"More or No More": Its Effectiveness as a Contextualized Game-Based Pedagogy in Improving Learners' Performance in Social Science

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Manuscript received October 24, 2024; revised November 14, 2024; accepted November 18, 2024; published February 17, 2025

***Abstract*—The need to prove the effectiveness of More or No More as a contextualized game-based pedagogy in teaching social science was the reason why this study was conducted. This study tried to assess its effectiveness through the use of a two group quasi-experimental research, specifically the pretest-posttest design to both the experimental and the control group. It was observed that before the intervention took place, both groups from grade 7 to 10 demonstrated comparable comprehension levels, indicating no group is superior than the other based on the pretest result. However, in the posttest result, consistently, the groups with an intervention of More or No More pedagogy performed better as compared with the groups with an intervention of the traditional pedagogy. Moreover, the learners who were taught using the More or No More pedagogy have performed above 50% out of the total gain they could have demonstrated from the experimentation as compared to the group taught using traditional pedagogy which obtained 50% gain. Using the t-test, it was affirmed that there is no significant difference on the pretest of both groups while there is a significant difference on the posttest of the same groups. Furthermore, it was strengthened that there is a significant difference on the learning gains of both groups, which proves the effectiveness of More or No More in improving the performance of the students in social science.**

***Keywords*—effectiveness, pedagogy, more or no more, contextualized, social science, teaching, education**

I. Introduction

In recent years, there has been a growing need to re-evaluate traditional pedagogical methods and embrace more innovative approaches to teaching and learning. The ever-evolving global environment and the challenges of the 21st century have underscored the need to nurture creativity and adaptability in education [1, 2]. Traditional methods like lectures, textbooks, and discussions may not consistently engage students and meet their diverse learning preferences [3]. To keep pace with a rapidly changing society, ongoing research and enhancement in the educational field are vital [4]. This involves enhancing teaching techniques, strategies, learning materials, and overall classroom management [5]. Employing innovative pedagogical technologies and modern educational tools can significantly impact teachers' professional practices and enhance their pedagogical expertise.

One such innovative pedagogy that has garnered global attention is game-based pedagogy. Game-based teaching diverges from traditional educational methods by integrating games as a primary instructional tool [6]. This approach entails modifying games to establish learning environments that foster peer and social interaction, decision-making, and problem-solving [7]. It underscores the teacher's ability to adjust instruction, content, and tasks in response to students' learning needs and aims to amplify students' enjoyment, pleasure, and engagement in playing, learning, and relating [6]. Game-based learning can be applied across different subject areas and may entail customizing existing games or creating new ones to boost learning and skill development [8]. In game-based pedagogy, the emphasis on the importance of teachers acting as game designers is recognized. Game-Based Learning (GBL) entails leveraging games to elevate learning outcomes, with teachers crafting GBL activities to foster profound learning and metacognitive skills [9]. Teachers can also modify games to shape learning settings that catalyze peer interaction, decision-making, and problem-solving proficiencies [6]. Immersing students in game design not only nurtures practical skills like collaboration and problem-solving but also heightens their grasp of academic content and programming concepts [7]. Moreover, involving teachers in game design equips them with a deeper understanding of the educational promise of digital games and positively reshapes their disposition towards integrating games in the classroom [10]. Sardone [11] further explores the benefits of incorporating games into K-12 education, highlighting the impact on assessments and teachers' game construction skills.

By integrating educational games that cater to the preferences and needs of both teachers and students, the teaching and learning process can be enhanced and more successful and that utilizing game-based learning with indigenous instructional materials can be an effective approach to enhancing students' comprehension and academic performance [12].

In the study conducted by Rapada and Obliopas [13], More or No More as a contextualized game-based pedagogy was developed. The whole concept was taken based on teachers' and students' perception on how they would like game to be used in teaching social science. Though it may be considered an innovation but it has to undergo the process of experimental treatment in order to prove if the said breakthrough is effective.

Therefore, this study aims to fill the research gap by conducting a thorough investigation into the effectiveness of game-based pedagogy in improving social science

performance of the learners in the Philippine educational context. Using a quasi-experimental research design, the study evaluated the effect of More or No More on student learning outcomes, focusing on pre-test and post-test performance assessments, learning gains, and differences between control and experimental groups. By examining the effectiveness of game-based pedagogy in the social science classroom, this research sought to provide valuable insights for educational innovation and instructional design, informing evidence-based teaching practices and promoting continuous improvement in the Philippine educational system.

Specifically, this study answered the following questions:

1) What is the proficiency level of the control group and experimental group in their pre-test?
2) What is the proficiency level of the control group and experimental group in their post-test?
3) Is there a significant difference between the pre-test average mean scores of the control group and experimental group as well as the post-test average mean scores of the same group?
4) What are the learning gains of both the control group and experimental group?
5) Is there a significant difference between the learning gains of the control group and experimental group?

Furthermore, the following hypotheses were tested at 0.05 level of significance:

1) There is no significant difference between the pre-test average mean scores of the control group and experimental group as well as the post-test average means scores of the same group.
2) There is no significant difference between the learning gains of the control group and experimental group.

II. Literature Review

Numerous global studies have consistently demonstrated the efficacy of game-based pedagogy in improving student learning outcomes. One of these is the research findings of Chellaswanny *et al.* [14] which states that integrating game-based learning approaches can result in notable enhancements in student learning, motivation, and academic achievement [15], as well as the development of cognitive abilities and critical thinking skills [16]. Moreover, the incorporation of digital games into educational practices has been linked to heightened student engagement and better learning results [17].

In addition, research in Southeast Asia indicates that employing game-based teaching methods may boost learning outcomes and motivation. A recent study by Gupta and Goyal [18] revealed that integrating game-based teaching methods based on Self-Determination Theory (SDT) resulted in improved learning outcomes for college students in India. Additionally, Idris *et al.* [19] demonstrated that utilizing the Kahoot! Game-based learning platform enhanced the performance and motivation of ESL (English as Second Language) learners in Malaysia. Collectively, these studies point to the efficacy of game-based teaching approaches in improving learning outcomes and motivation in educational settings across Asia.

Prior studies have investigated the advantages of incorporating gamification and digital simulations into educational contexts [20]. However, the field of Social Science presents unique challenges and opportunities that warrant further exploration. Social Science topics often involve intricate phenomena, historical events, and societal structures, which can pose specific difficulties for instructional design. Unlike subjects such as mathematics or the natural sciences, Social Science subjects are sometimes perceived as dull or straightforward by students. Traditional teaching method as an educational practice and inactive learning encounters frequently employed in Social Science disciplines may result in student detachment and apathy [21]. The use of lectures, rote memorization, and teacher-centered instruction can lead to lower student engagement for they find passive learning less motivating, as it lacks opportunities for active involvement and self-directed learning. Darling-Hammond *et al.* [22] suggests that student-centered, interactive techniques improve engagement, while traditional methods often fail to captivate students, particularly in social sciences where critical thinking and discussion are essential for deep learning. Moreover, according to Dobbins and Denton [23], students in traditional settings tend to acquire knowledge but struggle to apply it in real-world contexts, which is crucial in social sciences. In addition, teaching methods emphasizing critical thinking—such as case studies, debates, and game-based learning—are more effective in developing analytical skills, while lecture-based approaches limit students' ability to evaluate and synthesize complex social issues [24]. The theoretical essence of numerous Social Science ideas and the emphasis on rote memorization of information and dates exacerbate these hurdles [25]. Thus, there is a critical need to explore innovative pedagogical strategies, such as the integration of game-based pedagogies, to enhance student engagement, critical thinking skills, and deeper comprehension of Social Science concepts.

Nevertheless, despite the widespread adoption of game-based teaching methods in different academic disciplines, there is a limited amount of comprehensive research dedicated to examining the effectiveness of using games in Social Science education. This prompts the query: are game-based pedagogies truly impactful in enhancing student learning outcomes in Social Science? This gap in the literature underscores the need for rigorous empirical investigations to evaluate the effectiveness of game-based pedagogy in teaching Social Science concepts.

III. Materials and Methods

A. Research Design

Quasi-experimental research through the two-group pre-test and post-test design was used in this study. Across three sessions, both experimental and control groups were subjected to pre-test, then the teaching and learning process, followed with More or No More pedagogy for the experimental while the traditional instruction for the control group was used. A post-test was conducted after the intervention in order to determine if there are improvements in their academic performance. The learning gains of both groups were determined which of the two interventions is more effective.

B. Participants

The participants in this study were the Junior high school students of Maypangdan National High School from grade 7 to grade 10 enrolled on the current school year 2024–2025, hence purposive sampling was used. Although all of students in the two sections of four grade levels were involved in the study, only an aggregate of 50 students per grade level was considered, 25 from the experimental group and another 25 from the control group who are heterogeneously grouped. As a total there were 200 subjects of the study, 100 for the experimental and 100 for the control group.

C. Sampling Procedure

On the basis of choosing the subjects for each group, purposive sampling was use guided with the following inclusions: 1) They must be students and officially enrolled from grade 7 to 10 in Maypangdan National High School where the researcher conducted his extension project on the utilization of More or No More to the Social Science Teachers, 2) They must be under the subject of the four social science teachers of the said school and lastly, 3) The sectioning must be heterogeneously grouped. Moreover, as presented in Table 1, the grades of the students in their first quarter were considered in order to attain homogeneity despite being heterogeneously grouped per section to prove that the two groups performed the same academically.

Table 1. Distribution of the subjects of the study in each group per grade level

Grade Range	Experimental Group	Control Group
75–80	4	4
81–85	8	8
86–90	8	8
91–95	3	3
96–100	2	2
Total	**25**	**25**

To ensure if the sample size of 25 per group in every grade level warrants the test of significant difference, G* Power was used, specifically the post hoc analysis for a two tailed hypothesis with 0.5 as the effect size and margin of error 0f 0.05. As a result, the achieve power was 0.41 which means that the sample size used is still acceptable.

D. Research Instrument

The four teachers who conducted the experimentation were made to craft a brief lesson plan tailored specifically for each grade level from grade 7 to grade 10 students in the social science curriculum for three sessions for the two groups. Each of the lesson plans has a formative test consisting of a 10 items multiple choice type of test. The said test served as the pre-test and post-test that measured the proficiency level of the subjects of the study for each lesson.

To ensure the assessment tools' validity, inputs were sought from master teacher and the department head in social sciences. The master teacher offered insights into the relevance and suitability of the assessment items based on their teaching experience while the department head ensured alignment with curriculum standards and learning goals. Furthermore, a pilot testing of the formative test was conducted to guarantee the reliability of the assessment tool internal consistency reliability to those students who belong to the same grade level respectively but were not a part of the pre-identified subject for experimentation. The result was evaluated using Cronbach's alpha coefficient 0.82 as its result projecting a very good level of reliability.

E. Experimental Treatment

As much as possible, the entire experimental treatment should not disrupt the normal and usual flow of the classes, so instead that the researcher will conduct the experimentation, it was decided that the subject teachers do it instead. The subject of the study should not even feel and notice that they are being experimented, this is the reason why they were all part of the experimentation but only considered the performance of the pre-identified students.

To ensure teacher fidelity to the "More or No More" intervention, strategies were used to maintain consistency and effectiveness in implementation of the said pedagogy before the experimentation process. First, a comprehensive training was conducted through a school-based extension service at Maypangdan National High School which was attended by the social science teachers wherein teachers receive thorough initial training that explains the goals, content, and procedures of the "More or No More" intervention. This training typically includes modeling, practice sessions, and guidance on how to apply the intervention effectively in real classrooms. It was the aim of the said activity to capacitate the teachers on the utilization of More or No More as a contextualized game-based pedagogy. Second, to ensure the full grasp on the execution of the said pedagogy, a demo-teaching was conducted wherein they were assessed using the classroom observation tool, from there, potential social science teachers were tapped from grade 7 to grade 10 of the said school. Third, the teachers were given ongoing support and coaching in order to maintain fidelity and be well-oriented on the use of the pedagogy over time through regular coaching sessions, either in person or via video conferencing. Fourth, monitoring and observation was conducted wherein the researcher took time to observe classes, provide feedback, and help address challenges teachers encounter, ensuring adherence to the intervention's procedures. This was followed up with the making of a group chat in order to assure that the use of pedagogy is fully mastered. Finally, they were also taught the process flow on how experimentation is being conducted. Implementing the above-mentioned strategies ensured that the "More or No More" intervention was delivered consistently across classrooms from grade 7 to 10 during their social science period, maximizing its intended impact and maintaining high fidelity to its original design.

Guided by the skills learned on the utilization of the said pedagogy and the mechanics of a quasi-experiment, they were the one who conducted the experimentation which was meticulously monitored by the researcher.

The experimental treatment of this study consisted of three phases; pre-experimental phase, experimental phase and post-experimental phase. Throughout three sessions these steps were carried out methodically to fully assess the effectiveness of game-based pedagogy in improving the performance of the students in social science.

In the pre-experimental phase, both the control and

experimental group underwent pre-test in order to assess their prior and stored knowledge about the topic.

During the experimental phase, both the control and experimental groups participated in specific educational activities tailored to their respective teaching methods. For the control group, they were taught using traditional teaching techniques including lectures, textbook readings and teacher led discussions focusing on social science topics, especially economics. Teachers guided students through structured content delivery, emphasizing key concepts and theories using conventional teaching methods. On the other hand, the experimental group experienced game-based pedagogy with the use of "More or No More" as the intervention. This interactive approach involved students in dynamic scenarios where they make decisions and solve problems related to social science topics. Students were actively engaged in gameplay facilitated by their respective teachers, applying critical thinking skills and collaborating with peers to meet learning goals.

In the post-experimental phase, a post-test was employed to both the control experimental groups to measure the increase in their learning after being subjected to specific interventions. The post-test was designed to gauge the students' understanding of social sciences concepts with emphasis on the respective lessons used per grade level. For the control group, the test evaluated how effective traditional teaching methods are in conveying social science concepts. The test followed the same format and content as the pre-test to ensure consistency in evaluation. Similarly, the experimental group took a post-test to see how "More or No More" pedagogy influences learning outcomes.

Both groups received equal instructional time and support throughout the intervention phase to ensure fairness in their learning experiences. By offering different teaching approaches to each group, this phase aimed at comparing the effectiveness of game-based learning versus traditional methods in improving student outcomes in social science education.

F. Measurement of Variables

Table 2. Measurement used on the pretest and posttest performance of both groups

Mean Average Score	Percentage (%)	Performance Descriptor	Interpretation
9.0–10	90–100	Outstanding	**Highly Proficient** Displays a thorough understanding and grasp of the concepts
7.0–8.9	85–89	Very Satisfactory	**Proficient** Understands the concepts.
5.0–6.9	80–84	Satisfactory	**Nearly Proficient** Demonstrates some comprehension. May have areas needing improvement
3.0–4.9	75–79	Fairly Satisfactory	**Low Proficient** Limited understanding of the concepts
0–2.9	Below 75	Did Not Meet Expectations	**Not Proficient** Requires significant review and further study

The proficiency level of the subjects of the study based on the result of the pre-test and the post-test of the experimental and the control group was measured using the DepEd (Department of Education) order number 8 series of 2015 on the policy guidelines for classroom assessment for the k to 12 basic education programs. As presented in Table 2, a measurement for the pretest and posttest performance of both groups was used along with descriptions of performance levels.

G. Analysis of Data

The data which were gathered as the result of the experimentation were tabulated and applied appropriate statistical tool in order to translate them into a meaningful information.

In determining the pretest as well as the posttest of both groups, the mean and standard deviation were used. The performance of their pre-test and post-test will be further evaluated using the DepEd order number 8 series of 2015 on the policy guidelines for classroom assessment for the k to 12 basic education programs.

In determining the learning gains of both groups, the learning gain analysis was employed.

In identifying the significant difference between the pre-test, the post-test and the learning gains of the experimental and control group, t-test was used at .05 level of significance.

H. Ethical Considerations

Throughout the duration of this research, ethical standards were diligently observed to ensure the integrity and welfare of all subjects involved. Correspondingly, the following ethical guidelines were followed:

1) Assent and informed consent

Before taking part in the study, all selected participants received full details about the study's purpose and goals. Their voluntary involvement was respected, and they could decide freely whether to join the study. Furthermore, parental authorization was acquired for individuals below 18 years old, guaranteeing that parents were briefed on the research and consented to their child's involvement. Prior to experimentation, students' consent was secured. A consent form was served then the students were asked to affix their signature to confirm their affirmation to participate in the study.

2) Privacy and confidentiality

Participant information was handled with utmost confidentiality, privacy measures were implemented, and the data obtained was solely utilized for research, ensuring no unauthorized disclosure or sharing.

3) Conflict of interest

The researcher ensured fairness and openness throughout the study, without letting any personal interests affect the research process or results. Putting the welfare of participants first, any potential conflicts were recognized and dealt with appropriately.

IV. Result and Discussion

Through a quasi-experimental design, this study assessed the differences in pretest and posttest results and difference in

learning gains among the control and experimental groups. Below is the disaggregated presentation of the performance in the pretest and posttest per group and per grade level.

A. Pretest Proficiency Level of the Control and Experimental Groups

Table 3 displays the average mean scores from the pretest of the control and experimental groups and its corresponding interpretation. The purpose of this test was to establish the starting performance standards of each group prior to the intervention.

In accordance with the predefined scoring system, it was observed that both the control and experimental groups in grade 7 and 10 attained average mean scores that falls within the score range 3.0–4.9 categorized as "Did No Meet the Expectations" which means that they still are not proficient thus it requires a significant review and further study. Meanwhile, both groups of grade 8 and 9 falls under the score range 0–2.9 and is considered "Fairly Satisfactory" as to performance, this further explains that they are low proficient with a limited understanding of the concepts. It was observed that both groups of the four grade levels have almost the same mean average score that suggests limited comprehension of the tested concept which means that the subjects of this study have almost the same academic performance in terms of their prior knowledge prior to the intervention. Both groups from grade 7 to 10 have a standard deviation closer to zero which means that there is a high consensus from among the respondents that they strongly agree.

Table 3. Pre-test proficiency level of the control group and experimental groups

Grade	Groups	Mean Score	Std Deviation	Indicator	Interpretation
7	Control	3.75	0.73	Fairly Satisfactory	Low Proficient
	Experimental	3.71	0.82	Fairly Satisfactory	Low Proficient
8	Control	2.81	0.59	Did Not Meet the Expectation	Not Proficient
	Experimental	2.53	0.53	Did Not Meet the Expectation	Not Proficient
9	Control	2.60	0.56	Did Not Meet the Expectation	Not Proficient
	Experimental	2.64	0.45	Did Not Meet the Expectation	Not Proficient
10	Control	4.51	0.53	Fairly Satisfactory	Low Proficient
	Experimental	4.33	0.66	Fairly Satisfactory	Low Proficient

The analysis of these findings indicates that before the intervention took place, both sets of participants from grade 7 to 10 demonstrated comparable comprehension levels, indicating no group is superior than the other in terms of proficiency. This uniformity in initial performance is vital in guaranteeing that any divergences noted after the intervention can be more decisively linked to the effect of the experimental procedure rather than existing variations in group performance. As stated by Chen and Chang [26], creating a parallel baseline is imperative to maintain the internal validity of experimental studies. Moreover, the pre-test scores form the basis for assessing how well the experimental intervention enhanced the participants' performance and comprehension.

B. Posttest Proficiency Level of the Control and Experimental Groups

Table 4 presents the average mean scores and its corresponding proficiency level obtained in the post-test by both the control and experimental groups. The purpose of this test was to gauge the effect of the intervention conducted to each group based on their performance.

Table 4. Post-test proficiency level of the control group and experimental groups

Grade	Groups	Mean Score	Std Deviation	Indicator	Interpretation
7	Control	6.11	0.58	Satisfactory	Nearly Proficient
	Experimental	9.03	0.51	Outstanding	Highly Proficient
8	Control	6.68	0.42	Satisfactory	Nearly Proficient
	Experimental	9.01	0.45	Outstanding	Highly Proficient
9	Control	5.77	0.45	Satisfactory	Nearly Proficient
	Experimental	9.12	0.68	Outstanding	Highly Proficient
10	Control	6.97	0.59	Satisfactory	Nearly Proficient
	Experimental	9.09	0.49	Outstanding	Highly Proficient

It could be observed in the table that there is a notable enhancement in average mean scores of both the control and experimental sets in contrast to their pre-test results. The control group from grade 7 to 10, subjected to traditional pedagogy, attained an average mean score within the score range 5.0–6.9, placing them in the "Satisfactory". This means that the groups had demonstrated some comprehension and may have areas needing improvement. This development underscores the efficacy of traditional pedagogy in improving student academic performance up to a specific degree.

Conversely, the experimental group treated with More or No More pedagogy attained an average mean score that falls within the score range 9.0–10, categorizing them in the "Outstanding" bracket indicating display of thorough understanding and grasp of the concept.

It was observed that both groups from grade 7 to 10 have a high consensus as reflected in the standard deviation closer to zero. It could be noted that the respondents have a strong agreement.

The post-test results comparison revealed that while both teaching methods resulted in enhanced student performance, consistently, the groups taught with More or No More pedagogy performed better as compare with the groups taught with traditional pedagogy. This result is consistent with the study of Sánchez *et al*. [8], which showed that incorporating game-based learning techniques can lead to significant improvements in student learning, motivation, and academic success. The experimental group's progression from requiring improvement to achieving mastery indicated that game-based learning methods were highly successful in captivating students and promoting a deeper understanding of the subject matter. This highlights the advantages of integrating game-based components into educational strategies to boost student motivation, engagement, and ultimately, academic performance. Furthermore, the study

conducted by Rapada and Obliopas [13] regarding development of contextualized game-based pedagogy in the Philippine setting reinforces the findings that game-based pedagogy if tailored on experiences and perception of teachers and students could bring minimal adjustments leading to a better result in students' performance. The better progress observed in the experimental group of this study validates the More or No More pedagogy in improving educational results.

Nevertheless, it is crucial to recognize that not all research studies universally endorse the efficacy of game-based learning. For instance, a study conducted by Johnson *et al.* [27] revealed that while game-based learning can boost engagement, it may not always translate into substantial enhancements in academic performance when compared to conventional approaches. The researchers contended that the success of game-based learning hinges on a variety of factors, such as game design, the educational context, and specific learning goals.

From the findings it could be claimed that the post-test analysis indicated that incorporating More or No More pedagogy led to a greater level of comprehension and proficiency among students in contrast to traditional teaching pedagogy. This discovery underscores the effectiveness of innovative educational strategies in enhancing learning outcomes. Nonetheless, the conflicting findings in existing literature underscore the necessity for further investigation to fully grasp the circumstances in which game-based learning proves most beneficial.

C. Difference between the Pretest and Posttest Mean Scores of the Control and Experimental Groups

Table 5 displays the results of the statistical analysis on the difference between the pretest as well as the posttest mean scores of both control and experimental groups across all grade levels. As shown in Table 3, the pre-test mean scores of the control and experimental groups did not manifest any significant difference when analyzed across all grade levels ($t(23) = 0.181$, $p = 0.857$; $t(23) = -1.763$, $p = 0.084$; $t(23) = -0.27$, $p = 0.782$; $t(23) = 1.026$, $p = 0.310$). On the other hand, the post-test mean scores of both groups of learners were found to be significantly different across grade levels ($t(23) = 18.610$, $p < 0.001$; $t(23) = -18.944$, $p < 0.001$; $t(23) = -20.551$, $p < 0.001$; $t(23) = -13.830$, $p < 0.001$).

Table 5. Difference of pretest of control and experimental group as well as the posttest of the same group

Grade	Group	Mean Difference	SD	*T*	*p*-value	Interpretation
7	Pretest Mean Score of both Groups	3.727	0.655	0.181	0.857	Not Significant
	Posttest Mean Score of both Groups	7.560	0.542	18.610	<0.001	Significant
8	Pretest Mean Score of both Groups	2.673	0.560	−1.763	0.084	Not Significant
	Posttest Mean Score of both Groups	7.847	0.435	−18.944	<0.001	Significant
9	Pretest Mean Score of both Groups	2.620	0.506	−0.278	0.782	Not Significant
	Posttest Mean Score of both Groups	7.447	0.564	−20.551	<0.001	Significant
10	Pretest Mean Score of both Groups	4.420	0.594	1.026	0.310	Not Significant
	Posttest Mean Score of both Groups	8.033	0.539	−13.830	<0.001	Significant

These findings simply indicate that the entry knowledge of both groups of learners are comparably the same prior to the introduction of the two types of pedagogy therefore accepts the hypothesis that there is no significant difference on the pretest of both groups. However, despite a significant increase in students' level of competence after the utilization of both types of strategy, their performance was found to be significantly different indicative of a comparably better performance in favor of the experimental groups of learners exposed to the More or No more pedagogy. This result further warrants the rejection of null hypothesis for there is a significant difference on the post-test result of both groups.

The analysis of the pretest and posttest scores illustrates the effectiveness of the More or No more pedagogy intervention. The absence of a significant difference in pretest scores suggests that both groups commenced with a similar baseline level of knowledge. However, the substantial improvement in the posttest scores of the experimental group implies that the More or No More pedagogy is more effective than traditional pedagogy in enhancing student performance. This result is in line with the study conducted by Halabi & El-Masri [28] on the benefits of game-based learning in improving student engagement, motivation, and academic achievement. According to this study, incorporating game-based pedagogies enables teachers to utilize the interactive and motivational elements of games in order to cultivate a more profound comprehension and passion for the subject material, ultimately resulting in enhanced academic achievements.

The findings of this research demonstrate that implementing More or No More resulted in a notable enhancement in student achievement. This is supported by the considerable rise in posttest scores among the experimental group in contrast to the control group. It highlights the advantages of integrating game-based components such as the use of More or No More pedagogy in educational approaches to boost student engagement, involvement, and ultimately, academic outcomes.

However, with the use of G* Power under post hoc analysis in computing achieved power with 0.05 as the margin of error, 0.5 effect size and 25 sample size of both groups, it was observed it has only 0.41 achieved power which means that 25 as the sample size is not enough to claim if there is or there is no significant difference both the pretest and the posttest od the two groups. Thus, there is a need to increase the number of the sample size per group to assert the significant difference.

D. Learning Gains of the Control Group and Experimental Groups

Results of the learning gains analysis are summarized in Table 6. As can be seen from the table, all control groups across grades levels obtained learning gains below 50%. The control group in grade 7 yielded the lowest gain, with a corresponding gain of 23.23%. This was followed by the control group from grade 10 achieving an average learning

gain of 24.22 percent. Meanwhile, the control groups from grades 9 and 10 garnered average learning gains of 31.47 and 38.39%, respectively. These results show that the learners assigned to the control groups across grade levels have gained an average learning gain less than 50% out of the total gain they could have achieved after the introduction of the two types of instructional strategies.

Table 6 also reveals the learning gains of the experimental groups of learners. Notably, all grade levels have yielded an average learning gain above 50%, except for grade 10 recording an average of 47. 17 %. Learners from grade 8 and 9 obtained the highest gains, followed by learners from grade 7 and grade 10. Remarkably, the findings show that the learners who were taught using the More or No More pedagogy have performed above 50% out of the total gain they could have demonstrated from the experimentation.

Table 6. Learning gains of the control group and the experimental group

Grade	Groups	Pretest Mean Score	Posttest Mean Score	Learning Gains
7	Control	3.75	6.11	23.23
	Experimental	3.71	9.03	52.83
8	Control	2.81	6.68	38.39
	Experimental	2.53	9.01	64.55
9	Control	2.60	5.77	31.47
	Experimental	2.64	9.12	64.54
10	Control	4.51	6.97	24.22
	Experimental	4.33	9.09	47.17

These findings strengthened the effectiveness of More or No More pedagogy in enhancing academic performance. The higher learning gains in the experimental group underscore the potential of More or No More pedagogy in learning to promote a deeper grasp and retention of subject matter. This finding is supported by the study of Maulida et al. [29], which revealed that game-based learning interventions resulted in notable enhancements in student learning outcomes, with learning gain scores indicating moderate to highly effective improvements in learning efficacy.

The notable higher learning gains of the students taught with More or No More pedagogy as compare to the students taught with the traditional pedagogy highlights the potential of incorporating More or No More pedagogy to enhance student performance thus further emphasize the advantages of transitioning from traditional pedagogy to more interactive and stimulating one that leverage the motivational and cognitive benefits of games.

E. Difference in the Learning Gains between the Control and Experimental Groups

Table 7 illustrates the difference in the learning gains between the control and experimental groups of learners. It may be gleaned from the table that the difference in the learning gains recorded by the two groups of learners across all grade levels was found to be statistically different ($t(23) = -14.791$, $p < 0.001$; $t(23) = 13.305$, $p < 0.001$; $t(23) = -16.078$; $p < 0.001$; $t(23) = -9.700$, $p < 0.001$). The result further suggests rejecting the hypothesis and further strengthened that there is a significant difference in the learning gains of the experimental and the control group.

From these findings, it may be surmised that while both groups of learners have obtained learning gains after the experimentation, learners assigned to the former did better in terms of the attainment of the objectives, which may be attributed to the effectiveness of the More or No More pedagogy. This result is consistent with previous studies emphasizing the advantages of game-based learning. For instance, Maulida *et al*. [29] demonstrated that game-based learning interventions resulted in notable enhancements in student learning outcomes, with learning gain scores indicating moderate to quite effective improvements in learning effectiveness.

Table 7. Paired t-test of the learning gains of the control and experimental groups

Grade	Groups	Mean Difference	*t*	*p*-value	Interpretation
7	Learning Gains of both Control and Experimental Groups	−14.791	−14.791	<0.001	Significant
8	Learning Gains of both Control and Experimental Groups	13.305	13.305	<0.001	Significant
9	Learning Gains of both Control and Experimental Groups	−16.078	−16.078	<0.001	Significant
10	Learning Gains of both Control and Experimental Groups	−9.700	−9.700	<0.001	Significant

It could be claimed that the results of the independent t-test strongly support the idea that More or No More is an effective pedagogy when compared to traditional one. The noticeable difference in learning outcomes between the control and experimental groups underscores the promise of More or No More pedagogy in boosting and embracing progressive, student-focused teaching techniques to elevate academic success and equip students for the challenges of today's society.

However as also explained in the significant difference of the pre-test and post-test of both groups, the claim on the significant difference on the learning gains could have been more reliable if the initial sample size of 25 will be increased to 105 following the result of G* Power in getting the exact sample size.

V. Conclusion

This paper tested the effectiveness of More or No More as a contextualized game-based pedagogy in improving the performance of the students in social science. The control group and the experimental group have a comparable level of performance showing low level of performances in their pretest result. Moreover, both groups improved in the post-test, but the experimental group, using More or No More pedagogy, outperformed the control group using the traditional pedagogy. In addition, the pre-test scores showed no significant difference between the control and experimental groups. However, the post-test scores showed a

significant difference, confirming that More or No More has a more substantial effect in enhancing student performance compared to the traditional methods. On the other side, both groups have improved, but the experimental group, using More or No More pedagogy, performed better than the control group using the traditional pedagogy. Finally, there is a significant difference in the learning gains between the control group and the experimental group, in favor of the latter, highlighting the effectiveness of More or No More pedagogy over traditional teaching methods in enhancing student performances in social science. However, due to the low sample size used in this study, it reduced statistical power, wherein it is harder to detect a significant difference, increasing the likelihood of a Type II error and that is failing to reject the null hypothesis making the findings less reliable. In addition, a smaller sample is more likely to yield results that are less representative of the population leading to increases the variability of results and means that the observed outcomes may be due to random chance rather than true effects. Therefore, a low sample size makes it challenging to apply findings from a study to a larger population, particularly when studying significant difference. This limitation can hinder the study's external validity, as the observed results may not reliably predict or reflect real-world outcomes across settings. Consequently, researchers using such data should be cautious when applying the results broadly, as they may not be fully well-represented.

Based from the conclusions, it should be noted that in order to improve educational practices and guide future research endeavors it is a must to ensure comparability between both groups at the beginning of upcoming studies in order to precisely assess the effectiveness of the intervention. This can be accomplished by randomly assigning participants to groups, matching them based on specific characteristics, or utilizing statistical controls to address any potential variables that may affect the results. Prior to the study, pre-test assessments should be carried out to verify that both groups have similar baseline characteristics. Since the use of More or No More pedagogy was proven to be effective in improving the performance of the students in social science, it should be considered incorporating the said pedagogy into the curriculum to boost student achievement by offering professional development opportunities for teachers to learn on its utilization through training-workshops so they could confidently use it in their daily teaching and eventually broaden the implementation of the said pedagogy. However, there is a crucial need to constantly assess and analyze the effectiveness of this pedagogy by testing its effectiveness to other subject areas other than social science. In addition, the same study should be made but with an increased sample size in order to fully claim if there is or there is no significant difference of the pre-test, the post-test and the learning gains as suggested in the G* Power of selecting the sample size, for the reason that, increasing the sample size will improve statistical power and ensure more robust findings.

In testing the effectiveness of a novelty game-based pedagogy, various challenges were encountered. Taking into consideration that the pedagogy was a new skill to be learned by the teachers, ample time were invested in training the teachers on the utilization of the said pedagogy which was even done through an extension service to the Maypangdan National High School, hence, the negative attitude and impression of the teachers towards dealing with a new pedagogy to be learned as an additional task was something that must be resolved. In addition, it was also a challenge to the researcher and the teacher to make it appear that the students were just attending their usual class schedule considering that two groups were formed in each grade level with different interventions used. Moreover, since it was experimentation, the need to conduct the pretest, game-based invention and posttest in three sessions became a challenge on how the one-hour class schedule will be sufficient that it sometimes consumed few minutes of the next subject teacher. Furthermore, meeting the sample size as suggested by G* Power became a challenge for there are only a maximum of 53 students per section, getting an ideal sample size of 105 for both groups from grade 7 to 10 was not possible, therefore it ended up with only 25 per group because there was also a need to consider a more or less the same number of participants in terms of intellectual capacity based on their grades from their first quarter. Finally, balancing these limitations with the benefits of game-based learning requires thoughtful planning, customization, and regular feedback from students and teachers.

Conflict of Interest

The author declares no conflict of interest.

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