

African Multidisciplinary Journal of Development (AMJD)

Page 132-145

IMPACT OF TECHNOLOGICAL-ENHANCED COLLABORATIVE AND INSTRUCTOR-LED INSTRUCTIONAL DESIGN MODEL ON 4TH-GRADE PUPILS' ATTITUDE IN SOCIAL STUDIES

¹Olasunkanmi I.A.(PhD.) & ²Lawani E.O.

Educational Technology Unit, Department of Science and Technology Education,
University of Ibadan, Nigeria

¹e-mail: ia.olasunkanmi@ui.edu.ng ;Phone: (+234) 806 048 0636

²e-mail:elawani217@gmail.com Phone: (+234) 703 724 5060

Abstract

The purpose of social studies is to help learners inculcate ideas and practices suitable for eliciting acceptable behaviours for national consciousness and global communities. It appears that the traditional method of teaching the subject is deficient in addressing the right attitude needed in 21st-century learners. The study adopted a quasi-experimental design with a 3×2×3 factorial matrix in an intact class of 88 participants. The study was manipulated at three levels involving a Collaborative Instructional Design Model (CIDM), Instructor-led Instructional Design Model (IIDM) and Traditional Instructional Strategy (TIS) with a Storytelling-video package. Cronbach-Alpha was used to establish the reliability coefficient at 0.81 questionnaire items used at pre-post tested with 7 hypotheses at 0.05. Findings showed that treatment had a significant main effect on pupils' attitudes in Social Studies, effect sized accounted for revealed ($\eta^2=0.14$). The 2&3-way interaction of treatments, age and gender was not significant. Therefore, it is recommended that teachers adopt the instructional design model as revealed in the study to be effective at the main treatment level to enhance pupils' attitude towards Social Studies.

Key words: Storytelling-Video, Attitude, Think-pair-share, age, gender

1. Introduction

The inclusion of Social Studies in the elementary school curriculum is critical to ensuring sustainable development in society. Its main purpose is to contribute to providing opportunities for learners to inculcate in their ideas and practices suitable for eliciting acceptable behaviours in respect of national consciousness, unity in diversity, national tolerance and respect for others National Policy on Education NPE both in the immediate and global communities. The Social Studies curriculum with its integrated design features drawn themes in different subject areas, yet distinct in approach (Abimbade, Olasunkanmi, Akinyemi and Lawani 2023). Such as the theme of "identity" explored in geography (mapping), history (nationality), literature (characterization), and science (classification). These multiple perspectives in Social Studies reveal that its major aim is to promote citizenship, literacy, and critical thinking skills. (Penner 2019).

The aims and objectives as reflected in the NPE then necessitate the early introduction of Social Studies as a subject at elementary to middle school levels of education.

As such the importance of careful instructional design model aims at aiding the 21st century learners in effective and engaging classroom activities where necessary. However, its no doubt learners are faced with multiple social vices which social studies according to design are meant to address. When techniques are appropriately used in the facilitation of Social Studies, it brings the learner to a point where learning is meaningful and determines the extent of instructional objectives being actualised (Sofadekan 2012). Hence, the study, the impact of video-based technological-enhanced collaborative and instructor-led instructional design model on 4th-grade pupils' attitude in social studies

Therefore, "learners' attitude in any learning endeavour remains critical regardless of age and gender (Olasunkanmi 2015). Attitude reflects the evaluation of a specific target and behaviour of an individual in an environment and evidence of learning is found to be consistent with expected attitudinal outcomes as a result of perceptions and judgement of certain events and objects. (Pruet, Ang, and Farzin 2016). This implies that the way learning design is approached by instructional technologists and learning experience experts in conjunction with the teacher is vital to enable better inculcation of national values as embedded in the curriculum. The eminent problem of digitized forms of learning and technologically enhanced integration has to be done cautiously for effective learning to take place within the classroom.

This study considered attitude as a dependent variable moderated by gender and age. However, two major treatments proposed; collaborative learning and instructor-led aimed to reflect various levels of learning experience design and dynamic as regards its implementation within the classroom activity using the ASSURE model, meaning; analysing the learner, state objectives, select media, method and material, utilize media and material, require learner participation and evaluate and revise. The ASSURE model helped to incorporate digital media integration with a developed video-storytelling instructional package.

2. Literature Review

Technological-enhanced learning is an instructional approach that makes it possible for learners to handle various technology uses within the class during class activities. However, instructors must take caution on the appropriate use and models that aid effective technological integration in the class to help learners utilize the benefits that come with such technology, as such aid learners take ownership, accountability and responsibility (Grant and Basye 2014). Ineffective teaching and learning have been traced to several factors among which are, traditional teaching strategy, rote memorization such as names, dates and places, and implementing activities that discourage critical thinking in the classroom such as poor uses of digital media. Hence, lack of experience on the part of the teacher leads to mass failure in both standardized tests and teachers-made tests as a result of the use of teacher-centred instructions characterized by "direct instruction" (Abimbade, Akinyemi, Bello, and Mohammed 2017). This is why Ajani (2018) is of the view that teachers should not be stocked with the entry-level knowledge they had when they came into the teaching profession. This implies their ability to impact younger learners' attitudes with engaging learning design. No wonder, Aremu (2019) emphasises the use of storytelling by citing its potential to "help children acquire social skills such as tolerance, cooperation and respect for other people".

Attitude is a state of readiness that allows an individual to perceive phenomena in certain ways and to act accordingly, attitudes are also dynamic and have motivational qualities, however, students' attitudes

toward a subject are a fairly accurate measure of their interest in that subject. Attitudes are also an important parameter of the state of education as well as a significant predictor of students' future choices. If a given subject is to continue to have public support at local, state, or federal levels, attitudes toward this subject should be positive and enhanced using appropriate measures that interest learning. This implies that constant retraining is required to aid better facilitation within the classroom activities such as the inclusion of various media like the storytelling-video package by teachers aided by instructional designers where teachers lack the essential skills to integrate media.

Storytelling-video is an instructional package that combines researching, creating, analysing, and combining visual images with written text (Cherry, 2017) in story form it also incorporates images and sounds with rich narratives and is mostly perceived to aid a meaningful learning experience for learners of various levels ranging from kindergarten to university levels (Lambert, 2013; Robin, 2008; Shelton, Archambault, & Hale, 2017). Curriculum themes are processed and transformed into stories aided by technologies in multimedia tools and packaged in various learning forms, such as "visual, auditory and kinesthetic" (Aremu 2019). Despite the widespread use of technological-enhanced tools for instructional purposes for schools, "many studies have shown gender imbalance in ICT usage and skill development" (Qazi, Hasan, Abayomi-Alli, Hardaker, Scherer, Sarker, Paul, & Maitama, 2021; Abimbade et al 2023) The reaction, behaviour, rate of assimilation and how elementary learners relate with their pairs, and the extent to which they exercise their minds and brains is a function of their age, such that in some case, younger learners assimilate faster and comprehend. Studies have shown that the chronological age of learners had a significant bearing on learning outcomes such that the younger learners had the potential to perform better than their oldest counterparts in a teacher-made test (John, Jackson, and Simiyu 2015) "They reiterate the lack of systematic and meta-analytical reviews to substantiate the statistical significance, validity strength and gender differences" (Abimbade et al 2023) be it in a collaborative setting where learners are encouraged to work in groups.

The collaborative instructional design model focuses on a think-pair-share cooperative learning strategy and also aids teachers with a powerful tool that can be used in the classrooms in a variety of ways. It enables learners to pair, think and share their responses and answers with other pairs, teams, or entire groups (Othman & Othman, 2012). The vital aspect of collaborative think-pair-share is a strong thinking excises for the learner which gives room for learners to formulate their ideas and share with group members within a predefined grouping (Sutrisno et al. 2019), though opposed by the teacher-led instructional design strategy, the strategy with its strength and weakness is also perceived as the most popular choice among instructional strategies deployed within a classroom activity by teachers. It is identified as a formal, controlled and autocratic method of instruction which directs how, what, and when students learn through digital storytelling (Aremu 2019). The teacher-led combined storytelling-video package would aid learners' ability to think aloud and essentially guide learners through digital storytelling to a desired outcome (Ericikan, Arim, Law, Domene, Gagnon and Lacroix, 2010).

2.1 Statement of Problem

Social Studies in schools has been implemented for many years now with little success in terms of inculcating the values of good citizenship among children of younger age. Teachers are mostly perceived to implement learning activities focusing more on traditional teaching strategies, such as the teacher expository method categorised by dictation and note-taking, which are not very interactive. The curriculum

does not address its major aims and objectives of behavioural changes for the good of society as a result of teacher's lack of an effective instructional design model. Hence, the schools aim to resolve this problem and saddle much responsibility on the teacher which over time has not been found to be effective enough as a result of several teaching techniques lacking engagement and collaboration among learners.

2.2 Research Questions

1. What is the significant main effect of treatment on pupils' attitudes towards Social Studies?
2. What is the significant main effect of gender and age on pupils' attitudes towards Social Studies?
3. Is there an interaction effect of treatment on gender and age on pupils' attitude towards Social Studies?
4. What is the combined interaction effect of gender and age on pupils' attitudes towards Social Studies?
5. What is the composite effects of treatment, gender, and age on pupils' attitude towards Social Studies?

2.3 Research Hypotheses

HO1 There is no significant main effect of treatment on pupils' attitude towards Social Studies

HO2 There is no significant main effect of gender and age on pupils' pupils' attitude towards Social Studies

HO3 There is no significant interaction effect of treatment on gender and age on pupils' attitude towards Social Studies

HO4 There is no significant interaction effect of gender and age on pupils' attitude towards Social Studies

HO5 There is no significant interaction effect of treatment, gender and age on pupils' attitude towards Social Studies

3. Research Design

This study adopted a presurvey-post survey, control group and quasi-experimental design to examine the impact of a technological-enhanced collaborative and instructor-led instructional design model on 4th-grade pupils' attitude in social studies involving the development of an instructional package to scaffold the learning process.

3.1 Sample and Sampling Technique

Participants

The investigation took into consideration participants in their 4th-grade schooling year in a random sampling technique involving three government-owned elementary schools in Osogbo, Osun State, Nigeria. In the study, 88 pupils who participated in the study were drawn from three intact classes. The CIDM represents experimental group one with a population of 26 participants, while the IIDM represents group two with a population of 22 participants and the TIS has 40 participants.

Instruments for Data Collection

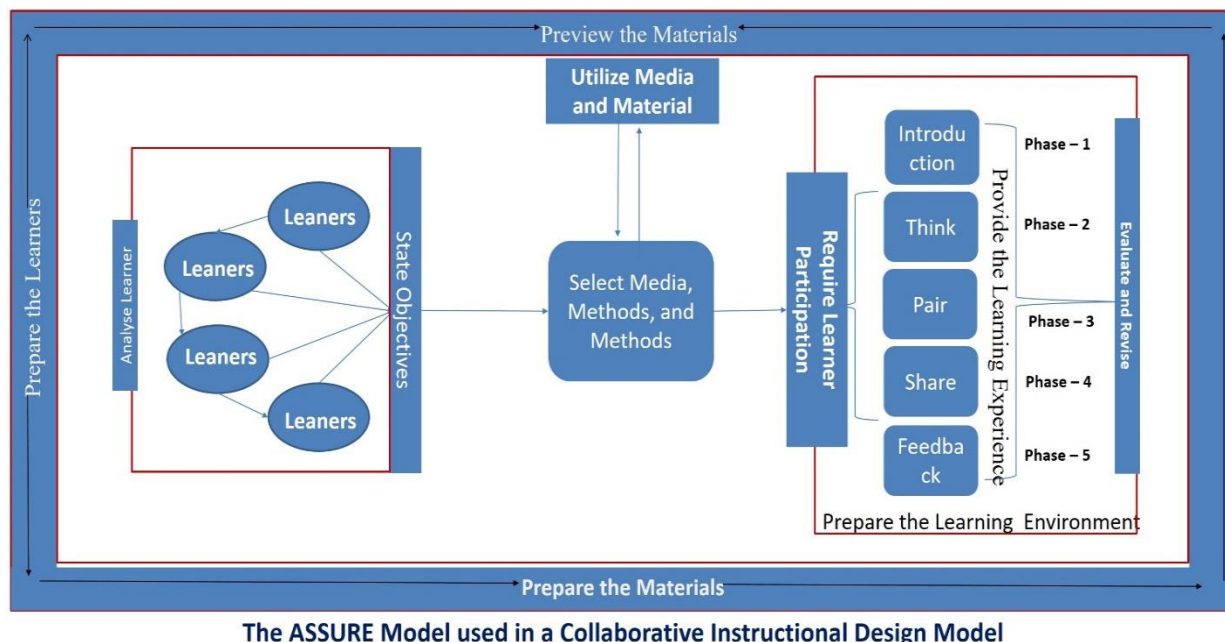
A survey instrument titled Pupils' Attitude to Social Studies (PASS) was used to investigate during the learning process on pupils' attitude towards Social studies. The survey item was ten (10) items rated on a three (3) point Likert scale of Yes-3; Not sure-2; and No-1 for positive items while the negative items were

rated as No-3; Not sure-2; and Yes-1 respectively. To ensure the reliability of instruments, a pilot study was carried out on thirty (30) respondents who were not part of the main study. Cronbach Alpha was used to establish the reliability coefficient at 0.81, these revealed that the instrument was reliable.

The Treatment Procedure

The ASSURE model which contains six vital steps to initiating practical media integration into learning and teaching exercise was considered for this study considering the effectiveness of effectively integrating instructional media in learning activities. The ASSURE Model acronym as pronounced symbolises; analysis, state objectives, selecting media and materials, utilising media and materials, requiring learner participation and evaluating and revising. the model is modelled in Figure 1 below as it was applicable in the study.

1. The Procedure for Collaborative Instructional Design Model (CIDM)



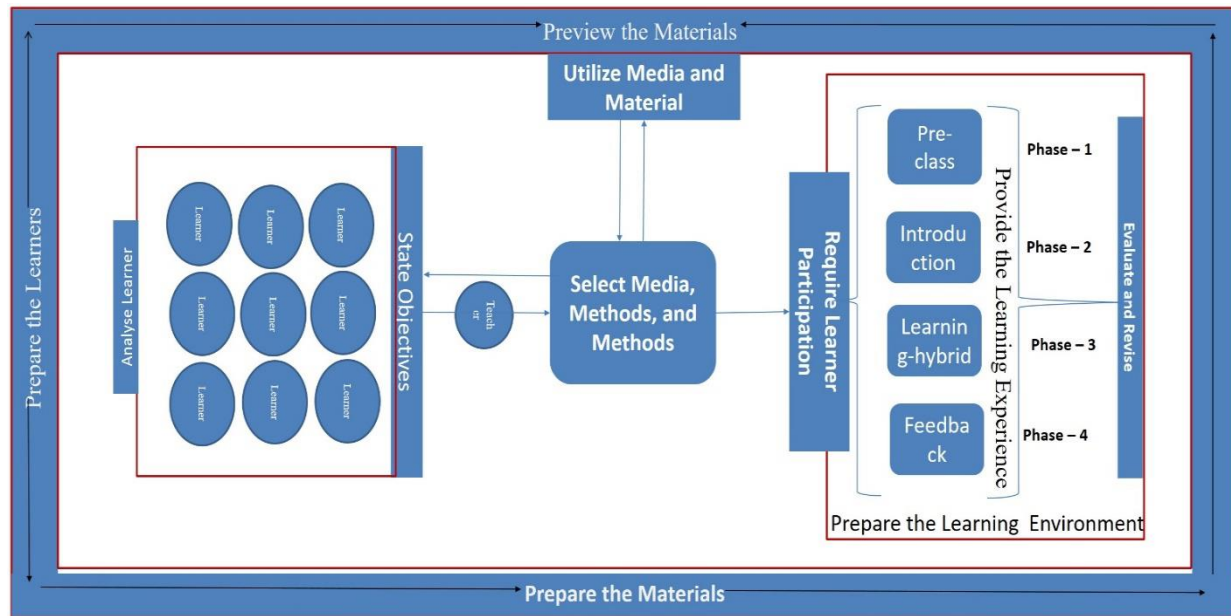
The ASSURE Model used in a Collaborative Instructional Design Model

Figure 1: The ASSURE Model used in a Collaborative Instructional Design Model

This model is relevant in this study as it forms the basis on which the storytelling-video package was integrated into the class activities explained in the following five phases of the collaborative instructional design model of class implementation of treatment group one; The process allowed the learners to work in groups of 4 and 5 respectively, going through the various phases of class activities using laptops as transmission channels for the storytelling-video package. The teacher introduces and stirrup expectations for the learners in phase one, while phase two starts with the “think” where learners brainstorm on posed dramatic questions, the third phase enables the “paired” activity also known as paired circle involving participants in various groups and interacting with an instructional storytelling-video package in a paired grouping, then the phase four called “share”, this is where paired participants are allowed to share insight and responding to learning activities as represented in the design document within specific guidelines. The fifth phase “feedback”, this is where the teacher sampled pupils' insights of the instructional storytelling-video package from the dramatic posed question, group leaders within groups where appointed by other pupils to present their various insight while the pupils were also expected to turn-in individual worksheet

despite the group task. The teacher further evaluated the classes based on the storytelling-video package clarified concepts and recapped major points to ascertain learning had occurred.

2. The Procedure for the Instructor-led Instructional Design Model (IIDM)



The ASSURE Model used in a Teacher-led Instructional Design Model

Figure 2: The ASSURE Model used in a Teacher-led Instructional Design Model

The Instructor-led instructional design model served as the treatment group two in the investigation and also had five implementation phases. The phase one “Pre-class”, the teacher prepares the Social Studies pupil's learning environments, such as television, an android TV box device, and a copy of the storytelling-video package to be used through the facilitation process. The second phase “Introduction” where the teacher is expected to facilitate the entire process, from moderation while the class assistant helps in playing the storytelling-video package as requested by the facilitating teacher phase three “Learning-hybrid” enables the technologically enhanced facilitation as the teacher implements the storytelling-video along the dramatic questions and the interactivity infused through the teacher-learner, teacher-technology-learner and learner-learner communication pattern. The phase four “Feedback”, the teacher evaluates the facilitation using the instructional worksheet while the teacher also clarifies concepts and recaps major points raised in the storytelling-video package.

3 Method of Data Analysis

The Statistical Package for the Social Sciences (SPSS) was used to analyse data collated in the study. The demographic data were processed using frequency count. Other statistical tools used are The Estimated Marginal Mean (EMM) and the Bonferroni posthoc analysis to determine the rationale of the cause-effect of variables responsible for the significant main effect in the study.

3.1 Results and Discussion

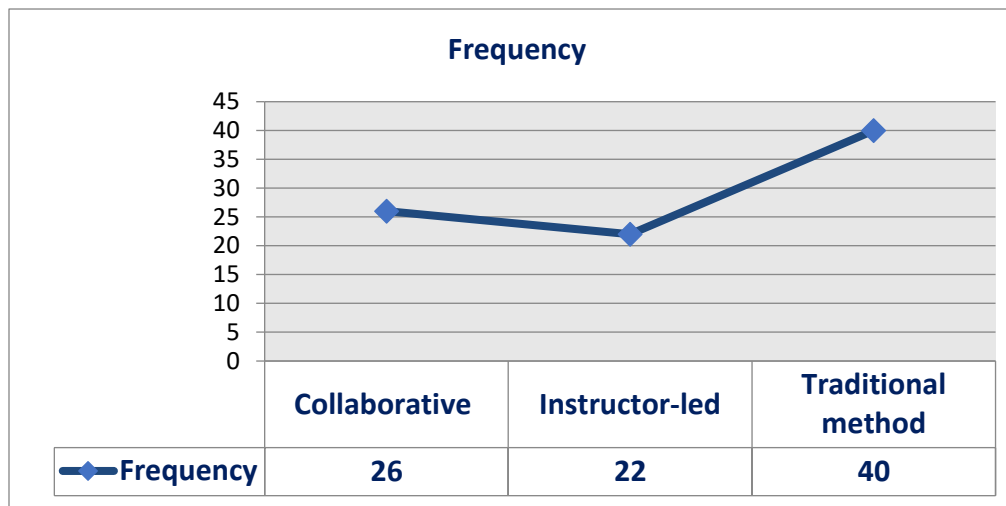


Figure 2: Distribution of Participants

The above figure shows the participant's distribution into various treatment groups and those in the control group. The collaborative instructional design model of treatment group one had a participants' population of 26 pupils while the instructor-led instructional design model of treatment group two had a participants' population of 22 pupils while the control group had 40 participants. The differences in the participants' population were a result of the study design of adopting participants within an intact class.

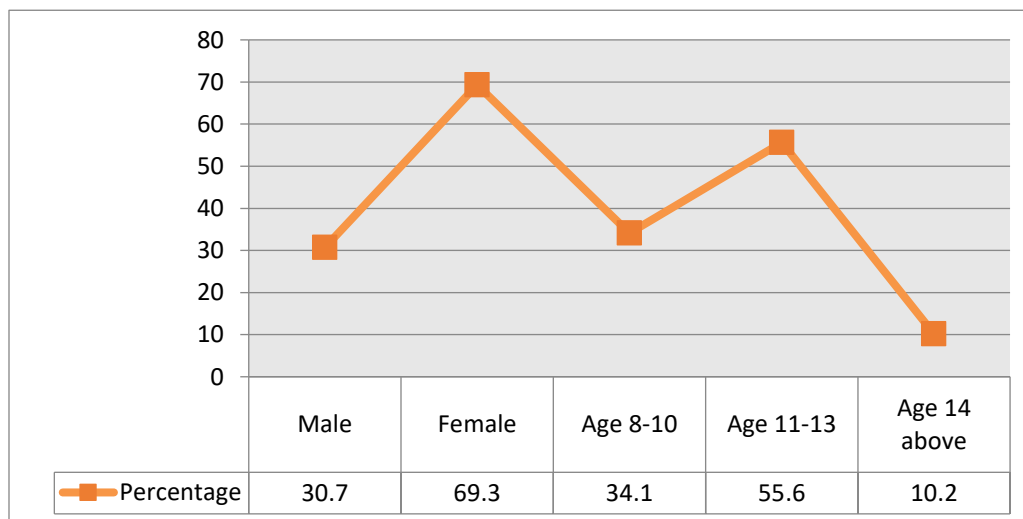


Figure 3: Demographic Features of Participants

The figure above shows that 30.7% of pupils who participated in the study were boys while 69.3% were girls. The study revealed pupils ages 8 to 10 years accounted for 34.1%, while 55.6% accounted for pupils between the ages of 11 to 13 years and only 10.2% accounted for those ages 14 and above.

HO1: There is no significant main effect of treatment on pupils' attitudes towards Social Studies.

Table 1: Table 4.4: Analysis of Covariance (ANCOVA) of Post-Attitude on Treatment.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1538.017	1	1538.017	54.487	.000	.493
Prescore	1.245	1	1.245	.044	.834	.001
Preattitude	921.438	1	921.438	32.643	.000	.368
Treatment	256.482	2	128.241	4.543	.015	.140
Corrected Model	2267.350 ^a	31	73.140	2.591	.001	.589
Error	1580.730	56	28.227			
Total	118545.000	88				
Corrected Total	3848.080	87				

a. R Squared = .589 (Adjusted R Squared = .362)

There is no significant main effect of treatment on pupils' attitude in Social Studies; Analysis of Covariance (ANCOVA) of Post-Attitude. The table above shows that there was a significant main effect of treatment on pupils' attitude in Social Studies ($F(2,56)=4.54$; $P<0.05$; $\eta^2=0.14$). The effect size accounted for 14%. This means there was a significant difference in the mean post-attitude scores of pupil's attitudes towards Social Studies. Thus, the hypothesis was rejected.

HO2: There is no significant main effect of gender and age on pupils' attitudes towards Social Studies.

Table 2: Table 4.4: Analysis of One-way Interaction Effects of Age and Gender of Post-Attitude on Treatment.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Treatments	256.482	2	128.241	4.543	.015	.140
Gender	1.919	1	1.919	.068	.795	.001
Age	88.426	7	12.632	.448	.868	.053
Corrected Model	2267.350 ^a	31	73.140	2.591	.001	.589
Error	1580.730	56	28.227			
Total	118545.000	88				
Corrected Total	3848.080	87				

The hypothesis assumed that gender and age had no significant main effect on pupils' attitudes towards Social Studies. The result on gender revealed ($F(1,56)=0.07$; $P>0.05$; partial $\eta^2=0.00$) while age revealed

($F(7,56)=0.05$; $P>0.05$; partial $\eta^2=0.05$). Thus, the hypothesis was not rejected. This means that gender and age did not affect pupils' attitudes towards Social Studies as speculated in the study.

HO3: There is no significant interaction effect of treatment on gender and age on pupils' attitude towards Social Studies

HO4: There is no significant interaction effect of gender and age on pupils' attitude towards Social Studies

Table 3: Analysis of Two-way Interaction Effects of Treatment on Age and Gender of Post-Attitude on Treatment.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Treatment * Gender	59.069	2	29.534	1.046	.358	.036
Treatment * Age	191.199	9	21.244	.753	.660	.108
Gender * Age	62.756	5	12.551	.445	.815	.038
Corrected Model	2267.350 ^a	31	73.140	2.591	.001	.589
Error	1580.730	56	28.227			
Total	118545.000	88				
Corrected Total	3848.080	87				

The table above revealed that there was no significant two-way interaction effect of treatment on gender and age on pupils' attitude towards Social Studies where gender revealed ($F(2,56)=0.23$; $P>0.05$; partial $\eta^2=0.04$) and age revealed ($F(9,56)=0.75$; $P>0.05$; partial $\eta^2=0.11$). Thus, the null hypothesis was not rejected. This implies that the effect of treatment on gender and age did not affect pupils' attitudes towards Social Studies.

The two-way interaction effect of gender and age on pupils' attitude towards Social Studies was also revealed ($F(5,56)=1.50$; $P>0.05$; $\eta^2=0.12$). Hence, the null hypothesis was not rejected.

H05: There is no significant interaction effect of treatment, gender and age on pupils' attitude towards Social Studies

Table 4: Analysis of Three-way Interaction Effects of Treatment Gender and Age of Post-Attitude on Treatment.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Treatment * Gender * Age	6.396	3	2.132	.076	.973	.004
Corrected Model	2267.350 ^a	31	73.140	2.591	.001	.589
Error	1580.730	56	28.227			
Total	118545.000	88				
Corrected Total	3848.080	87				

The results show that there was no significant two-way interaction effect of gender and age on pupils' attitude towards Social Studies ($F_{3,56}=0.08$; $P>0.05$; $\eta^2=0.00$). Hence, the null hypothesis was not rejected.

Table 5: Estimated Marginal Means - EMM for Post-Attitude by Treatment and Control Group

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Collaborative Instructional Design Model (CIDM)	34.455 ^{a,b}	1.326	31.799	37.112
Instructor-led Instructional Design Model (IIDM)	34.257 ^{a,b}	1.531	31.190	37.323
Traditional Instructional Strategy (TIS)	39.230 ^{a,b}	1.164	36.898	41.562

The table above shows the magnitude of the significant main effect across the treatment groups, and the estimated marginal mean (EMM). This reveals that pupils exposed to the Traditional Instructional Strategy (TIS) had the highest adjusted post-attitudinal mean score (39.23), followed by pupils exposed to the Collaborative Instructional Design Model (CIDM) (34.46), while the Instructor-led Instructional Design Model (IIDM) had the lowest mean score (34.26). This order is represented as TIS>CIDM>IIDM

Table 6: Bonferroni Post hoc Analysis of Post-Attitude by Treatment and Control

Treatments	N	Conventional strategy	Think-pair-share	centralised video-based digital storytelling
Collaborative Instructional Design Model (CIDM)	40		*	*
Instructor-led Instructional Design Model (IIDM)	22	*		
Traditional Instructional Strategy (TIS)	26	*		

Table 6 shows sources of significance, such as the pair-wise comparisons of Bonferroni's Post hoc Analysis. The table reveals that pupils in the Traditional Instructional Strategy (TIS) did significantly better than those exposed to the Collaborative Instructional Design Model (CIDM) and those in the Instructor-led Instructional Design Model (IIDM) respectively.

4. Discussion

The study revealed the effectiveness of the main treatment on pupil's attitude towards Social Studies to be significant, as such we cannot undermine the two instructional design models employed in the “Collaborative and Instructor-led” as implemented in the study using the ASSURE model to aid the integration of the storytelling-video package. Considering the learner's perspective on the level of effectiveness of the instructional design strategies as employed in the study showed that “the most effective means of fostering intrinsic motivation, intelligence, and disposition for social cooperation was eminent (Krutka and Carpenter 2016), that is, learning is drawn from experiences learners could share with pairs. Hence, the positive effect strongly rested on the multimedia element infused and developed into a storytelling-video package to stimulate interest and engage learners. One could further argue the efficacy of these two experimental strategies may be a result of the engagement pupils had, being able to create new ideas, interact by discussing the ideas created from the story and then organize their ideas in a more meaningful pattern (Aremu 2019), however Aremu’s investigation on attitude concise with the research outcome in a Christian Religious Studies discipline on pupils attitude in an instructor-led digital storytelling. However, the mean score revealed the control group participants had a higher mean school, followed by those in the collaborative treatment group and lastly the instructor-led.

Hence, gender and age, interaction and combined effect of treatment had no significant main effect on pupils’ attitude towards Social Studies as seen in Olagunju and Babayemi (2014) and Eze, Ezenwafor and Obi (2015) in a study showing no significant effects of gender and age while it is evident that no specific is stated to determine enrollment into school and not also a determinant for learning activities but rather task should be focused on instructional design (Aransi 2018). The most important aspect as revealed by constructivism which formed the theoretical base for the study emphasises learners' maturation rather than their age, thereby the study revealed no combined effect of both gender and age on treatment. Hence, digital collaborative learning environments have been shown to foster meta-reflection and higher-

level cognition among learners as well as to cultivate the spirit of collaboration and support positive social relationships with other learners. (Chen, Wang, and Lin, 2015).

5. Conclusion

The instructional design model as used in this study involving a colligative treatment group and instructor-led group, the ASSURE model which aided the integration of the storytelling-video package from findings proved to be successful in improving the attitude and increasing the aim to achieving the major goal rooted in the National Policy on Education to aid learners who have developed knowledge, skills and attitude by exhibiting nationalistic individual for a socially healthy society. However, Social Studies teachers need to be equipped with the necessary skills to enable them to use the practical strategy embedded in the use of instructional design model of collaborative and instructor-led learning strategies with the right toolset as a learner-centred approach to learning.

6. Contribution to Knowledge

The findings have shown a high level of collaboration when learners are invariably paired together, however, the weak and slow learners find a shield to prioritized learning goals as learning has been designed to accommodate interest, increasing their chances to be actively involved and participate in their unique way of learning. The instructional design model provides an enabling environment where pupils take the control needed, where teachers help and act as a guide to learners making positive decisions. Stories capture attention, gears interest and motivate learning. The study embarked on influencing learners' attitudes towards Social Studies. The strategy reported a positive attitude. Also, the strategy helped learners to develop teamwork and leadership skills during the learning process which later positively reflected on their attitude towards Social Studies.

7. Recommendation

- 1) Teachers should act as guides and carry out teaching with the learner in mind during the experience design journey to relieve the anxiety of writing, connecting content and activity-based learning for the learner.
- 2) Teachers should be equipped with the right skill tools to integrate various forms of instructional models as used in this study.
- 3) Teachers should help introverted learners function within groups when paired. This will provide a learning environment that caters for pupils who would prefer to function among their peers.
- 4) The government should introduce a digital media skills integration training program for pre-service teachers and a form of re-training for the in-service teachers through the organization of workshops and conferences for Social Studies teachers in elementary schools.

References

- Abimbade, O. A., Olasunkanmi, I. A., Akinyemi, L. A., & Lawani, E. O. (2023). Effects of Two Modes of Digital Storytelling Instructional Strategy on Pupils' Achievement in Social Studies. *TechTrends*, 1-10.
- Abimbade, O., Akinyemi, A., Bello, L., & Mohammed, H. (2017). Comparative effects of an individualised computer-based instruction and a modified conventional strategy on students' academic achievement in organic chemistry. *Journal of Positive Psychology and Counselling*, 1,3:1-19.
- Adedola G. O. and Olasunkanmi I. A. 2015. Pre-service teachers' awareness and attitude towards User-Generated Content as a collaborative learning tool. *Ibadan Journal of Educational Studies*, IJES. 12.1:49-63
- Aranis, W. O. (2018). The impact of age and gender on high school students' academic performance in economics is a case study analysis. *International journal for innovative research multidisciplinary field*, 4.1: 8-15.
- Aremu, V.I. (2021). Two storytelling strategies and primary school pupils' learning outcomes in christian religious studies in Lagos State, Nigeria. Unpublished PhD thesis. University of Ibadan.
- Bello, L. K. (2018). Development of digital storytelling package and its effect on students' learning outcome in map reading in Ibadan Metropolis, Nigeria. Unpublished PhD thesis. University of Ibadan.
- Chen, C. H., Wang, K. C., and Lin, Y. H. 2015. The comparison of solitary and collaborative modes of game-based learning on students' science learning and motivation. *Journal of Educational Technology and Society*, 18.2:237-248.
- Eze, T. I Ezenwafor, J. I and Obi M. N. 2015. Effects of Age and Gender on Academic Achievement of Vocational and Technical Education (VTE) Students of a Nigerian University. *Journal of Emerging Trends in Educational Research and Policy Studies*, 6.1:96-101.
- Federal Republic of Nigeria (FRN). (2013). National policy on education. Lagos: Nigerian Educational Research Council (NERDC) Press.
- Grant, P., and Basye, D. 2014. Personalized learning: A guide for engaging students with technology. International Society for Technology in Education.
- John M. M Jackson T and Simiyu, C. 2015. Effect of Students' Age on Academic Motivation and Academic Performance among High School Students in Kenya. *Asian Journal of Education and e-Learning*; 3.5:337-342.
- Krutka, D. G, and Carpenter, J. P. 2016. Participatory learning through social media: How and why social studies educators use Twitter. *Contemporary Issues in Technology and Teacher Education*, 16.1:38-59.
- Lambert, J. (2013). *Digital storytelling: Capturing lives, creating community* (4th ed.). New York, NY: Routledge.
- Olagunju, A. M., and Babayemi, J. O. 2014 Effects of Enhanced Explicit Teaching (Explicit Teaching+ Peer-tutoring) Strategy and Gender on Students' Attitude to Basic Science.
- Penner, Anna, (2019). Steam and social studies: Creating an integrated classroom: School of Education student Capstone Projects. https://digitalcommons.hamline.edu/hse_cp/288.
- Pruet, P., Ang, C. S., and Farzin, D. 2016. Understanding tablet computer usage among primary school students in underdeveloped areas: Students' technology experience, learning styles and attitudes.

Computers in Human Behavior, 55:1131-1144.

- Qazi, A., Hasan, N., Abayomi-Alli, O., Hardaker, G., Scherer, R., Sarker, Y. & Maitama, J. Z. (2021). Gender differences in information and communication technology use & skills: a systematic review and meta-analysis. *Education and Information Technologies*, 1-34.
- Sutrisno, B., Rasyid, Y., & Rahmat, A. (2019). Beyond the use of Think Pair Share towards the personality type students in essay writing. In *Eleventh Conference on Applied Linguistics (CONAPLIN 2018)* (pp. 120-126). Atlantis Press.