



Long Paper

Interactive Web Charting Material to Enhance the Collaborative Performance in Araling Panlipunan of Grade 4 Learners in Bangar Central School

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Abstract

This action research determined the acceptability of the Interactive Web Charting Material in enhancing the collaborative performance of Grade 4 learners in Araling Panlipunan (*social studies*) of Bangar Central School. Specifically, it answers the following sub-problems: 1. What is the performance of the two groups of respondents in



the pre-test and post-test? 2. Is there a significant difference between the pretest scores of the control and experimental groups? 3. Is there a significant difference between the post-test scores of the control and experimental group? 4. What is the level of acceptability of the developed intervention material used in the experimental group? 5. What are the learner's perceptions of the use of Interactive Web Charting based on the following characteristics: such as social interaction, teamwork, and learner's perception? The results of this study comprised the level of acceptability of the learner's perception in the utilization of Interactive Web Charting Material, based on the results of learners' perceptions through a checklist based on the three characteristics: social interaction, teamwork, and individual. The social interaction got a rating of 4 which is an equivalent level of agreement of Strongly Agree, while in the teamwork eight criterion items got a rating of 4 or its equivalent level of agreement of Strongly Agree. Lastly, the Individual accountability got nine criterion items which have a rating of 4 or its equivalent level of agreement of Strongly Agree. Thus, it simply inferred that the material had proven to have a significant impact on learners' collaborative performance along with the three characteristics mentioned. The material had been proven to be effective in terms of collaborative involvement for the enhancement of their learning experience in the Araling Panlipunan.

Keywords – Interactive Web Charting Material, Collaborative performance, Control group, Experimental group, Araling Panlipunan (social studies).

INTRODUCTION

Over the years, the educational system in the Philippines had a major change particularly when the pandemic occurred in 2020. Wherein the Department of Education (DepEd) is currently driven to adapt and explore different teaching approaches to aid the issues and needs of every learner caused by the transition of the learning environment setting, putting back the traditional setting of the learning environment of learners. This transition affects how learners can learn better in such ways. This has particularly been the case in the subject of social studies, where learners can benefit greatly from visual representations of data and interactive tools for exploring historical events, geographic locations, and cultural practices. In the context of the Philippines, the Department of Education implemented the K-12 program in 2012, a comprehensive reform of its basic education which includes the subject of Araling Panlipunan as a core component of the elementary school curriculum. While the curriculum is designed to provide learners with a comprehensive understanding of Philippine history, geography, and culture, there is often a lack of engagement and participation among learners, particularly in Grade 4.

In the context of this action research, addresses the mentioned issue by exploring the use of interactive web charting materials to enhance the collaborative performance of Grade 4 learners in Araling Panlipunan at Bangar Central School with the use of

intervention applicable for face-to-face classes. The project is based on the premise that provides learners with an engaging and interactive tool for exploring and visualizing data, making them more motivated and invested in their learning, leading to improved collaboration and performance. As to Carini et al. (2006), if learners are actively involved in the classroom, they are more likely to show greater interest and participation in the lesson, thus leading to better performance. Similarly, according to Kukard (2020), maintaining a sense of collaboration and connection has been one of the most challenging components of teaching during a global pandemic. This research involved the development and implementation of a series of interactive web charting materials, including graphs, charts, and interactive maps, that can be used to support collaborative learning in Araling Panlipunan. This material is designed to be accessible and easy to use for Grade 4 learners the activities or the intervention developed by the research should not only focus on this but must also integrate collaborative activities. Access to education entails having access to a diverse learning environment that allows for interaction and connection. Students can participate in interactive and collaborative activities with their peers in a quality learning environment, which has been proven to improve learning outcomes, including the development of higher-order thinking skills (Brindley et al., 2009).

To address students' needs and difficulties, the researchers believe that the use of interactive web charting materials may serve as one of the learning resource materials for Araling Panlipunan. With this learning material, learners may perform better and be motivated to study and learn more, thus providing a rich and engaging learning experience. The effectiveness of these materials on collaborative performance, including pre-and post-assessments, observation, and learners' feedback, will be evaluated. The results of this study can be used to inform future instructional practices and improve the overall learning experience for Grade 4 learners in Araling Panlipunan at Bangar Central School.

LITERATURE REVIEW

Interactive Wen Charting

Johnson and Johnson (2009) found that collaborative learning methods can enhance student achievement, engagement, and motivation. The study highlights the importance of creating a positive learning environment that encourages active participation and communication among learners. Española (2019) analyzed the Araling Panlipunan curriculum in the Philippines and found that the curriculum can be improved by incorporating more interactive and collaborative learning methods. The study highlights the need for innovative teaching methods that can engage learners and improve their understanding of social studies concepts. In connection with this, the results of the study showed that there is a significant impact on student engagement and performance in Araling Panlipunan.

Roehl et al. (2013), interactive learning materials can improve student engagement and learning outcomes. The study found that interactive learning materials, such as web-based simulations and games, can provide an immersive and engaging learning experience that can help students retain information better. Kuo and Haigh (2015) examined the impact of collaborative learning on elementary school students and found that collaborative learning methods can improve academic performance, social skills, and self-esteem. The study emphasizes the importance of creating a positive and supportive learning environment that fosters collaboration and communication among learners.

Turgut and Temur (2017) and Avcı and Koçak Usluel (2016) found that the use of interactive web charting materials in social studies classes resulted in increased student engagement and a more participatory learning environment. The study also found that the use of such materials improved learners' critical thinking skills and helped them to better understand complex concepts.

According to Zhang et al. (2022). The use of interactive web charting materials was found to promote active participation and collaboration among students, leading to improved academic performance and higher levels of learner satisfaction. In the context of Araling Panlipunan, a study by Callahan et al. (2013) found that the use of web-based educative curriculum materials improved learners' understanding of historical events and helped them to visualize and analyze complex data. The study also found that the use of such materials promoted a more collaborative and engaging learning environment, leading to higher levels of student satisfaction and academic success. Overall, the literature suggests that the use of interactive web charting materials as a teaching aid can enhance collaborative learning and promote a more engaging and participatory classroom environment.

The present study aims to build upon this literature by investigating the effectiveness of such materials in enhancing the collaborative performance of Grade 4 learners in Araling Panlipunan at Bangar Central Elementary School. Kim et al. (2019) demonstrated that the use of interactive web charting materials as a teaching aid improved learners' collaborative skills and helped them to better communicate and work together on assignments. The study also found that the use of such materials improved students' motivation and engagement in the classroom, leading to greater academic success.

Social Interaction

According to Hernández et al. (2019), social interaction is critically important in learning environments. It is described as the cooperative effort between two or more people working towards a shared goal and is greatly appreciated by learners. They find that communication and peer interaction greatly enhance their ability to complete learning tasks and achieve their goals. Through this collaborative process, knowledge is generated. Learners participate in discussions, exchanging ideas and strategies for

handling learning tasks and making effective use of self-learning modules. In a group dynamic, each participant contributes by offering advice, sharing information, and making group-beneficial recommendations. It's common for them to divide the task, with different members handling various components. Turgut and Temur (2017) This collaborative learning approach, emphasizing the combination of cognitive, social, and instructional elements, is essential for nurturing a socially-oriented learning experience and is sustained by ongoing group interactions.

Teamwork

According to Bhat et al. (2020), teamwork within a group holds significant importance, especially in the context of performance-based activities. This collaborative approach enhances learners' capabilities through face-to-face interaction, ultimately contributing to an enhancement in academic performance. Working together in groups increases the probability of achieving excellence in school. These teamwork skills empower learners to engage effectively and cooperate with their peers, implementing agreed-upon plans for assigned tasks. The incorporation of collaboration in various activities sparks greater interest and motivation among students to learn. Group members must maintain mutual understanding, participate in negotiation, and assume responsibility for their designated roles. Bhat et al. (2020) and Chen and Yang (2019). Further highlights that this collaborative method assists teams in understanding the importance of teamwork, creating awareness about team dynamics, and fostering essential teamwork skills.

Individual Accountability

According to Yücel et al. (2016), individual accountability underscores that each person is responsible for their learning and performance. In tasks requiring teamwork, learners display adaptability and willingly take on responsibilities. As per their findings, engaging in these collaborative activities fosters a sense of security, with learners investing their time, effort, and trust in their peers. The authors note that in a collaborative environment, where cognitive duties are shared among all members, the exploration and debate of collective perspectives become essential. Opinions are shaped collectively within the framework of literature and examples, contributing to the development of knowledge frameworks throughout the process. Additionally, the study suggests that in such settings, groups often choose a team leader who is tasked with delegating various roles and functions to accomplish the given task.

METHODOLOGY

Research Design

This section presents the research design, flow of the study, environment, respondents, instruments, data gathering procedures, statistical treatment, and scoring procedure. This study employed a quantitative method of experimental and descriptive research. This action research aimed to investigate the effectiveness of using interactive web charting as a tool to enhance the collaborative performance of Grade 4 learners. The study involves two sections of a Grade 4 class at Bangar Central School consisting of approximately 40 learners in total, assigned to an experimental and a control group. The experimental group lavender section received instruction utilizing interactive web charting tools, while the control group primrose section received traditional instruction without the use of such tools. The data were analyzed using statistical methods to compare the impact of interactive web charting on collaborative skills, engagement, and academic achievement between the experimental and control groups. Ethical considerations were followed, and the research findings were disseminated to relevant stakeholders through a final report, presentations, and possible publication in educational journals. The outcome is that the experimental group demonstrated improved collaborative skills, increased engagement, and enhanced academic achievement compared to the control group.

The result of this study comprised the level of acceptability of the learner's perception in the utilization of Interactive Web Charting Material, based on the results of learners' perceptions through a checklist based on the three characteristics: social interaction, teamwork, and individual accountability thus, it simply inferred that the material had proven to have significant impact to learners' collaborative performance along with the three characteristics mentioned. The material had been proven to be effective in terms of collaborative involvement for the enhancement of their learning experience in the Araling Panlipunan.

Population and Locale

This study involved forty (40) learners from two sections of grade 4 at Bangar Central School. Grade 4 Primrose has 20 learners, and Grade 4 Lavender has 20 also in their sections. All learners have completed the pre-test, post-test, and their perceptions.

Validity and Reliability

The validity of the test that had been given to the learners in this research was ensured by the three validators. One English teacher, to ensure that the grammars and capitalizations in the test are accurate. One math teacher who excels in logical reasoning, and facilitates techniques and methods that aid in validation of the test, and one Araling

Panlipunan teacher to ensure that the test questions are relevant for data gathering needed in the study. The researchers solved the validity value and came up with 4.47 regarded as very high. This indicates that the research instrument measures what it intended to measure.

For the reliability of the test, a pilot test was conducted with twenty (20) grade 4 learners of section Lavender in Bangar Central School as the participants. To substantiate that the questions can provide essential information, the reliability coefficient was computed using a reliability calculator. High reliability is indicated by the reliability value of 0.67. This merely implies that the validated research instrument may provide reliable and consistent results.

Research instrument

The use of interactive web charting material in the Grade 4 curriculum at Bangar Central School has shown potential in terms of enhancing teamwork. Teachers could stimulate active involvement and cooperation by creating dynamic learning environments. Though difficulties may exist, they may be overcome with adequate training and support. As a result, highlighted concerns must be validated and shown by the information accessible from examined and analyzed papers, records, and reports.

Surveys: a) Pre-Intervention Survey: This survey was administered to teachers to gather information about their familiarity with interactive web charting materials, beliefs about collaborative learning, and their previous experiences integrating materials in the classroom.

b.) Post-Intervention Survey: Following the intervention period, teachers were surveyed to assess their perceptions of the impact of interactive web charting materials on students' collaborative skills, engagement levels, and understanding of the subject matter. The survey will also collect feedback on their intent to continue using these materials in the future.

In the Phase 1 of the study, two research instruments were prepared. A simple pre-test assessment with a 30-item multiple choice type pencil and paper test. This was to diagnose the weaknesses of the learners along operations on signed numbers and attest the data from interviews among the Araling Panlipunan teachers. After identifying the problems or weaknesses of the learners, the researchers came up with a plan to prepare an interactive web chart to enhance collaborative performance.

After preparing the learning intervention material, a ready-made instrument was used to validate the level of acceptability of the prepared Interactive Web Charting Material. It was patterned from the study of Stiffany Ruth B. Montejo (2022) entitled; "Online Collaborative Learning-Based Module for Araling Panlipunan 10".

Likewise in Phase II, for the level of acceptability of the material, a teacher-made multiple-choice type of test composed of thirty (30) items is used in determining the level of collaborative performance in Araling Panlipunan of Grade 4 Lavender and Primrose learners of Bangar Central School which are aligned with the Most Essential Learning Competencies (MELCs) in the specific lessons where our intervention was uniquely designed. The test had been reviewed and checked by the researchers, cooperating teachers, validators as well the adviser for corrections and further suggestions before it was administered.

RESULTS

This chapter presented the data gathered from the collaborative performance based on the pre-test and post-test scores of grades 4 in Araling Panlipunan 4 and the conduct of a survey questionnaire on the respondent's perception based on the three characteristics.

Table 1. Pre-test and Post-test of the Grade 4 learners

Group	Mean Score			
	Pretest	Descriptive Equivalent	Posttest	Descriptive Equivalent
Experimental (Lavender)	14.3	Approaching Proficiency	20.7	Proficient
Control (Primrose)	13.75	Approaching Proficiency	16.5	Approaching Proficiency
Overall	14.03	Approaching Proficiency	18.60	Approaching Proficiency

Level 1 (0-6): Beginner

Level 2 (7-12): Developing

Level 3 (13-18): Approaching Proficiency

Level 4 (19-24): Proficient

Level 5 (25-30): Advance

Table 2. Significant Differences between the Pre-test of learners from the Control and the Experimental Group

<i>Mean Difference</i>	<i>P-value (two-tail)</i>	<i>t Stat</i>	<i>Decision</i>
0.550	0.684	0.413	Accept Ho

***Significant at 0.05 level**

Table 3. Significant Differences between the Post-test Scores of learners from the Control and the Experimental Group

<i>Mean Difference</i>	<i>P-value (two-tail)</i>	<i>t Stat</i>	<i>Decision</i>
4.200	0.027*	2.394	Do Not Accept Ho

***Significant at 0.05 level**

Table 4. Significant Differences between the pre-test and post-test Scores of learners from the Control and the Experimental Group.

<i>Mean Difference</i>	<i>P-value (two-tail)</i>	<i>t Stat</i>	<i>Decision</i>
3.650	0.035	-2.275	Do Not Accept Ho

***Significant at 0.05 level**

Table 5. Level of Acceptability of the developed intervention material used in the experimental group.

Indicators	Mean	DER
A. Adequacy		
1. The material is up to date.	4.3	VHA
2. The material presented is accurate.	4.2	HA
3. The material is appropriate.	4.3	VHA
4. The material includes adequate advice/tips/information for the involvement of grade 4 lavender in the research.	4.3	VHA
5. Material is relevant to the grade 4 learner's involvement in the research.	4.1	HA
Sub-mean	4.24	VHA

B. Coherence		
1. The material's design is logically organized and structured.	4.4	HA
2. The cohesive devices and evidence of coherence in texts alone are not enough	4.1	HA
3. The language and terminology used in the material are consistent and coherent.	4.2	VHA
4. The material maintains a consistent design and style throughout.	4.3	HA
5. The material is coherent and easy to follow the flow of the chart.	4.4	HA
Sub-mean	4.28	VHA
C. Appropriateness		
1. Information presented in the material is factually correct, up to date, and free from errors. It helps in avoiding any misleading or false information that may confuse or misinform the learners.	4.4	VHA
2. Consistency of the information presented within the material is maintained.	4.3	VHA
3. The materials design and layout align with the needs, interests, and preferences of the target learners. This helps in making the material more relevant and engaging for the learners.	4.2	HA
4. It ensures that the material's design does not violate any laws, regulations, or copyrights. Additionally, it helps in avoiding any potentially offensive or inappropriate content that may harm the reputation of the organization or offend the learners.	4.1	VHA
5. The design elements, including layout, colors, fonts, and images, ensure that they are visually appealing and enhance the overall goal of the material. It helps in creating a visually engaging and attention-grabbing appearance for the learners.	4.5	VHA
Sub-mean	4.3	VHA
D. Usefulness		
1. The material provided valuable information or insights related to the topic aligned with specific lessons of the learners in grade 4.	4.2	HA
2. The material offers practical tips, strategies, or actionable steps that can be applied in real-life situations.	4.6	VHA
3. The material presents a unique perspective, innovative ideas, or fresh insights.	4.2	HA
4. The material caters to different levels of expertise or knowledge.	4.4	VHA
5. The material offers useful information for both teachers and learners in the application of the material in a classroom setting.	4.2	HA
Sub-mean	4.32	VHA
Overall Mean	4.29	VHA

STUDENTS' PERCEPTION OF THE USE OF INTERACTIVE WEB CHARTING MATERIAL

These are the learner's purposeful realization, understanding, or conception while learning and answering the Collaborative Learning activities. These perceptions are based on three characteristics Social Interaction, Teamwork, and Individual Accountability. Each characteristic has 10 criterion items. This study gathered the learners' perception through a Likert scale with its corresponding level of Legend: 4- Strongly Agree (Sibibileg nga Umanamong) 3- Disagree (Saan nga Umanamong) 2- Agree (Umanamong) 1- Strongly Disagree (Nakaro ti saan nga umamong) Legend: 4- Strongly Agree (Sibibileg nga Umanamong) 3- Disagree (Saan nga Umanamong) 2- Agree (Umanamong) 1- Strongly Disagree (Nakaro ti saan nga umamong)

Table 1. Learners Perception of Social Interaction in the Use of the Interactive Web

Criterion Items	WD	VD
I feel motivated when my classmates and I interact with each other (Mariknak a matignayak no makilanglangenkami ken dagiti kaklasek.)	3.50	SA
I follow a lot of my classmates' opinions, pieces of advice, and insights. (Kanayon nga ibinglayko dagiti kapanunotan ken nasursurok kadagiti kaklasek)	3.35	SA
I share my ideas and learnings with my classmates all the time. (Kanayon nga ibinglayko dagiti kapanunotan ken nasursurok kadagiti kaklasek.)	3.24	A
I prefer to work on a task with my classmates. (Kaykayatko ti agtrabaho iti maysa nga aramid a kaduak ti kaklasek.)	3.50	SA
My groupmates and I assign tasks and roles in the group. (Mangitudingkami ken dagiti kakaduak iti grupo kadagiti trabaho ken akem iti grupo.)	3.24	SA
I feel happy if our group leader asks for our suggestions and reactions before doing the task. (Mariknak ti ragsak no ti lider ti grupomi ket agkiddaw kadagiti singasing ken reaksionmi sakbay nga aramidenna ti trabaho.)	3.45	SA
If I have some difficulties answering the activities, I ask my classmates. (No adda marigatanak a mangsungbat kadagiti aktibidad, ikagumaak a kontaken dagiti kaklasek babaen ti Facebook messenger wenno kapadana.) (Ad-adu ti maawatanko kadagiti aktibidad no sagpaminsan nga ibinglay dagiti kaklasek ti maipapan iti leksion oras.)	3.39	SA
I can comprehend more of the activities if my classmates share the lesson from time to time. (Ad-adu ti maawatanko kadagiti aktibidad no sagpaminsan nga ibinglay dagiti kaklasek ti maipapan iti leksion oras.)	3.37	SA
I can learn more if my classmates and I share ideas on complex topics. (Ad-adda a mapalawa ti pannakaammok no ibinglay dagiti kaklasek dagiti pannakaawatda, personal a padasda ken kapanunotan a mainaig iti topiko.)	3.40	SA
I can expand my knowledge more if my classmates share their insights, personal experiences, and ideas related to the topic. (Ad-adda a mapalawa ti pannakaammok no ibinglay dagiti kaklasek dagiti pannakaawatda, personal a padasda ken kapanunotan a mainaig iti topiko.)	3.30	SA
General Weighted Mean	3.37	SA

Charting Material

Table 2. Learners' Perception of Teamwork in the Use of the Interactive Web Charting Material

Criterion Items	WD	VD
My group mates and I display high levels of cooperation and mutual support in doing a task. (Ipakpakitami ken dagiti kakaduak iti grupo tinangato a lebel ti panag titinnulong ken panagtitinnulong iti panangaramid iti maysa nga aramid.)	3.32	SA
My group mates and I set and met challenging goals in doing tasks. (Mangipasdek ken maragpatmi ken dagiti kakaduak iti grupo dagiti makakarit a kala ti panangaramid iti trabaho.)	3.31	SA
Everyone values what each member contributes to the group in accomplishing a learning task. (Ipatpateg ti tunggal maysa no ania ti maitulong ti tunggal miembro iti grupo iti panangibanag iti maysa nga aramid a makasursuro.)	3.35	SA
My group mates and I avoid duplication of effort to maximize time and set deadlines for every task. (Liklikanmi ken dagiti kakaduak iti grupo ti panagdoble ti panagregget tapno ad-adu ti tiempo ken mangikeddeng kadagiti deadline para iti tunggal trabaho.)	3.41	SA
My group mates and I have a strong sense of accomplishment relative to our learning tasks. (Napigsa ti riknami ken dagiti kakaduak iti grupo dagiti nagapuanan no maidilig kadagiti trabahomi nga agsursuro.)	3.22	SA
My group mates and I maintain a can-do approach when encountering frustrating situations while doing our learning tasks. (Taginayonenmi ken dagiti kakaduak iti grupo ti pamay-an a kabaelanmi nga aramiden no makasabet kami kadagiti makapaupay a kasasaad bayat nga aramidenmi dagiti trabahomi a panagsursuro.)	3.36	SA
My group mates and I can work through differences of opinion in planning a task without damaging our group's relationship. (Mabalinmi ken dagiti kakaduak iti grupo ti agtrabaho babaen ti nagdudumanga opinion iti panagplano iti maysa nga aramid a di madadaeltirelasyon ti grupo mi.)	3.24	SA
My group mates and I make sure our learning tasks are accomplished on time. (Siguraduenmi ken dagitikakaduak iti grupoket maibanag iti umiso a tiempo dagiti trabaho minga agsursuro.)	3.44	SA
My group mates and I appreciate one another's unique capabilities and contributions in doing a task. (Apresiaenmi ken dagiti kakaduak iti grupo ti naisangsangayan a kabaelan ken kontribusion ti maysa ken maysa iti panangaramid iti maysa nga aramid.)	3.43	SA
My group mates and I plan ahead of time and distribute the tasks equally. (Nasaksakbay nga agplano kami ken dagiti kakaduak iti grupo ken agpapada ti panangiwaras mi kadagiti trabaho.)	3.37	SA
General Weighted Mean	3.35	SA

Table 3. Learners' Perception of Individual Accountability in the Use of the Collaborative Learning-Based Module

Criterion Items	WD	VD
I work with a sense of urgency if I am assigned to do a task in a group. (Agtrabahoak buyogen ti rikna ti kinaganat no maitudingak nga agaramid iti maysa nga aramid iti maysa a grupo.)	3.44	SA
I feel responsible when we cannot accomplish or finish tasks on time. (Mariknak a responsableak no ditay maibanag wenna maileppas ti trabaho iti umiso a tiempo.)	3.22	A
I give our group my full support and cooperation in answering the module's collaborative learning activities. (Itedko ti naan-anay a suporta ken kooperasionko iti grupomi iti panangsunbat kadagiti aktibidad ti module's collaborative learning activities.)	3.48	SA
I actively participated in our group for us to successfully finish and submit the given task on time. (Aktibo a makipasetak iti grupomi tapno sibaballigi a maileppas ken maisubmitirmi ti naited nga aramid iti umiso a tiempo.)	3.60	SA
I finish my assigned task on time to avoid delays in our group submission. (Leppasko ti naituding nga aramidko iti umiso a tiempo tapno maliklikan ti pannakaat-atiddog ti panagipatulodmi iti grupo.)	3.45	SA
I feel happy if I contribute a lot of ideas that make our group accomplish a difficult task. (Mariknak ti ragsak no adu ti maikontribusionko nga ideya a mamagbalin iti grupomi a mangibanag iti narigat nga aramid.)	3.50	SA
I always ask my groupmates anything I could help even if I have already done my part. (Kanayon a damagenko kadagiti kagrupok ti aniaman a matulongak uray naaramidkon ti pasetko.)	3.30	SA
I feel guilty and frustrated if I cannot contribute anything to the group. (Makonsiensia ken maupayak no awan ti maitulongko iti grupo.)	3.25	SA
I always allocate time for group meetings and group work. Kanayon nga itudingko ti oras para kadagiti miting ti grupo ken panagtrabaho iti grupo.	3.40	SA
I'm not too fond of the idea of being a free-rider; thus, I always make sure to share my insights with my group. Saanak unay a pagay-ayat ti ideya nga agbalin a free-rider; isu ti gapuna; Kanayon a siguraduek nga ibinglayko dagiti pannakaawatko iti grupok.	3.46	SA
General Weighted Mean	3.41	SA

DISCUSSION

Table 1 shows the performance levels of the control (Primrose) and experimental (Lavender) groups both before and after the intervention. In the pre-test phase, both groups were assessed to have an Approaching Proficiency performance level, with the Lavender group scoring a mean of 14.3 and the Primrose group a mean of 13.75. This initial similarity suggests that at the beginning, both groups were performing at a comparable level. This parallels the emphasis on the significance of collaborative, engaging learning environments highlighted in studies by Johnson and Johnson (2009), Manahan (2010), and Kuo et al. (2015). After the intervention, the Lavender group's performance improved significantly to Proficient, as indicated by their post-test mean score of 20.7. This improvement echoes the outcomes reported in studies by Zhang et al. (2022) and Panganiban (2018), which showed that interactive web tools enhance learners'

engagement, critical thinking, and understanding of complex concepts. In contrast, the Primrose group, which did not receive the experimental treatment, showed a lesser degree of improvement, remaining at an Approaching Proficiency level with a post-test mean score of 16.5. This discrepancy reflects the insights from studies by Watters (2014) and Cooper, B., & Cowie, B. (2010) emphasizing how collaborative and interactive methods can significantly boost learning outcomes. This difference in post-test performance levels a significant improvement for the Lavender group and a more modest gain for the Primrose group suggests that the intervention implemented with the Lavender group was effective in enhancing their performance beyond the initial level. Overall, the data indicates that while both groups started at a similar level, the intervention led to a significant improvement in the Lavender group, as opposed to the Primrose group which maintained a consistent but less improved performance.

Table 2 shows the computed p-value (two-tail) of 0.684 which is greater than the 0.05 level of significance. As a result, we accept the Null Hypothesis, indicating that there is no significant difference between the pretest scores of the control (Primrose) and experimental (Lavender) groups. This implies that both groups did not lead to a significant variance in pretest scores.

Table 3 shows a calculated p-value (two-tail) of 0.027 is found to be greater than the 0.05 level of significance. Consequently, we do not accept the Null Hypothesis, indicating that there is a significant difference between the posttest scores of the control (Primrose) and experimental (Lavender) groups. This suggests that the Lavender group's post-test scores differ significantly from those of the Primrose group, highlighting the impact of the experimental treatment.

Table 4 shows the computed p-value (two-tail) of 0.035 which is observed to be greater than the 0.05 level of significance. Consequently, we do not accept the Null Hypothesis. This implies a substantial difference between the pretest and posttest scores for both the control (Primrose) and experimental (Lavender) groups. Moreover, the result signifies the effectiveness of the intervention material, as the Lavender group's scores demonstrate a significant improvement compared to the control group. The observed difference suggests that the Lavender group, exposed to the intervention, experienced positive changes, supporting the notion that the intervention material had a meaningful impact on the measured outcomes.

Table 5 shows the level of acceptability of the proposed learning material. There are four different indicators along the level of acceptability of the Interactive Web Charting Material namely, adequacy, coherence, appropriateness, and usefulness. Along with adequacy, the indicator from the table stating the material is up to date had a mean score of 4.3 described as Very Highly Acceptable. This simply means that the material itself is timely, new, and recent.

Moreover, it implies that the material contains topics that are recent particularly on learners' collaborative involvement. If this is so, then the learners are capable of easily understanding and utilizing the material used.

On the coherence, the indicator stating that the material is logically organized and structured with a mean score of 4.4 described as Very Highly Acceptable which implies that the layout and design of the material is well crafted as well as its style which provides learners an easier way to follow and understand the flow of the chart

Students' Perception in the Use of Interactive Web Charting Material

Table 1 shows the results of the learner's perception of the use of Interactive Web Charting Material in Araling Panlipunan through Social Interaction. In the table, each criterion item displays its *WD or Weighted Mean* and *VD or Verbal Description*. Based on the results, nine items got a rating of 4 which is an equivalent level of agreement of *Strongly Agree*. Only item number three got a weighted mean of 3.24 with its equivalent verbal description of *Agree*.

Learners' perception through Social Interaction has a significant impact and effect in terms of accomplishing grouped activities. Learners who are more likely to interact with their peers, classmates, and even teachers for guidance and instruction might provide a big help for learners to excel more in their studies. Collaborating, connecting, and communicating with peers in the new normal in the educational system greatly aids learners in achieving their goals. By collaboratively working with others, learners can discuss freely their thoughts, enhance their social skills, and solve problems together easily with the help of others. For instance, the 'relational' approach developed by Kutnick and his colleagues (Kutnick & Blatchford, 2014) and Backer et al. (2018), which aims to improve learners' social, communication, and advanced group working skills could prove fruitful. The more learners are given opportunities to collaborate and interact with one another, the more skills, abilities, and knowledge they can develop. Moreover, collaborative learning methods can enhance student achievement, engagement, and motivation. The study highlights the importance of creating a positive learning environment that encourages active participation and communication among learners (Johnson and Johnson, 2009).

Table 2 presents the results of the learners' perception of the use of Interactive Web Charting Material in Araling Panlipunan through Teamwork. Each criterion item displays its *WD or Weighted Mean* and *VD or Verbal Description*. Eight criterion items got a rating of 4 or its equivalent level of agreement of *Strongly Agree*. There are two items number five who got a weighted mean of 3.22 and item number seven who got a weighted mean of 3.26 with its equivalent verbal description of *Agree*.

Teamwork greatly influences learners when they do group activities. If a group works well together, the members will be more encouraged, inspired, and motivated to participate and cooperate in accomplishing the task. However, teamwork can be a

challenging process and its success relies on how well each member manages their learning and works with others. (Jarvela et al., 2016).

In answering these criterion items, the learners realized that teamwork means more than just working together. It involves each member contributing to the group, working quickly and efficiently on tasks, and making plans and goals as a team. When group interactions are organized towards specified learning goals and each learner is responsible for a portion of the task, these strategies are known as cooperative (Zambrano et al., 2019).

Table 3 displays the results of the learners' perception of the use of Interactive Web Charting in Araling Panlipunan through Individual Accountability. Each criterion item displays its WD or Weighted Mean or Verbal Description. Nine criterion items got a rating of 4 or its equivalent level of agreement of Strongly Agree. Only item number two got a weighted mean of 3.22 with its equivalent verbal description of Agree. Learners' perceptions in answering the post-test through Individual Accountability have both positive and negative impacts based on their performances and responses. There are factors needed to consider such as the matter of belonging to the group, putting trust in each group member and setting and pursuing common goals (Forslund Frykedal & Hammar Chiriach, 2018), accountability to fulfill, time to allocate and ideas to be shared and considered.

Thus, each learner needs to value the importance of Individual Accountability, especially when they are going to do tasks in a group and are designated specific roles. It provides a manner of working with people that respects and recognizes individual group members' strengths and contributions in all situations where individuals come together in groups. The members of the group share authority and accept accountability for the actions of the group. Collaborative learning's core principle is consensus-building through group cooperation, as opposed to competition in which individuals outperform other group members (Marjan et al., 2012).

CONCLUSIONS

The study concludes that the implementation of Interactive Web Charting Materials has significantly improved the collaborative performance of Grade 4 learners in Araling Panlipunan at Bangar Central School. This intervention, focusing on group-based activities and interactive, web-assisted learning tools, proved to be more effective compared to traditional individual-based methods. The findings highlight the importance of interactive and collaborative learning strategies in enhancing learners' engagement and educational outcomes in Araling Panlipunan, particularly in classroom settings where direct interaction and cooperation among learners are achievable.

RECOMMENDATIONS

This study does not intend to replace the old or another style of collaborative learning that our educational system has. Instead, this study displayed that Interactive

Web Charting Material may be considered as one of the effective ways to strongly help learners to be actively engaged in collaborative learning or activities.

The Interactive Web Charting Material of this study can be used in succeeding school years specifically in the second quarter of Grade 4. This material would greatly help the learners engage in learning and will be motivated to work and participate through the collaborative learning activities despite of often changes in our educational system, together with the difficulties in the Araling Panlipunan subject.

In implementing the Interactive Web Charting Material in a face-to-face setting of a learning environment and collaborative activities, the teachers must ensure that directions should always be observed, and serve as a guide for the learners. The teachers must also group the learners randomly. They must also check feedback and progress from the learners in terms of cooperation, participation, and fair learners' work contribution and treatment.

Since the learners performed well through grouped activities rather than individual ones, it is recommended that the teachers imply appropriate grouped or collaborative activities that will surely meet the Most Essential Learning Competencies (MELCs).

Since the experimental group obtained higher scores through collaborative activities using the proposed material, then this will be recommended for use in the succeeding school years to ensure learners' better level of performance in the Araling Panlipunan subject.

Based on the learners' experiences through the three characteristics, collaborative learning activities are recommended especially to Grade 4 Lavender who utilize the Interactive Web Charting Material. In line with this, learners could not only improve their level of performance in the Araling Panlipunan subject, but also, learned how to interact, cooperate, participate, and become responsible in terms of working on their task as a group or team.

This action research study provides a foundation for future research on the effectiveness of interactive web charting material in enhancing collaborative performance in Araling Panlipunan. Further studies can explore the long-term effects of utilizing these materials, compare their effectiveness across different grade levels and subjects, and investigate the impact on student motivation and engagement.

IMPLICATIONS

The findings of this action research study have significant implications for both pedagogical practice and educational policy within the context of Araling Panlipunan (AP) education in the Philippines. Implications for Teaching Practice:

Integration of Interactive Web Charting Materials: The study demonstrates the effectiveness of interactive web charting materials in enhancing collaborative performance among Grade 4 AP learners. Teachers should be encouraged to incorporate these materials into their lessons, leveraging their interactive and engaging nature to foster deeper understanding and active participation.

Collaborative Learning Environments: The study highlights the importance of creating collaborative learning environments that encourage student interaction and knowledge sharing. Teachers should design activities that promote peer learning, discussion, and group work, facilitating the development of essential 21st-century skills such as communication, critical thinking, and problem-solving.

Differentiated Instruction: The study suggests that interactive web charting materials can be adapted to cater to different learning styles and needs. Teachers should consider differentiating instruction by providing various levels of support and challenge within the interactive web charting activities.

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DECLARATIONS

Conflict of Interest

The authors declare no competing interest in the study.

Informed Consent

Prior to the respondent's participation in the study, informed consent was secured from the participants of the study, the reason why they have been asked to participate is stated in a clear manner, such as what is the study about, what are the questions that are given, where it has been used, and any other necessary undertaking of the respondent's engagement are explained to ensure that they give their full consent.

Ethics Approval

This study has been approved by Ilocos Sur Polytechnic State College, the school where the authors studied and by Bangar Central School, where the study has conducted.

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