Enhancing Grade VIII Geography Learning through Google Classroom: An Action Research

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Abstract: This action research project examines the impact of Google Classroom on the academic performance and views of Grade VIII students in Geography education. Using Google Classroom made it possible for students to learn in ways that were interactive, collaborative, and flexible. This let them learn about geography in ways that went beyond the typical classroom. Descriptive statistics and paired sample t-tests were used to analyze pre- and post-intervention test scores and survey responses obtained from 16 students. The results showed that academic performance improved significantly, with mean scores going up from 25.1 to 34.3 ($p < .05$). Students' attitudes regarding using Google Classroom also improved, going from a moderate mean of 3.40 to high mean of 4.00 on a 5-point Likert scale. This shows that they felt more comfortable, convenient, and engaged in their learning. The findings show the efficacy of incorporating Google Classroom to promote independent learning and improve educational outcomes in Geography. This study adds to the body of evidence supporting technology-enhanced learning as a strategy for increasing learner motivation and achievement in secondary education. The study recommends that the teachers should integrate Google Classroom alongside traditional approaches, and future studies should look into its impact across subjects and grade levels.

Key Words: *Google Classroom, Intervention, effective, academic performance, Geography education*

1.Introduction

In recent years, education has undergone a significant transformation, shifting from a teacher-centric approach to one that prioritizes the needs of learners. There is now a strong emphasis on integrating technology into the classroom through innovative teaching methods aimed at helping students achieve their learning objectives (Hwang, Lai, & Wang, 2015). According to Northey et al. (2015), technology plays a crucial role in increasing student engagement and is essential for meeting learning goals (Bolkan, 2015). The adoption of digital technology in education accelerated when physical classrooms were replaced by online learning platforms worldwide (Korkmaz & Toraman, 2020).

Geography, as a subject, presents unique opportunities for leveraging digital tools like Google Classroom. Through interactive maps, multimedia resources, and virtual field trips, educators can enrich geography instruction, providing students with immersive and experiential learning opportunities. Furthermore, the collaborative nature of Google Classroom facilitates peer-to-peer learning, encouraging students to explore geographical concepts together and share their insights and perspectives.

Similarly, in Bhutan, educators have embraced Google Classroom as a delivery platform mandated by the Ministry of Education (Kado et al., 2020). Both the iSherig ICT Master plan and our education blueprint prioritize the incorporation of technology into education (Ministry of Education [MOE], 2014; 2019). Google Classroom, a free tool, facilitates collaboration, assignment creation, and communication between teachers and students (Hussaini et al., 2020), making it suitable for use in any grade level depending on the proficiency of users (Bell, 2015).

The shift towards digital platforms like Google Classroom reflects a broader trend in education, emphasizing learner-centered approaches and leveraging technology to enhance teaching and learning outcomes. With its array of features including assignment management, content sharing, and real-time communication, Google Classroom offers educators the flexibility to design interactive lessons and engage students in meaningful learning experiences.

Alim, Linda, Gunawan, & Saad (2019) and Azhar & Iqbal (2018) have also highlighted the benefits of ICT-integrated teaching and learning, including fostering cooperation, active learning, and personalized learning experiences through digital resources. Adopting Google Classroom can contribute to producing globally competent learners, enabling learning to occur irrespective of physical classroom settings.

Thus, this paper underscores the importance of digital tools like Google Classroom in modern education and their potential to transform geography instruction. By conducting action research, this study aims to contribute to the growing body of knowledge on the use of technology in geography education, offering valuable insights for educators, policymakers, and researchers striving to create innovative and impactful learning environments.

Aim: This study aims to investigate the impact of using Google Classroom on both academic performance and student perceptions in Geography among Grade VIII students. The following objectives will guide the research to explore how digital tools like Google Classroom can enhance collaboration, motivation, and overall academic performance in the geography classroom.

Objectives:

1. To evaluate how students' academic achievement in geography changed before and after using Google Classroom.
2. To examine the students' perceptions regarding learning Geography using Google Classroom.
3. To evaluate how Google Classroom affects student engagement, understanding, and participation in Geography learning.

Reconnaissance

Situational Analysis

In the last experience of researcher's teaching geography to grade VIII students, have noticed a shift towards a more focused and integrated curriculum with the incorporation of digital tools. The widespread adoption of educational technology followed the COVID-19 pandemic, necessitating virtual learning due to school closures. Despite its initial challenges, digital learning has been widely embraced in education due to its usability and adaptability.

Google Classroom facilitates collaboration and communication, essential for learning geography, allowing students to work together on projects, discuss topics, and share ideas. However, the academic performance of grade VIII students in my school, particularly in Dagan Dzongkhag, has been comparatively low in the past year (Bhutan Council for School Examinations and Assessment [BCSEA], 2022).

While there is limited research on the use of Google Classroom in the Bhutanese context, studies elsewhere have demonstrated its effectiveness in enhancing the teaching and learning process, improving access, and increasing student engagement (Hussaini et al., 2020). However, its effectiveness specifically in teaching geography has not been widely studied. Therefore, the researcher undertook this action research project to examine the effectiveness of Google Classroom as a Digital Tool in Learning Geography for grade VIII students.

Competence

Tenzin, the lead researcher, has 23 years of teaching experience and 13 years of experience as a principal. He holds a Master's degree in Education (Leadership and Management) from Lovely Professional University, India, and has conducted research on the impact of positive discipline strategies on teachers' and students' beliefs and practices.

Critical Friend

Leela Balab Pokhrel, the teacher, has 14 years of teaching experience with a Bachelor's degree in Education, specializing in History and Geography. He holds a Master's degree in Education (Geography) from Samtse College of Education, Bhutan, and has conducted research on students' perceptions of geography education in middle and higher secondary schools.

2. Literature Review

2.1 Increased Engagement and Collaboration

Numerous studies suggest that Google Classroom can enhance student engagement and motivation in geography classes. Gupta and Panthania (2020) found that Google Classroom fosters collaboration and autonomy, supporting personalized learning environments. Similarly, Yang and Baldwin (2020) argue that technology-enabled instruction encourages active knowledge construction by students rather than passive reception.

Furthermore, Iftekhar's (2016) study at Daffodil International University revealed that Google Classroom strengthens interaction between teachers and students, promoting collaborative learning. Crawford

(2015) also supports this notion, stating that Google Classroom facilitates collaborative learning and enables students to collaborate with each other effectively.

2.2 Enhanced Feedback

Google Classroom enables quick and efficient feedback from teachers to students, aiding students in identifying their strengths and weaknesses and improving learning outcomes. Hussaini et al. (2020) found that using Google Classroom in geography classes improved the quality and frequency of feedback, resulting in better learning outcomes. Overall, students generally hold positive views regarding the meaningful feedback provided by Google Classroom to both students and parents.

2.3 Academic Performance

Hussaini et al. (2020) demonstrated that Google Classroom enhances the teaching and learning process, enabling students to track their progress through online assessments and monitor their learning performance conveniently.

Manolachi (2021) conducted research on "Utilization of Web 2.0 educational tools and the Google Earth application in interactive teaching-learning in the subject of geography" and concluded that, "Demonstrating the predominant use of Web tools and the Google Earth application leads to increased student motivation for learning, as well as enhanced quality and efficiency of the instructional-educational process within the school." This approach was found to be particularly beneficial in fostering the development of specific skills in geography education.

Kadhim (2020) literature review on the effective use of ICT (Information and Communication Technology) for learning and teaching geography suggests that integrating ICT into geography education can enhance the development of Geographical Pedagogical Content Knowledge (GPCK).The literature review suggests that incorporating ICT into geography education can enrich the learning experience, deepen students' understanding of geographical concepts, and help teachers develop effective pedagogical approaches to teaching geography.

2.4 Blended Learning

Google Classroom plays a pivotal role in implementing blended learning, which combines traditional face-to-face instruction with online learning. Colis and Moonen (2001) define blended learning as a flexible approach that integrates both in-person and online education, allowing learning to occur both inside and outside the classroom. By offering a personalized, flexible, and collaborative learning experience, Google Classroom supports blended learning, providing the benefits of online courses while maintaining face-to-face interaction.

Overall, the literature suggests that Google Classroom is an effective tool for teaching and learning geography. It enhances student engagement, promotes collaborative learning, and provides a flexible learning environment. Educators integrating Google Classroom into their instruction may observe improvements in student motivation, interest, and academic performance. However, further research is needed to explore the specific benefits of Google Classroom in the context of geography education in Bhutan. Additionally, empirical investigations are necessary to assess the efficiency of Google Classroom as a substitute for traditional classrooms in teaching geography.

The Action Research Question

Based on the reconnaissance, which included initial observations, casual interviews, and an analysis of classroom practices, the following action research questions were developed:

Overarching question:

How does the use of Google Classroom improve academic performance and student perception in learning Geography among Grade VIII students?

Sub Questions

a. What is the effect of using Google Classroom on students' academic performance in Geography?
b. How does Google Classroom influence students' perceptions toward learning Geography?
c. How does Google Classroom enhance student engagement and understanding of Geography concepts?

3. Methodology

This action research was conducted to examine the impact of Google Classroom on Grade VIII students' academic performance in and their perception on the use of Google Classroom in learning Geography. The research participants were all 16 students from grade VIII. The research is structured in three key phases; Pre-test, Intervention,

and Post-test. The baseline and post –intervention data were collected through standard test, interviews and Survey Questionnaire.

The baseline data were gathered through standard test, survey questionnaire and structured one-on-one interviews to assess students' initial academic performance and perception on the use of Google Classroom in learning Geography. The survey questionnaires and interview questions were pilot tested and changes were made accordingly. Critical friends and other expert views were incorporated to enhance the validity of the instruments. The survey questionnaires were administered to all 16 students of Grade VIII. A total of 6 students were selected for interviews using random sampling. The interviews were transcribed to obtain the baseline data. A 5-point Likert scale ranging from (1=Strongly Disagree, 2=Disagree, 3= Neutral, 4= Agree and 5=Strongly Agree) and interview was used to measure students' perceptions of the effectiveness of Google Classroom. The five-Likert Scale was chosen because it offers valid and dependable assessments with enough sensitivity to account for response variances (Revilla et al., 2014). Each response option was assigned a numerical value and the corresponding mean values were interpreted using standard mean ranges. The conversion table is presented below.

Table 1. Likert scale Converted to Numerical Mean and Rank

Scale Point	Description	Mean Range	Rank Category
1	Strongly Disagree	1.00–1.80	Very Low
2	Disagree	1.81–2.60	Low
3	Neutral	2.61–3.40	Moderate
4	Agree	3.41–4.20	High
5	Strongly Agree	4.21–5.00	Very High

Adapted from (Boone & Boone, 2012).

The quantitative and qualitative data collected through Test, Survey questionnaire and Interview were analyzed using descriptive statistics through the measure of mean and standard deviation. The pre-test data collection was followed by intervention. The intervention Strategies were based on the literature review and the results of the pre-test on the effectiveness of using Google Classroom in learning Geography. The frequency of use of Google Classroom has been increased while teaching. Introduced Google Classroom for delivering lessons, assignments, and resources. Included interactive content like videos, maps, and online quizzes. Encouraged peer-to-peer discussion and teacher feedback via Google Classroom.

The intervention data were collected after post- intervention using the same questionnaire employed for the pre-test. The students' perceptions of the effectiveness of Google Classroom was analyzed by comparing baseline data with post-intervention data using jamovi 2.6.26. The quantitative data collected were analyzed using descriptive statistics (mean and standard deviation). Further, t-test was conducted to study the effectiveness of the intervention strategies used by comparing the means of baseline and post-intervention data.

This study adhered to research ethical procedures to ensure integrity and respect for participants' rights: The research process was commenced after obtaining ethical clearance from the relevant authority. Permission was sought from the school administration and the Dzongkhag Education Office to conduct the study. Prior to participation, informed consent was obtained from all participants. Anonymity was ensured in all the data recording and reporting. Pseudonyms were used to represent the participants; for example, participant 1 was referred to as P1. The findings derived from the baseline and post-interventions are presented in the subsequent section.

4. Results

4.1 Baseline Data Analysis

To establish a reference point for evaluating the effectiveness of the intervention, a baseline assessment was conducted using a pre-test. The purpose of this assessment was to measure students' initial academic performance and their perception prior to the implementation of Google Classroom. Descriptive statistics, including the mean, median, and standard deviation, were calculated to summarize the performance levels and the perception of the participants. The findings derived from baseline data are presented below.

Table 2. Mean and Standard Deviation for Pre-Test Scores (Test marks)

	N	Missing	Mean	Median	SD	Minimum	Maximum
Pre_Test Score	16	0	25.1	26.0	5.42	16.0	32.5

According to the finding for the pre-test on academic performance presented in Table 2, a total of 16 participants completed the pre-test. The mean score of performance was 25.1 (SD = 5.42), and the median was 29.5, indicating that the students had performed averagely. The scores ranged from a minimum of 16.0 to a maximum of 32.0, showing a moderate spread of performance levels among the participants. The relatively high standard deviation suggests some variability in students' performance.

Further, descriptive statistics were computed for 10 survey questionnaire items to assess the students' perceptions on the use of Google Classroom. The responses were rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Table 3. Mean and Standard Deviation of Baseline Data on Perceptions of the Use of Google Classroom

	N	Missing	Mean	Median	SD
Q1. Google Classroom makes learning to be collaborative.	16	0	3.69	4.00	0.70
Q2. As a digital tool, it is innovative and very educational.	16	0	3.75	4.00	0.78
Q3. It helps me to become an independent learner.	16	0	3.06	3.00	1.00
Q4. I learn better when lessons delivered through Google Classroom.	16	0	3.31	3.00	0.70
Q5. With Google classroom, learning can take place everywhere and anytime (24/7).	16	0	3.56	4.00	0.89
Q6. It is easy to navigate the Google Classroom.	16	0	3.38	3.00	0.81
Q7. Google Classroom is convenient and user-friendly.	16	0	3.56	4.00	0.89
Q8. It is more convenient for me to learn via Google Classroom than other social media platforms like WeChat, Telegram, WhatsApp, Messenger, etc.	16	0	3.25	3.50	0.93
Q9. Google Classroom saves my time.	16	0	3.19	3.00	0.66
Q10. I felt comfortable interacting with other participants through Google Classroom.	16	0	3.25	3.00	1.00
Average			**3.4**		**).83**

As evident from Table 3, overall, students' perception was moderately positive with an average mean score of 3.4 (SD = 0.83), suggesting that students generally found Google Classroom to be a supportive tool for learning. It indicates that most of the students have moderately low positive perception of learning geography using google classroom.

The highest-rated item was Item 2: ***"As a digital tool, it is innovative and very educational"*** with a mean score of 3.75 (SD = 0.78). This indicates that students appreciated the educational and innovative value of Google Classroom. Similarly, participants also expressed that they can acquire creative and innovative ideas for learning. The expression of student's opinions regarding Creative, innovative and education learning platform is evident from their responses below:

> Google Classroom offers creative learning ideas and is useful for learning Geography, as it is engaging, creative, and enjoyable. It encourages innovative ideas, allowing us to enhance our learning. We can be creative and learn more through Google classroom (P2, 5, 3, 6).

In contrast, the lowest-rated item was Item 3**: *"It helps me to become an independent learner",*** which exhibited mean score of 3.06 (SD = 1.00).This indicates that some students may not feel empowered and autonomy when using the platform for learning. This survey results aligns with the qualitative data gathered

through interviews where students expressed their difficulty in learning independently. For instance, P4 stated, "It is difficult to learn independently." Similarly, P6 expressed like not being able to connect with teachers and friend to clear doubt faster like other social media.

Overall, the findings from both the quantitative and qualitative response indicate a generally favorable perception of Google Classroom. However, the comparatively lower rating for independent learning suggests the need to improve their independent learning skills.

The finding in the Table 4 revealed that there is notable change in academic performance after intervention. The pre-test scores had a mean of 25.1 (SD = 5.42), whereas the post-test scores demonstrated a higher mean of 34.3 (SD = 6.50). Notably, the performance scores increased from 25.1 to 34.3. The median score also increased from 26.00 in the pre-test to 35.80 in the post-test, indicating an overall upward trend in performance.

To examine the significance of the differences between the pre and post-intervention data on performance in Geography, paired sample t-test was conducted, and the result is presented in Table 5.

4.2 Finding from the Post -intervention Data

The post-intervention data were collected after the implementation of the intervention. To assess the impact of the intervention on student performance and their perception on the use of Google Classroom, both descriptive statistics and a paired samples t-test were conducted. The findings of the test marks obtained and survey data on student's perception on the use of Google Classroom are presented accordingly in this section.

Table 4. Comparison of Baseline and Post- intervention Data Mean of Test Score

	N	Mean	Median	SD	SE
Base line data (Test score)	16	25.1	26.00	5.42	1.65
Post intervention data (Test score)	16	34.3	35.8	6.50	1.62

Table 5. Paired Samples t-Test Comparing Baseline and Post-intervention Test Scores

			statistic	df	p
Pre_Test	**Post_Test**	**Student's t**	-15.74	15.0	<.001

Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$

The t-test analysis in the above table revealed a statistically significant improvement test score, $t(15) = -13.9$, $p < 0.05$. The negative t-value indicates that the Post-Test scores were higher than the Pre-Test scores. Thus, this result confirms that the interventions have a significant effect on student performance in Geography among students.

To further examine the impact of interventions, the descriptive statistics were computed to analyze participants' scores on the pre-test and post-test survey data. The mean comparison of the baseline and post-intervention data is presented below in Table 6.

Table 6. Mean Comparison of Baseline and Post-Intervention Perception Scores on the Use of Google Classroom

	N	Mean	Median	SD	SE
Mean_Pre_Test	16	3.40	3.50	0.53	0.13
Mean_Post_Test	16	4.00	4.00	0.26	0.06

As shown in Table 6, the mean score for the pre-test was 3.40 (SD = 0.53), whereas the mean score for the post-test was 4.00 (SD = 0.26). This suggests an increase in students' perceptions of the use of Google Classroom in learning Geography following the intervention. The comparative analyses exhibited the change in student's perception on using Google Classroom in learning Geography. Before the intervention, the majority of participants reported that the use of Google Classroom for learning Geography was neither comfortable nor useful. They were not able to specify the concrete benefits of Google Classroom. However,

after the intensive intervention the perception on the use of Google Classroom has changed on student's perception. The majority of participants expressed positive perception on the use of Google Classroom. For instance, Participants expressed:

> The use of Google Classroom has greatly benefited us in learning and has greatly supported our learning in Geography. It helped us collaborate easily with friends, share assignments quickly, and get help from teachers even when we are at home. We find it easier and faster to complete our work, learn new things, and understand concepts better. It has helped us to improve our academic performance and even started enjoying Geography more because of the easy access to information.

In general, these results show that using Google Classroom not only helped students do better in Geography, but it also made them more positive about learning online, which led to more engagement, teamwork, and confidence in their learning abilities.

5. Discussion of Results

The findings from this study show a significant improvement in both academic performance and student perceptions following the use of Google Classroom in learning Geography. The intervention strategies employed significantly improved students' academic achievement. Similarly, students' perceptions on the use of Google Classroom has improved from a moderately positive mean of 3.40 to 4.00 after the intervention. The results indicate that students not only performed better but also exhibited more positive to learn independently through the use of Google Classroom.

These results corroborate other studies highlighting the advantages of mixed and technology-enhanced learning environments. Alqahtani and Rajkhan (2020) say that digital platforms like Google Classroom make students more interested in learning and help them have more individualized learning experiences, which can lead to better academic results. The research upholds the conclusions of Hew and Lo (2018), which indicated that online learning technologies offer learners flexibility, accessibility, and prompt feedback, all of which boost learning outcomes and foster positive learner perspectives.

In this study, students specifically stated that using Google Classroom to learn Geography made it easier for them to work together, share homework, and get help from their teachers even when they weren't in class. This is similar to what Jena (2020) found, which shows that Google Classroom encourages students to work together and ask questions. Additionally, the enhancement in students' views of the platform indicates that the integration of technology in education not only elevates academic achievement but also increases motivation and engagement with the subject matter (Hrastinski, 2008).

While students appreciated the innovative and educational features of Google Classroom, the baseline data revealed challenges in independent learning, with a lower mean score of 3.06 on the ability to become self-directed learners. This emphasizes the need for scaffolding strategies to guide students in developing self-regulated learning skills, which is consistent with Zimmerman (2002) who emphasizes the role of structured support in enhancing students' autonomous learning abilities.

The statistically significant improvement demonstrated by the paired sample t-test ($t(15) = -13.9$, $p < .05$) confirms that the intervention had a measurable effect on student performance. Such results are consistent with the broader literature on digital learning interventions, which show that structured and guided use of educational technologies can significantly enhance both learning outcomes and student engagement (Means et al., 2013; Tamim et al., 2011).

In summary, this study demonstrates that Google Classroom serves as an effective tool for improving academic performance and positively influencing student perceptions in Geography. The findings underscore the importance of integrating technology in the classroom to facilitate collaborative learning, improve access to learning resources, and support student-centered pedagogical practices.

6. Conclusion and Recommendations

This study aimed to look into how Grade VIII students' perceptions of geography and academic achievement are affected by utilizing Google Classroom through a comparative analysis of pre- and post-intervention results. Comparing the pre- and post-intervention findings, the result concluded that the integration of Google Classroom significantly improved students' academic achievement and their perceptions improved from moderately positive to highly positive. Students reported that the platform made it easier to collaborate, made resources easier to obtain, and allowed for prompt feedback—all of which raised motivation and engagement levels. Even though there were difficulties with independent learning initially, the intervention techniques employed effectively scaffolded these skills, thereby fostering greater student

confidence and autonomy in learning. Considering the finding, this study shows that Google Classroom serves as an effective instructional tool for promoting academic achievement and fostering and students' perception in learning Geography using the Google Classroom.

Based on the findings of this study, it is concluded that the use of digital tool is vital in this technology-driven world. Therefore, it is recommended that teachers integrate Google Classroom alongside traditional instruction, supported by training programs and scaffolding strategies for independent learning. Building on these findings, future research could explore the term impact of Google Classroom across subjects and grade levels, using experimental studies and action research to investigate teachers' and students' confidence and skills in teaching Geography.

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APPENDIX A-Survey Questionnaire

Title: Use of Google Classroom and its Effectiveness in Learning Geography: Action Research

Please tick [□] the most appropriate response

PART 1: Demographic Information

1. Gender

a) Male b) Female

Read each statement carefully and tick [□] the appropriate response

Sl No.	Personal Characteristics	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1	Google Classroom makes learning to be collaborative					
2	As a digital tool, it is innovative and very educational					
3	It helps me to become an independent learner					
4	I learn better when lessons delivered through Google Classroom.					
5	With Google classroom, learning can take place everywhere and anytime (24/7)					
6	It is easy to navigate the Google Classroom.					
7	Google Classroom is convenient and user-friendly.					
8	It is more convenient for me to learn via Google Classroom than other social media platforms like WeChat, telegram, whatsapp, messenger and etc.					

9	Google Classroom saves my time.					
10	I felt comfortable interacting with other participants through Google Classroom.					

APPENDIX B- Interview protocol for students (Guiding Questions)

1. How do you feel about using Google Classroom for learning geography?
2. What benefits have you experienced from using Google Classroom in your geography studies?
3. Can you describe how you use Google Classroom in your geography learning? What specific features or tools do you find most helpful?
4. What challenges have you faced while learning geography through Google Classroom? Can you elaborate on why you think these challenges exist?
5. Could you share any specific examples or experiences related to using Google Classroom in your geography classes?
6. Do you find the materials provided through Google Classroom beneficial for your geography learning? Why or why not? Can you provide examples?