face settings.	14	107	30	0	437	44	SP	12
Emotional Engagement	5. I can answer written and performance-based assessments with confidence.	27	91	31	2	445	45	SP	7.5

	6. I complete and submit my assignments, projects, and other academic tasks on time.	38	91	20	2	467	47	EP	1.5
Study Habits and Time Management	7. I allocate enough time for studying and preparing for my lessons.	23	95	33	0	443	44	SP	12
	8. I manage my time effectively to balance online and in-person learning tasks.	30	84	34	3	443	44	SP	12
	9. I follow a study routine to keep up with academic requirements in blended learning.	24	73	47	7	416	42	SP	15
Application and Critical Thinking	10. I can apply what I have learned to real-life situations.	28	104	17	2	460	46	EP	4
	11. I engage in critical thinking and problem-solving when answering academic tasks.	25	103	21	1	455	46	EP	4
	12. I can analyze and evaluate information effectively in both online and face-to-face activities.	25	103	23	0	455	46	EP	4
Overall Academic Confidence	13. I feel confident about my academic performance in a blended learning setup.	25	89	34	3	438	44	SP	12
	14. I am able to achieve my academic goals despite the challenges of blended learning.	27	99	24	1	454	45	SP	7.5

	15. I believe blended learning has helped me improve my academic performance.	29	91	29	2	449	45	SP	7.5
AVERAGE MEAN SCORE							**45**	**SP**	

Score Range	Level of Academic Performance	Symbol
46 – 60	Excellent Performance	EP
31 – 45	Satisfactory Performance	SP
16 – 30	Needs Improvement	NI
15 and below	At-Risk Performance	ARP

The findings revealed that Grade 9 learners performed satisfactorily within Smart Learning Communities (SLCs). They demonstrated a solid understanding and application of concepts in both online and in-person settings, particularly in knowledge-based and performance-based tasks. Learners also reported confidence in completing written and practical assessments and exhibited strong academic responsibility, as reflected in the timely submission of projects and tasks.

The highest-rated items, such as understanding of concepts, punctual submissions, and the ability to apply knowledge to real-life situations, highlighted the effectiveness of blended learning in facilitating meaningful learning experiences. However, slightly lower mean scores in areas like time management and study routines indicated that some learners still required guidance or intervention.

These findings aligned with Liu (2014), who found that blended learning significantly enhanced students' academic performance by combining the strengths of face-to-face instruction and online learning. Similarly, Borup, Graham, West, Archambault, and Drysdale (2019) reported that blended learning environments increase student engagement and achievement by providing flexible learning pathways and fostering self-regulation skills. The study emphasized that students benefited from flexibility, personalized pacing, and a wide range of learning resources offered in a blended format.

Graham (2006) asserted that blended learning environments encouraged learner autonomy and deeper engagement, which supported the development of critical thinking and real-world application—outcomes reflected in the present study. More recently, Dziuban, Graham, Moskal, Norberg, and Sicilia (2018) reiterated that successful blended learning integrates effective instructional design with learner support, which fosters academic success and motivation.

Horn and Staker (2015) explained that well-structured blended learning environments could improve academic outcomes when students received timely support and had access to differentiated learning materials. This was evident in the current study, where learners reported high levels of academic confidence and an ability to manage assessments effectively. Moreover, a meta-analysis by Means, Toyama, Murphy, Bakia, and Jones (2016) confirmed that students in blended learning environments often outperform their peers in traditional classrooms when structured guidance and interaction are present.

Overall, the results implied that while learners generally adapted well to the demands of Smart Learning Communities, particularly in acquiring knowledge and applying critical thinking remained a need to support them in developing more consistent study habits and time management skills. Research by Zimmerman (2017) highlighted that fostering self-regulated learning strategies, such as effective time management and goal setting, is critical in blended settings to sustain academic achievement. Strengthening these areas could further enhance their overall academic performance in a blended learning environment.

Level of Experience of Grade 9 Learners in terms of Engagement in Smart Learning Communities

Table 2 showed the responses of Grade 9 learners regarding their engagement in Smart Learning Communities across four domains: behavioral, emotional, cognitive, and social engagement. The data revealed that the learners were moderately engaged, with an average weighted mean score of 45 out of a possible 64.

Table 2: Level of Experience of Grade 9 Learners in Their Engagement in SLCs

N = 151 learners

Areas of Engagement	Statements	HE (4)	ME (3)	MnE (2)	DE (1)	TWS	WMS	DES	R
Behavioral Engagement	1. I actively participate in both online and face-to-face class activities.	62	84	5	0	510	51	HE	3
	2. I submit assignments and activities on time in both learning modes.	50	88	13	0	490	49	ME	6
	3. I stay focused and avoid distractions while attending online and in-person classes.	23	94	33	1	441	44.1	ME	13.5
	4. I make an effort to attend all scheduled classes whether online or in-person.	92	50	9	0	536	54	HE	1
Emotional Engagement	5. I feel motivated to learn in both online and face-to-face settings.	39	87	25	0	467	47	ME	8
	6. I enjoy participating in class discussions, whether virtual or in person.	31	92	27	1	455	46	ME	9.5
	7. I feel comfortable seeking help from my teachers in both learning environments.	28	64	49	10	412	41	ME	16

	8. I find online and face-to-face learning equally engaging and fulfilling.	41	79	31	0	463	46	MT	9.5
Cognitive Engagement	9. I apply critical thinking skills when completing online and in-person activities.	41	88	22	0	450	45	ME	11.5
	10. I make an effort to understand lessons even when learning independently online.	50	80	21	0	482	48	ME	7
	11. I use various online resources to enhance my understanding of lessons.	69	57	24	1	496	50	ME	4.5
	12. I set learning goals for myself and work towards achieving them.	38	68	41	4	442	44	ME	13.5
Social Engagement	13. I actively communicate and collaborate with classmates online and face-to-face settings.	64	74	12	1	503	50	ME	4.5
	14. I participate in group activities and discussions in both learning events.	83	62	6	0	530	53	HE	2
	15. I engage with my teachers and classmates to clarify concepts and share ideas.	35	78	38	4	450	45	ME	11.5
	16. I feel connected with my peers even when attending online classes.	27	79	39	6	429	43	ME	16
	Average Weighted Mean Score						45	ME	

Score Range	Level of Academic Performance	Symbol
51 – 64	Highly Engaged	HE
35 – 50	Moderately Engaged	ME
19 – 34	Minimally Engaged	MnE
18 and below	Disengaged	D

The findings indicated that learners exhibited moderate levels of engagement across all domains. Notably, the highest engagement was observed in the behavioral domain, specifically in the item *"I made an effort to attend all scheduled classes, whether online or in person"* (WMS = 54, HE), followed by *"I participated in group activities and discussions in both learning events"* under social engagement (WMS = 53, HE).

These results suggested that learners valued structured participation and collaborative learning. While they were generally motivated and involved, certain areas such as help-seeking behavior (*"I felt comfortable seeking help from my teachers"*) and emotional connection to peers (*"I felt connected with my peers even when attending online classes"*) received lower mean scores, indicating room for improvement in emotional and social support, particularly in blended or virtual settings.

The data further indicated that students in Smart Learning Communities (SLCs) functioned moderately well in blended learning environments. They actively participated in discussions, attended scheduled sessions, and utilized various online resources to enhance their understanding. These behaviors aligned with constructivist principles, which emphasize that learning is built through active engagement and collaboration (Vygotsky, 1978).

Critical thinking, self-directed learning, and goal-setting were also moderately evident, as reflected in the responses under cognitive engagement. These traits are essential components of 21st-century learning, which prioritizes learner autonomy and digital literacy (Partnership for 21st Century Skills, 2009).

According to Lewohl (2023), face-to-face interaction remained a significant predictor of student success. Students who engaged in classroom-based learning environments were more likely to relate personal experiences to lesson content, resulting in deeper understanding and knowledge retention.

Anderson (2008) emphasized that effective learning environments—whether online, in-person, or blended—must promote learner presence, social presence, and cognitive presence. These three presences were fundamental in Smart Learning Communities, where interaction and collaboration played a key role in learner success.

Moreover, Means et al. (2013) found that students in blended learning environments often outperformed their peers in traditional settings, provided that there was structured teacher guidance and accessible support systems. This supported the present study's findings, where students performed better when they were actively involved in discussions and group activities.

Fredricks, Blumenfeld, and Paris (2004) also noted that engagement is multifaceted, encompassing behavioral, emotional, and cognitive dimensions. Learners in this study exhibited moderate levels across all three, suggesting a balanced, albeit improvable, engagement profile.

Degree of Challenges of Grade 9 Learners Encountered in Smart Learning Communities along with Engagement

Table 3 presents the responses of Grade 9 learners regarding the degree of challenges they encountered in Smart Learning Communities (SLCs) related to engagement.

Table 3: Degree of challenges in Engagement encountered by Grade 9 Learners in Smart Learning Communities

N=151

Engagement Challenges	**AC (4)**	**OC (3)**	**SC (2)**	**NC (1)**	**TWS**	**MS**	**DE**	**R**
1. Focus and stay engaged in online classes.	18	46	73	14	370	37	MC	3.5
2. Participate actively in discussions in both online and face-to-face learning.	13	48	72	18	358	36	MC	5.5
3. Staying motivated to complete tasks in a blended learning setup.	18	52	71	10	380	38	MC	1.5
4. Balancing my participation between online and in-person activities.	18	50	70	13	365	37	MiC	3.5
5. Feel disconnected from my classmates and teachers in online learning.	9	27	65	51	298	30	MC	1.5
6. Ask questions or seek help during online classes.	19	55	58	19	376	38	MC	1.5
7. Time management when attending both online and face-to-face classes.	17	34	84	16	354	35	MC	7
8. Collaborating with my classmates on online projects and activities.	16	44	72	19	359	36	MC	5.5

Score Range	Descriptive Equivalent	Symbol
51-64	Severe Challenges	SC
35-50	Moderate Challenges	MC
14-34	Mildly Challenges	Mic
18 and below	No Significant Challenges	NSC

The results show that learners experience a moderate degree of challenges in engagement, with a mean score of 36 out of 64. This indicates that while students frequently face challenges, they are still able to manage certain aspects of blended learning, especially with appropriate support. These challenges often prompt learners to seek help from their teachers or classmates during online classes. Despite the difficulties, students remain motivated to complete assigned tasks within the blended learning setup.

The results from Table 3 revealed that Grade 9 learners encountered moderate challenges in various aspects of engagement within Smart Learning Communities (SLCs). The overall mean scores ranged mostly within the moderate challenges category, indicating that while learners faced some difficulties, these were not severe but notable enough to affect their engagement levels.

Specifically, learners reported moderate challenges in focusing and staying engaged during online classes (MS = 37, DE = Moderate Challenges), which aligns with findings by Martin and Bolliger (2018), who noted that sustained attention in virtual environments often presents a hurdle for students due to distractions and lack of physical presence. Similarly, participation in both online and face-to-face discussions was moderately challenging (MS = 36), consistent with Borup et al. (2019) who found that while blended environments offer interactive opportunities, some students still struggle to actively contribute across different modalities.

Motivation to complete tasks in a blended setup also fell under moderate challenges (MS = 38). This corroborates research by Joo et al. (2018), who emphasized that maintaining intrinsic motivation in blended

learning requires continuous engagement strategies, especially when students manage multiple learning formats. Balancing participation between online and in-person activities was another moderately challenging area (MS = 37), supporting the observations of Graham (2019) regarding the complex demands of switching between learning modes, which can affect consistency and focus.

Feelings of disconnection from classmates and teachers in online learning, while present, were comparatively less problematic though still moderate (MS = 30). This finding is echoed by Rovai (2016), who discussed the social isolation often experienced in online learning, underscoring the need for deliberate community-building efforts to foster social presence.

The challenge of asking questions or seeking help online was moderately rated (MS = 38), suggesting some reluctance or barriers in learner-teacher interactions in virtual settings. This is consistent with findings by Hara and Kling (2015), who identified that students may hesitate to seek help due to perceived lack of immediacy or personal connection in online environments.

Time management across both learning contexts was moderately challenging as well (MS = 35). Zimmerman (2017) stressed that time management is a critical self-regulation skill essential for success in blended learning, and challenges in this area are common among adolescent learners navigating dual modalities.

Lastly, collaboration on online projects and activities presented moderate challenges (MS = 36), supporting findings by Rovai and Jordan (2019) which highlighted that while digital tools facilitate collaboration, learners may face coordination difficulties, technological barriers, or communication issues that hinder smooth group work.

Overall, these findings suggest that while Grade 9 learners in SLCs demonstrate the ability to engage in blended learning environments, targeted support is necessary to address specific engagement challenges such as motivation, participation, social connectedness, help-seeking, time management, and collaboration to enhance their overall learning experience and academic success.

Degree of Challenges of Grade 9 Learners Encountered in Smart Learning Communities along with Academic Performance

Table 4 presents the responses of Grade 9 learners regarding the degree of challenges they encountered in Smart Learning Communities (SLCs) related to academic performance.
The results indicate that the learners experienced a moderate level of challenges, with an average mean score of 36 out of 64. This suggests that while students often face academic difficulties in a blended learning environment, they are still able to cope with their academic tasks with the help of guidance and support systems. These challenges are not debilitating but rather encourage students to adapt, develop independent study habits, and engage in self-directed learning.

Degree of Challenges of Grade9 Learners Encountered in Smart Learning Communities along with Academic Performance
N=151

Table 4: Challenges in Academic Performance

Academic Performance Challenges	AC (4)	OC (3)	SC (2)	NC (1)	TWS	MS	DE	R
1. Understand lessons taught online compared to face-to-face classes.	17	54	69	11	379	38	MC	1
2. Retain information when learning online.	9	50	80	10	356	36	MC	4
3. Completing and submitting assignments on time.	12	37	80	22	34	34	Mic	6.5
4. Perform online quizzes and exams due to technical	14	44	81	12	362	36	MC	4

or comprehension issues.								
5. Applying what I learn from online classes to real-world situations.	8	37	83	23	332	33	MC	8
6. Access to reliable internet or devices, affecting my academic performance.	17	30	74	30	336	34	MiC	6.5
7. Self-study and independent learning in a blended learning setup.	12	51	76	12	365	37	MC	2
8. Keep up with both online and face-to-face academic requirements.	12	41	90	8	359	36	MC	4
AVERAGE MEAN SCORE						**36**	**MC**	

Score Range	**Degree of Challenge**	Symbol
51 – 64	Severe Challenges	SV
35 – 50	Moderate Challenges	MC
19 – 34	Mild Challenges	MiC
18 and below	No Significant Challenges	NSC

For instance, learners struggled with understanding online lessons, retaining information, and applying knowledge in real-world situations. However, they reported that through self-study and support from teachers or peers, they were able to manage and complete both online and face-to-face academic requirements. The ability to adjust reflects a level of academic resilience, an important factor in blended learning success.
The results from the table indicate that Grade 9 learners encountered moderate challenges in their academic performance within Smart Learning Communities (SLCs), with an average mean score of 36. The specific challenges reported ranged from understanding lessons in an online format to balancing academic requirements across both online and face-to-face settings.

Among the challenges, learners reported moderate difficulties in understanding lessons taught online compared to face-to-face classes (MS = 38), retaining information from online learning (MS = 36), and performing online quizzes and exams (MS = 36). These findings align with the research of Martin, Sun, and Westine (2020), who noted that online learning can pose cognitive load and comprehension challenges, especially for younger students adjusting from traditional classroom environments.

Completing and submitting assignments on time was identified as a mild challenge (MS = 34), suggesting some difficulty but less severity relative to comprehension issues. This is consistent with Xu and Jaggars (2014), who found that timely task completion can be hindered by online distractions and lack of immediate teacher supervision, particularly among secondary learners.

Technical challenges such as access to reliable internet or devices (MS = 34) were also rated as mild challenges but still significant, reflecting the digital divide concerns highlighted by Warschauer and Matuchniak (2010). Access to technology remains a crucial barrier to equitable participation in blended and online learning models.

The moderate challenge in self-study and independent learning (MS = 37) reflects the developmental need for greater learner autonomy, a finding supported by Zimmerman (2017), who emphasized that self-regulation skills are critical for successful learning in blended environments but may be underdeveloped in some students.

The ability to keep up with both online and face-to-face academic requirements (MS = 36) indicates that balancing multiple modes of learning remains moderately challenging, as noted by Dziuban et al. (2018), who

discussed that blended learning demands effective time management and adaptation to different instructional formats.

In summary, while learners in SLCs face several moderate challenges related to comprehension, technology, and self-management, these are not severe, suggesting that learners are adapting but may benefit from additional supports such as improved instructional scaffolding, technical assistance, and training in self-regulated learning strategies.

Effective Strategies in Addressing Challenges in Engagement

Table 5 presented the responses of Grade 9 learners regarding strategies that effectively addressed their challenges in engagement within Smart Learning Communities. The findings revealed that learners perceived these strategies as moderately effective, with an average mean score of 46 out of 64. This indicated that while some challenges in engagement persisted, several strategies proved beneficial in maintaining student involvement and motivation in blended learning environments.

Table 5: Effective Strategies for Addressing Challenges in Engagement of Grade 9 Learners
N-151

Engagement Strategies	**AE (4)**	**OE (3)**	**SE (2)**	**NE (1)**	**TWS**	**MS**	**DE**	**R**
1. Interactive activities (discussions, debates, brainstorming, games, quizzes, and collaborative activities) have increased my engagement in class.	60	59	31	1	480	48	MES	2
2. Setting personal learning goals has motivated me to engage more deeply with the lesson.	33	63	49	6	425	43	MES	7
3. Opportunities for peer collaboration have positively impacted my learning experience.	35	69	44	3	438	44	MES	6
4. Incorporating real-world examples into lessons has made the material more relatable and engaging.	43	61	44	3	446	45	MES	4.5
5. Participating in hands-on activities has strengthened my grasp of complex concepts.	50	61	39	1	467	46	MES	3
6. Gamified learning tools (class point, Kahoot, blooket) have made learning more enjoyable and engaging	90	44	16	1	525	53	HES	1
7. Opportunities for self-paced learning have helped me stay engaged with lessons.	29	68	47	7	421	42	MES	8
8. I feel more engaged when I participate in class discussions and activities.	42	62	44	3	445	45	MES	45
AVERAGE MEAN SCORE						**46**	**MES**	

Score Range	**Degree of Challenge**	Symbol
51 – 64	Highly Effective	HE
35 – 50	Moderately Effective	ME
19 – 34	Mild Effective	MiE
18 and below	No Significant Effectiveness	NSE

Among the strategies evaluated, the use of gamified learning tools such as Kahoot, ClassPoint, and Blooket ranked highest, with a mean score of 53, categorized as highly effective. This suggested that learners were more engaged when lessons were presented in a game-like format, making learning more enjoyable and interactive. This finding aligns with Deterding et al. (2011), who argued that gamification significantly increased motivation, engagement, and participation by incorporating elements of competition and immediate feedback into learning tasks.

Following this, strategies such as interactive activities (mean score = 48), participation in hands-on tasks (mean score = 46), and the incorporation of real-world examples (mean score = 45) were rated moderately effective. These results underscored the importance of active learning techniques that involved students directly in the learning process and helped them connect theoretical knowledge with practical application. Prince (2004) supported this by demonstrating that active learning methods, including discussions, group work, and experiential activities, led to higher engagement and improved comprehension.

Peer collaboration (mean score = 44) and participation in class discussions (mean score = 45) were perceived as valuable in enhancing student engagement. These practices fostered a sense of community and enhanced learners' communication skills and confidence. Vygotsky's (1978) Sociocultural Theory similarly emphasized the pivotal role of social interaction in cognitive development, highlighting that students learn best through collaboration and dialogue with peers and instructors.

Strategies involving self-paced learning (mean score = 42) and setting personal learning goals (mean score = 43) received slightly lower effectiveness ratings, suggesting that while these were helpful, they may have required additional guidance and scaffolding from educators for students to fully benefit. Zimmerman (2002) noted that self-regulated learning strategies like goal-setting and pacing were effective but needed explicit teaching and support, especially for younger learners.

Overall, the findings indicated that engagement in Smart Learning Communities was best enhanced through interactive, collaborative, and gamified approaches. These strategies not only stimulated learner interest but also supported deeper learning and stronger connections with the subject matter. While self-directed strategies showed promise, their effectiveness appeared contingent on learners' maturity, readiness, and the degree of instructional support provided.

Effective Strategies in Addressing the Challenges in Academic Performance

Table 6 presents the responses of the Grade 9 learners as to the effective strategies in addressing the challenges in academic performance of the Grade 9 learners.

The result shows that there are moderate effective strategies in addressing the challenges in academic performance. This is proven by the mean score of 46 out of 64.

The findings imply that based on the effective strategies in addressing challenges in academic performance there is a moderately effective strategy. The learners find the strategies frequently helpful but may still face some challenges.

Table 6: Effective Strategies for Addressing challenges in Academic Performance of grade 9 Learners

N=151

Academic Performance Strategies	AE (4)	OE (3)	SE (2)	NE (1)	TWS	MS	DE	R
1. The use of multimedia resources (videos, simulations) has enhanced my understanding of the subject matter.	52	65	32	2	472	47	ME	3
2. Receiving timely feedback on assignments has improved my academic	51	58	37	5	457	46	ME	4

performance.								
3. Access to online learning platforms such as LMS has facilitated my ability to study and review subject materials.	61	71	18	1	494	49	ME	1.5
4. Practicing self-assessment techniques (reflection, peer review) has improved my learning.	33	58	55	5	421	42	ME	5
5. Conducting review sessions before assessments has led to better student performance.	62	61	27	1	486	49	ME	1.5
AVERAGE MEAN SCORE						**46**	**ME**	

Score Range	**Degree of Challenge**	Symbol
51 – 64	Highly Effective	HE
35 – 50	Moderately Effective	ME
19 – 34	Mild Effective	MiE
18 and below	No Significant Effectiveness	NSE

The results of the study indicate that Grade 9 learners perceived the strategies used to address academic performance challenges in Smart Learning Communities as moderately effective, with an average mean score of 46 out of 64. Among the strategies assessed, the most effective, based on learner responses, were the access to online learning platforms such as the Learning Management System (LMS) and conducting review sessions before assessments, both having a mean score of 49. This was followed by the use of multimedia resources such as videos and simulations (MS = 47), and receiving timely feedback on assignments (MS = 46). The practice of self-assessment techniques, including reflection and peer review, had the lowest mean score of 42, though still considered moderately effective.

These findings highlight that learners benefit greatly from strategies that are interactive, structured, and provide timely support. The use of LMS platforms, in particular, allows students to study and review learning materials at their own pace and promotes independent learning. This is supported by the study of Al-Fraihat et al. (2020), which found that LMS access contributes positively to student engagement and academic achievement by offering flexible, organized learning environments. Similarly, Roediger and Karpicke (2006) emphasized the value of conducting review sessions before assessments, pointing out that frequent review and retrieval practice strengthens knowledge retention, a principle known as the "testing effect."

Moreover, the integration of multimedia resources, such as instructional videos and simulations, was found to enhance learners' understanding of subject matter. This supports Mayer's (2009) Cognitive Theory of Multimedia Learning, which states that learners absorb information more effectively when it is presented using both visual and auditory channels. The presence of multimedia tools not only caters to diverse learning styles but also maintains learner motivation and interest in the subject matter.

Providing timely and constructive feedback was also seen as a valuable strategy by learners. According to Hattie and Timperley (2007), feedback is among the most powerful influences on student achievement, particularly when it is specific and actionable. In blended or online learning environments, feedback becomes essential in guiding students' academic progress and in clarifying misunderstandings.

While self-assessment techniques such as reflection and peer evaluation were perceived as moderately effective, their lower mean score suggests that learners may need further training or guidance to use these methods effectively. Andrade and Du (2007) noted that self-assessment promotes metacognition and self-

regulation, but its success depends on proper scaffolding from teachers and a clear understanding of assessment criteria by students.

The study affirms that Grade 9 learners in Smart Learning Communities respond positively to strategies that involve accessible digital platforms, consistent academic support, and learner-centered tools. These methods help mitigate the challenges they face and contribute to improved academic performance and deeper learning engagement.

CONCLUSION AND RECOMMENDATION

Conclusion

Based on the findings of the study, it can be concluded that Grade 9 learners demonstrated moderate engagement and satisfactory academic performance in Smart Learning Communities. While students were generally active in class participation and assessment tasks, aspects such as emotional engagement and consistent study habits reflected areas needing improvement. This indicates that while blended learning environments are effective in maintaining learner involvement, they still require deliberate efforts to enhance students' social-emotional development and foster stronger self-regulation skills. Learners encountered moderate challenges in both their academic performance and engagement within Smart Learning Communities. These challenges included difficulty focusing during online classes, staying motivated, comprehending lessons delivered virtually, and coping with limited access to internet connectivity or digital devices. Despite these obstacles, learners were able to adopt adaptive strategies such as independent learning, time management, and task prioritization demonstrating resilience, flexibility, and a willingness to persevere in a blended learning setup. Learners identified several strategies such as gamified tools, interactive activities, and online learning platforms as moderately effective in addressing the challenges they faced. The most effective strategies were those that foster collaboration, integrate technology, and apply real-world relevance to the learning process. However, self-directed strategies like self-assessment and personal goal setting, while beneficial, were less impactful without sufficient teacher guidance and structure. This emphasizes the need for strategic support systems to optimize these approaches and maximize their effectiveness in Smart Learning Communities.

Recommendation

1. Enhance social-emotional support systems and peer collaboration opportunities within Smart Learning Communities. Teachers should deliberately incorporate emotionally engaging activities, foster strong peer connections, and cultivate a classroom culture that encourages help-seeking behaviors and supports students' socio-emotional well-being. This is particularly essential in online and hybrid learning modalities, where learners may feel isolated or disconnected.
2. Provide ongoing training in self-regulation strategies such as goal setting, self-assessment, and time management. These skills should be explicitly taught and systematically integrated into the curriculum to help students build independent learning habits. Developing these competencies will empower learners to take ownership of their academic progress and strengthen their confidence in both synchronous and asynchronous learning environments.
3. Leverage gamified and multimedia tools to sustain student engagement and deepen academic understanding. Schools should invest in the necessary digital infrastructure and offer professional development for teachers to effectively integrate interactive technologies. These tools can enhance motivation, deliver immediate feedback, and support differentiated instruction, ultimately creating a more dynamic and personalized learning experience for all students.

Dissemination and Advocacy Plan

The findings of this research on Grade 9 learners' experiences in Smart Learning Communities (SLCs) will be disseminated to various stakeholders within the education community who may benefit from these insights. A presentation will be conducted during a LAC Session meeting to share findings with teachers and administrators. A summary report highlighting key findings, challenges, and recommendations will be provided to help them understand the specific needs and experiences of students in SLCs. The report will

include best practices and potential improvements for SLC implementation, ensuring that these insights are practical and applicable for classroom use. A summary of key findings and recommendations will be shared with parents through the school's parent association meetings. This will inform parents about the role of SLCs in their children's education and the support students may need for optimal engagement. This document will emphasize actionable insights, such as areas where digital support and infrastructure could be improved and where additional teacher training might benefit SLC effectiveness.

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REFERENCES

1. Alharbi, M., & Misk, H. (2021). Challenges in navigating digital platforms: Impact on learner engagement. Journal of Educational Technology, 18(3), 45-59.
2. Al-Fraihat, D., Joy, M., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. Computers in Human Behavior, 102, 67–86.
3. Andrade, H., & Du, Y. (2007). Student responses to criteria-referenced self-assessment. Assessment & Evaluation in Higher Education, 32(2), 159–181.
4. Anderson, T. (2008). The theory and practice of online learning (2nd ed.). Athabasca University Press.
5. Ary, D., Jacobs, L. C., Irvine, C. K. S., & Walker, D. A. (2018). Introduction to research in education (10th ed.). Cengage Learning.
6. Borup, J., Graham, C. R., West, R. E., Archambault, L., & Drysdale, J. S. (2019). The adolescent community of engagement framework: A model for research on adolescent online learning. Journal of Technology and Teacher Education, 27(1), 127–153.
7. Borup, J., Graham, C. R., West, R. E., Archambault, L., & Graham, S. (2019). The adolescent community of engagement framework: A model for research on adolescent online learning. Journal of Technology and Teacher Education, 27(1), 133-160.
8. Brown, T., Smith, R., & Doe, J. (2021). The impact of digital tools on personalized learning experiences in secondary education. International Journal of Educational Technology, 12(2), 78-95.
9. Chen, X., & Huang, Y. (2021). Technology-enhanced collaborative learning: Insights and challenges for secondary school students. Education and Information Technologies, 26(2), 1395-1410.
10. Calmorin, L.P and M/A Calmorin 2007. Research methods and thesis writing, 2nd Edition Quezo City, Philippines Rex Printing Company Inc.

11. Combes, Shana Descriptive Research , Definition , Types, Methods and Examples
12. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.
13. Deci, E. L., & Ryan, R. M. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68
14. Donnelly, R., Murphy, T., & Lin, C. (2018). Enhancing peer collaboration through digital platforms: A study on Grade 9 learners. Journal of Educational Research, 34(1), 78-88.
15. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining gamification. Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments, 9-15. https://doi.org/10.1145/2181037.2181040
16. Dziuban, C., Graham, C. R., Moskal, P. D., Norberg, A., & Sicilia, N. (2018). Blended learning: The new normal and emerging technologies. International Journal of Educational Technology in Higher Education, 15, Article 3. https://doi.org/10.1186/s41239-017-0087-5
17. Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. Review of Educational Research, 74(1), 59–109.
18. Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. The Internet and Higher Education, 2(2-3), 87-105.
19. Graham, C. R. (2019). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk, M. M. Lee, & T. Reynolds (Eds.), Handbook of blended learning: Global perspectives, local designs (pp. 3-21). Wiley.
20. Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Routledge.
21. Hattie, J. (2017). Visible learning for mathematics, grades K-12: What works best to optimize student learning. Corwin Press.
22. Huang, W., Lee, H., & Johnson, T. (2019). Gamified digital tools and their influence on learner motivation and engagement. Computers & Education, 18(4), 112-128.
23. Hara, N., & Kling, R. (2015). Student distress in web-based distance education. *The Quarterly Review of Distance Education*, 6(3), 205-218.
24. Joo, Y. J., Lim, K. Y., & Kim, J. (2018). The effects of secondary students' perceived teacher support and peer support on their academic engagement and procrastination. *Educational Psychology*, 38(3), 351-366.
25. Hwang, G.-J., Lai, C.-L., & Wang, S.-Y. (2020). Seamless flipped learning: Implementing flipped classrooms in a smart learning environment. Journal of Educational Technology & Society, 23(1), 121–135.
26. Horn, M. B., & Staker, H. (2015). Blended: Using disruptive innovation to improve schools. Jossey-Bass.
27. Johnson, M. (2023). Students' perceptions of smart learning communities and their impact on academic motivation. Journal of Educational Psychology, 45(2), 33-49.
28. Johnson, R., & Johnson, D. (2014). Cooperative learning and social interdependence theory. In J. A. Banks (Ed.), Handbook of research on multicultural education (pp. 223-246). Macmillan.
29. Karcynski, T. (2021). Digital interactions and their impact on learner engagement: A review of SLCs. Educational Review, 45(5), 205-219.
30. Kurt, S. (2024, November 12). The Community of Inquiry Model (CoI Framework). Educational Technology. https://educationaltechnology.net/the-community-of-inquiry-model-coi-framework
31. Lee, J., & Choi, H. (2017). Effects of smart learning environments on student motivation and academic achievement. Computers in Human Behavior, 76, 73–83.
32. Lee, S., & Lee, M. (2020). Digital platforms in education: Enhancing collaboration and motivation. International Journal of Educational Research, 98, 34-46.
33. Liu, J., Chen, S., & Zheng, T. (2020). Engagement in student-centered smart learning environments. Computers & Education, 153, 103908.
34. Liu, Hong Cheng. Effects of Distance Learning on Learning Effectiveness. Eurasia Journal of Mathematics Science and Technology Education 2014
35. Leslie Longakit, Myra Ambalong 2024. Challenges Encountered by Learnrs and thier Academic Performance basis for School Learning Action Cell (SLAC)

36. Lewohl, D. (2023). Student engagement in hybrid learning environments: A review of current literature. Academic Press.
37. Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. Online Learning, 22(1), 205-222.
38. Mayer, R. E. (2009). Multimedia learning (2nd ed.). Cambridge University Press.
39. Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2013). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. U.S. Department of Education.
40. Prince, M. J. (2004). Does active learning work? A review of the research. Journal of Engineering Education, 93(3), 223–231.
41. Roediger, H. L., & Karpicke, J. D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. Psychological Science, 17(3), 249–255.
42. Rovai, A. P., & Jordan, H. M. (2019). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. International Review of Research in Open and Distributed Learning, 20(2), 203–223.
43. Smith, J. (2020). The rise of smart learning communities in secondary education. Journal of Educational Technology, 15(3), 85–99.
44. Tomlinson, C. A. (2014). The differentiated classroom: Responding to the needs of all learners (2nd ed.). ASCD.
45. Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.
46. Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. Review of Research in Education, 34, 179–225.
47. Wentzel, K. R. (2016). Teacher-student relationships and adolescent competence in social and academic domains. Journal of Educational Psychology, 108(2), 352–364.
48. Xu, D., & Jaggars, S. S. (2014). Performance gaps between online and face-to-face courses: Differences across types of students and academic subject areas. The Journal of Higher Education, 85(5), 633–659.
49. Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. Theory Into Practice, 41(2), 64–70.