Impact of Television Telecast Strategy on Students' Attitude Towards Basic Science and Technology in Jos South, Plateau State, Nigeria

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Abstract
This study investigated the impact of television telecast strategy on students' attitude towards Basic Science and Technology in Jos South, Plateau State, Nigeria. The study adopted a quasi-experimental research design, specifically the non-equivalent pre-test–post-test control group design. The population comprised 1,793 JS II students, consisting of 854 males and 939 females, in public junior secondary schools in Jos South Local Government Area of Plateau State during the 2024/2025 academic session. A sample of 115 JS II students was drawn from two public junior secondary schools. Three research questions and three hypotheses guided the study. The Basic Science and Technology Attitude Questionnaire (BSTAQ) was used for data collection. The instrument was subjected to face, content, and construct validity. The observations and comments of the experts were incorporated into the final version of the instrument, while Kendall's coefficient of concordance was used to determine the level of agreement among the experts, yielding a coefficient of 0.76. Construct validity was established using factor analysis, which produced a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.767, indicating that the data were suitable for factor analysis. The reliability of the BSTAQ was determined using Cronbach's alpha coefficient, which yielded a reliability coefficient of 0.866, indicating high internal consistency. Both descriptive and inferential statistics were used to analyse the data. The findings suggested that the television telecast strategy provided an interesting and stimulating learning environment that sustained students' concentration and reduced boredom associated with conventional classroom teaching. It was recommended that Basic Science and Technology teachers should adopt the television telecast instructional strategy to improve students' attitudes towards the subject.

Introduction

The integration of educational technologies into classroom instruction has transformed contemporary teaching and learning by creating opportunities for more interactive, engaging, and learner-centred educational experiences. Rather than serving merely as instructional aids, digital technologies are increasingly viewed as pedagogical tools that support meaningful learning through visualisation, interaction, collaboration, and timely feedback. Recent research in

educational technology emphasises that the effectiveness of technology depends less on the technology itself than on how it is pedagogically integrated into classroom instruction to enhance learners' cognitive and affective outcomes (Scheiter, 2021). Among the various instructional technologies available to schools, television remains an important educational medium, particularly in developing countries where internet connectivity, advanced digital infrastructure, and one-to-one computing devices are not universally available. Educational television enables learners to access standardised instructional content through documentaries, demonstrations, animations, experiments, interviews, and simulations that might otherwise be difficult to provide in conventional classrooms. Although educational discourse has increasingly focused on artificial intelligence, virtual reality, and adaptive learning systems, television-based instruction continues to offer opportunities for expanding educational access and supporting teaching and learning. The UNESCO (2023) Global Education Monitoring Report recognises that television and other broadcast technologies can support educational access for disadvantaged and hard-to-reach learners, although their effectiveness depends on appropriate pedagogical integration and equitable access to the required infrastructure. Within educational technology research, students' attitudes towards learning are recognised as important aspects of their educational engagement and learning experiences. Positive attitudes can encourage learners to participate actively in classroom activities, sustain attention, explore scientific ideas, and develop confidence in solving academic problems. Conversely, negative attitudes may be associated with reduced motivation, anxiety, passive participation, and limited interest in learning. Consequently, educational technologies should be evaluated not only in terms of their potential to improve academic achievement but also in relation to their influence on learners' attitudes, motivation, engagement, and overall learning experiences. Scheiter (2021) emphasised the importance of examining how digital technologies are integrated into teaching and learning, while UNESCO (2023) highlighted the need to assess educational technology in relation to its actual contribution to learning rather than assuming that technology use automatically produces positive outcomes. In a related study, Okaka (2017) reportedly found that students taught Fine and Applied Arts using instructional charts developed more favourable attitudes and achieved better learning outcomes than those taught without charts. Although Okaka's study focused on instructional charts rather than television telecasts, both instructional approaches involve the use of visual media to support teaching and learning. Similarly, Asogwa and Ike (2019) reportedly found that students taught with real instructional objects demonstrated greater enthusiasm and more positive attitudes towards learning than students taught without such materials. These studies, if verified, would provide related evidence on the potential contribution of visual and concrete instructional materials to students' learning experiences. Basic Science and Technology occupies a strategic position within Nigeria's basic education curriculum because it provides learners with foundational scientific knowledge, technological literacy, critical-thinking skills, creativity, and problem-solving competencies required for lifelong learning and national development. The Nigerian Educational Research and Development Council (NERDC) provides the Basic Science and Technology curriculum for junior secondary schools, establishing the curricular framework within which learners acquire scientific and technological knowledge and skills. The curriculum provides a basis for instructional approaches that promote learners' understanding of scientific concepts and their applications in everyday life (NERDC, n.d.). Despite the importance of Basic Science and Technology, concerns about students' attitudes towards science-related subjects make it necessary to investigate instructional approaches that can stimulate interest and active participation. These concerns may

be associated with factors such as reliance on teacher-centred instructional approaches, inadequate instructional resources, overcrowded classrooms, insufficient opportunities for practical activities, and limited integration of educational technologies into classroom practice. Such conditions may make science learning abstract and reduce students' curiosity, enthusiasm, and willingness to engage actively in classroom activities. These challenges underscore the need for innovative instructional approaches capable of making science learning more meaningful and attractive to learners. Television telecast strategy represents one such instructional approach. The strategy involves the systematic integration of educational television programmes, recorded instructional broadcasts, science documentaries, demonstrations, animations, and other audiovisual materials into classroom teaching. Unlike traditional lecture-based instruction, which relies predominantly on verbal explanations, television telecast combines spoken narration with visual representations, allowing learners to observe scientific processes, practical experiments, and real-world applications. According to the cognitive theory of multimedia learning, learners can develop a deeper understanding when instructional messages combine appropriately designed words and pictures because human cognition processes verbal and pictorial information through complementary channels with limited processing capacity. Effective multimedia instruction therefore promotes active cognitive processing by helping learners select, organise, and integrate information into coherent mental representations (Mayer, 2021). Research on multimedia instruction supports the potential value of video-based learning when instructional materials are appropriately designed and integrated into teaching. Noetel et al. (2021), in a systematic review and meta-analysis of video-based learning in higher education, found that replacing existing teaching methods with video produced small improvements in learning, while adding video to existing teaching methods produced larger benefits. Although their study focused on higher education rather than junior secondary school students, the findings provide relevant evidence of the potential contribution of video-based instruction to learning. In a study by Oyetunde (2019), instructional video clips were reportedly found to improve students' attitudes towards Music by exposing them to more interactive and engaging learning experiences. Likewise, Murtala (2018) reportedly found that teachers and pupils demonstrated greater enthusiasm during lessons supported by instructional media because the media combined sound, visuals, and entertainment, thereby making learning more meaningful. Simpson and Kenneth (2018) also reportedly observed that teachers acknowledged the potential of television as an instructional medium, despite challenges such as inadequate television sets, irregular broadcast schedules, and unstable electricity supply. Similarly, Wada and Mohammed (2021), in a study of the effects of television programmes on students at Essence High School in Kaduna, examined the influence of television viewing on students' behaviour and academic experiences. Their findings highlighted concerns about the possible adverse effects of television viewing on academic performance and behaviour, indicating the importance of distinguishing educational television programmes from unrestricted television viewing. Previous research has also demonstrated that students' affective responses to school subjects may vary according to instructional approaches and learner characteristics. For example, Awofala (2020) investigated components of attitudes towards mathematics among senior secondary school students in Nigeria and reported significant gender differences favouring male students. However, because the study focused on mathematics, its findings cannot automatically be generalised to students' attitudes towards Basic Science and Technology. More recently, Ahmed (2025) investigated the effect of an Active Review instructional strategy on students' attitudes towards Basic Science in Oyo State using a quasi-experimental design. The study found

a significant treatment effect on students' attitudes, while the interaction effect between treatment and gender was not statistically significant. These findings suggest that instructional strategies may influence students' attitudes towards Basic Science, although the effectiveness of a strategy may not necessarily differ according to students' gender. Within the Nigerian context, the growing emphasis on technology-enhanced learning has stimulated interest in integrating audiovisual media into classroom instruction. Nevertheless, implementation may be constrained by infrastructural limitations, irregular electricity supply, inadequate instructional equipment, and varying levels of teachers' technological competence. Consequently, some schools may continue to rely predominantly on conventional teaching methods that may not sufficiently stimulate learners' interest or foster positive attitudes towards science learning. These contextual realities highlight the importance of investigating instructional technologies that are practical, relatively affordable, and adaptable to existing school conditions. UNESCO (2023) similarly emphasised the importance of considering access, equity, sustainability, and the quality of pedagogical integration when adopting educational technologies. Plateau State presents a relevant context for such an investigation because the availability of educational resources and the integration of technology into classroom instruction may vary across schools. Although curriculum frameworks provide opportunities for learner-centred and technology-supported instruction, there is a need for locally grounded empirical evidence on the influence of television telecast strategy on students' attitudes towards Basic Science and Technology. Existing studies on instructional media, multimedia learning, and students' attitudes provide a foundation for the present investigation; however, their findings do not, by themselves, establish the effect of television telecast strategy on junior secondary school students in Jos South Local Government Area of Plateau State. Accordingly, this study investigates the impact of television telecast strategy on students' attitudes towards Basic Science and Technology in Jos South Local Government Area of Plateau State, Nigeria. By examining whether structured television-supported instruction promotes more favourable attitudes towards the subject, the study seeks to contribute to research on multimedia-supported teaching in Nigerian basic education. The findings are expected to provide empirical evidence that can guide teachers, curriculum developers, educational technology specialists, school administrators, and policymakers in making informed decisions regarding the integration of television-based instructional strategies into Basic Science and Technology classrooms.

Research Questions

The research questions raised to guide this study include the following:

1. What are the pre-test and post-test mean attitude scores of JS 2 students in Basic Science and Technology in the experimental and control groups?
2. What are the pretest post-test attitude mean scores of JS 2 students in Basic Science and Technology in the experimental group based on gender?
3. What are the interaction effects of treatment and gender on the attitude of JS 2 students in Basic Science and Technology?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significant difference in the pre-test and post-test attitude mean scores of JS 2 students in Basic Science and Technology in the experimental and control groups.
2. There is no significant difference between the posttest attitude mean scores of junior secondary

two students in Basic Science and Technology in the experimental group based on gender after controlling for pre-test scores

3. There is no significant difference between the interaction effect of treatment and gender on the attitude of junior secondary two students in Basic Science and Technology.

Methodology

This study adopted a quasi-experimental research design, specifically the non-equivalent pre-test–post-test control group design. The design was considered appropriate because the study was conducted in a natural school setting where random assignment of participants to groups was not feasible. Consequently, intact classes were used, as the school system did not permit the reshuffling or reorganization of students into new groups.The population for the study comprised 1,793 Junior Secondary Two (JS II) students, consisted of 854 male and 939 female students drawn from 21 public junior secondary schools in Jos South Local Government Area of Plateau State during the 2024/2025 academic session . All the schools offered Basic Science and Technology as part of the junior secondary school curriculum. The sample for the study comprised 115 Junior Secondary Two (JS II) students drawn from two public junior secondary schools in Jos South Local Government Area, Plateau State. One intact class from one of the selected schools served as the experimental group, while one intact class from the second school served as the control group. The experimental group consisted of 58 students, comprising 26 males and 32 females, while the control group comprised 57 students, made up of 27 males and 30 females. Simple random sampling technique was used to select two public junior secondary schools from the 21 public junior secondary schools in Jos South Local Government Area, Plateau State.

Basic Science and Technology Attitude Questionnaire (BSTAQ) was used as instrument for data collection in this study. The instrument was subjected to face, content and construct validity. To establish the face and content validity of the instruments, it was scrutinized by three experts. One expert from Science Education, one from research measurement and evaluation and the other one from Educational Psychology. The independent corrections, observations and comments made by these experts were incorporated in the production of the final form of the instrument, while Kendall's coefficient of concordance was used to judge the agreement among the experts. The Kendall coefficient obtained was 0.76, which is valid according to Kendall (2016) which indicate that for a strong agreement the Kendall's coefficient value should be greater or equal to 0.60. Construct validity for the BSTAQ was established using factor analysis. The result for construct validity revealed that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.767 for the questionnaires, indicating the suitability of the instrument for factor analysis. The reliability of the Basic Science and Technology Attitude Questionnaire (BSTAQ) was determined using Cronbach's Alpha coefficient. Cronbach's Alpha is considered appropriate because the BSTAQ consists of multiple Likert-scale items designed to measure students' attitudes as a single construct. Since attitude measures typically involve polytomous (multi-point) response formats, Cronbach's Alpha is suitable for assessing the degree to which the items consistently reflect the same underlying variable. reliability coefficients of .866 was obtained, indicating a high degree of internal consistency. The data collected for this study were coded and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. Both descriptive and inferential statistics were employed in analyzing the data.

Results

Research Question One

What are the pre-test and post-test mean attitude scores of JS 2 students in Basic Science and Technology in the experimental and control groups?

Table 1

Mean and Standard Result on Attitude of Students in BSAT in the Experimental and Control Groups

Group		Pre-test		Post-test		Mean	Mean gain Difference	Post-test Mean Difference
	N	Mean	SD	Mean	SD	Gain		
Experimental	53	46.89	4.08	88.23	2.28	41.34	35.45	33.52
Control	49	48.82	11.02	54.71	22.16	5.89		

The result presented in Table 1 shows the pre-test and post-test attitude mean scores of JSS II students in BSAT in the experimental and control groups. The experimental group have an attitude mean score of 46.89 with a standard deviation of 4.08 in the pre-test and a mean score of 88.23 with a standard deviation of 2.28 in the post-test with a mean gain of 41.34. This means that there was an increase in the attitude of students after treatment. The control group have a mean score of 48.82 with a standard deviation of 11.02 in the pre-test and a mean score of 54.71 with a standard deviation of 22.16 at the post-test, with a mean gain of 5.89. The findings reveal that students in the experimental group had a higher attitude mean score (88.23) after treatment using television telecast as against those in the control group (54.71) who were not given treatment, with a mean gain difference of 35.45 and post-test mean difference of 33.52. This indicates that television telecast does increase students' interest in BSAT.

Hypothesis One

There is no significant difference in the pre-test and post-test attitude mean scores of JS 2 students in Basic Science and Technology in the experimental and control groups.

Table 2

ANCOVA Result on the Pre-test and Post-test Attitude Mean Scores of Students in BSAT in the Experimental and Control Groups

Source	Type III Sum of Squares	Df	Mean Square	F	P-value
Corrected Model	28955.040a	2	14477.520	61.026	.000
Intercept	10358.012	1	10358.012	43.661	.000
Covariate	360.980	1	360.980	1.522	.220
Group	28953.805	1	28953.805	122.047	.000
Error	23486.303	99	237.235		
Total	583083.000	102			
Corrected Total	52441.343	101			

a. R Squared = .552 (Adjusted R Squared = .543)

Table 3
Estimates Marginal Means on Attitude of Students in BSAT in the Experimental and Control Groups

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Experimental	88.442[a]	2.123	84.229	92.654
Control	54.482[a]	2.208	50.100	58.864

Analysis of Covariance (ANCOVA) was conducted to determine if there is a significant difference between the pretest and post-test attitude mean scores of students in BSAT in the experimental and control groups. Table 2 shows that F (1, 99) = 122.05, P< 0.05, since the P- value of .000 is greater than .05, the null hypothesis was therefore rejected, it was concluded that there is a significant difference between the pretest and post-test attitude mean scores of JSS II students in the experimental and control groups. The result further shows an adjusted R squared value of .543, which means that 54.3 % of the variation in the dependent variable which is students' attitude is explained by variation in treatment, while the remaining 45.7% is due to other factors not included in this study. The estimated marginal means in Table 3 further show that the experimental group had a mean score of 88.44 (SE = 2.123), whereas the control group had a mean score of 54.48 (SE = 2.208), with non-overlapping 95% confidence intervals. This indicates that students in the experimental group, who received the intervention, demonstrated a higher positive attitude toward BSAT compared to those in the control group, confirming that there is a significant difference between the pretest and post-test attitude mean scores of students in BSAT in the experimental and control groups.

Research Question Two
What are the pretest and post-test attitude mean scores of JS 2 students in Basic Science and Technology in the experimental group based on gender?

Table 4
Mean and Standard Deviation Results on Attitudes of students in BSAT in the Experimental Group based on Gender

Group			Pre-test		Post-test		Mean	Mean	Post-test
	Gender	N	Mean	SD	Mean	SD	Gain	Gain Difference	Mean Difference
Experimental	Male	23	46.43	4.21	88.35	2.52	41.92	1.02	0.22
	Female	30	47.23	4.02	88.13	2.13	40.90		

Table 4 reveals that male had a pre-test mean score of 46.43 with a standard deviation of 4.21 and the post-test attitude mean score of 88.35 and standard deviation of 2.52 with a mean gain of 41.92 in the experimental group. The females also have a pre-test mean score of 47.23 with a standard deviation of 4.02 and a post-test attitude mean score of 88.13 with a mean gain of 40.90. The findings show that male students have almost same mean gain score (41.92) as the female students who have a mean gain score of (40.90) when exposed to television telecast with a mean gain difference of 1.02 and post-test mean difference of 0.22. This means that male students have same attitude as female students in BSAT in Jos South LGA.

Hypothesis Two

There is no significant difference between the posttest attitude mean scores of junior secondary two students in Basic Science and Technology in the experimental group based on gender after controlling for pre-test scores

Table 5

ANCOVA Result on Post-test Mean Scores of Male and Female Students in BSAT in the Experimental Group after Controlling for Pre-test Scores

Source	Type III Sum of Squares	Df	Mean Square	F	P-value
Corrected Model	3.235[a]	2	1.618	.302	.741
Intercept	2851.280	1	2851.280	531.860	.000
Co-variate	2.636	1	2.636	.492	.486
Gender	.863	1	.863	.161	.690
Error	268.048	50	5.361		
Total	412818.000	53			
Corrected Total	271.283	52			

a. R Squared = .012 (Adjusted R Squared = -.028)

Table 6

Estimates Marginal Means on Attitude of Male and Female Students towards BSAT in the Experimental Group

Gender	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Male	88.373[a]	.484	87.401	89.345
Female	88.114[a]	.424	87.263	88.965

Table 5 shows the ANCOVA result on the difference between the pretest and posttest attitude mean scores of junior secondary two students in Basic Science and Technology in the experimental group based on gender. From the result, $F(1,50) = 0.161$; $P>0.05$, since the P-value of 0.690 is greater than .05 level of significance. The null hypothesis was retained, it was concluded that there was no significant difference between the post-test attitude mean scores of male and female

students taught BSAT using television telecast. The adjusted R squared value of -0.028 indicates that gender accounted for very little of the variation in students' attitude scores, with most of the variation attributed to the treatment and other factors not included in the study. The estimated marginal means in Table 6 show that male students had a mean score of 88.37 (SE = 0.484), while female students had a mean score of 88.11 (SE = 0.424), with overlapping 95% confidence intervals. This indicates that there was no significant difference in attitude between male and female students, suggesting that the intervention effectively enhanced students' attitude in BSAT regardless of gender.

Research Question Three

What are the interaction effects of treatment and gender on the attitude of JS 2 students in Basic Science and Technology?

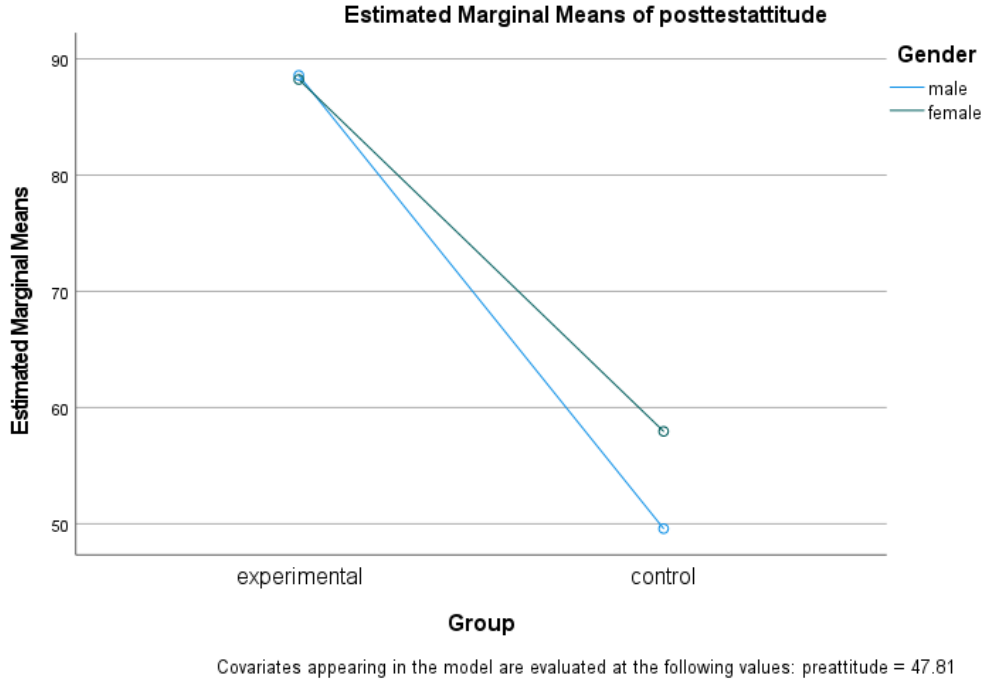


Figure 1 Showing Interaction Effects of Treatment and Gender on Attitude Towards BSAT

Figure 1 presents the profile plot showing the interaction effect of treatment, no treatment and gender of students on attitude to BSAT. The graph shows the estimated marginal means of post-test attitude scores for male and female students in the experimental and control groups, with pre-test scores controlled. Students in the experimental group had higher post-test attitude scores compared to those in the control group, with males scoring slightly higher than females in the experimental group and females scoring slightly higher than males in the control group. The lines for male and female students are nearly parallel, indicating that there is no interaction between treatment and gender. This suggests that the intervention improved students' attitude in Basic Science and Technology equally for both male and female students.

Hypothesis Three

There is no significant difference between the interaction effect of treatment and gender on the attitude of junior secondary two students in Basic Science and Technology.

Table 7
Interaction effect of Treatment and Gender on Attitude of Students in BSAT

Source	Type III Sum of Squares	Df	Mean Square	F	P-value
Corrected Model	29762.872[a]	4	7440.718	31.825	.000
Intercept	10973.221	1	10973.221	46.934	.000
Covariate	195.798	1	195.798	.837	.362
Groups	29462.562	1	29462.562	126.02	.000
Gender	389.892	1	389.892	1.668	.200
Groups* Gender	467.178	1	467.178	1.998	.161
Error	22678.471	97	233.799		
Total	583083.000	102			
Corrected Total	52441.343	101			

a. R Squared = .568 (Adjusted R Squared = .550)

Table 8
Estimates Marginal Means on Interaction effect of Treatment and Gender on Attitude of Students in BSAT

Group	Gender	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Experimental	Male	88.587[a]	3.199	82.238	94.936
	Female	88.234[a]	2.794	82.689	93.779
Control	Male	49.587[a]	3.429	42.781	56.392
	Female	57.957[a]	2.883	52.235	63.678

Analysis of Covariance (ANCOVA) was conducted to determine the effect of treatment and gender on the attitude of students in BSAT while controlling for a covariate. The overall model was significant, $F(4, 97) = 31.825$, $p < 0.001$, and accounted for approximately 55% of the variance in students' attitude scores ($R^2 = 0.568$, Adjusted $R^2 = 0.550$). The covariate did not have a significant effect, $F = 0.837$, $p = 0.362$, indicating that the controlled variable did not meaningfully influence attitude scores. The main effect of treatment was significant, $F(1, 97) = 126.02$, $p < 0.001$, suggesting that students in the experimental group had significantly higher attitude scores than those in the control group. Gender alone did not have a significant effect on attitude, $F(1, 97) = 1.668$, $p = 0.200$, indicating that male and female students did not differ significantly in their attitude scores. Similarly, the interaction effect of treatment and gender was not significant, $F(1, 97) = 1.998$, $p = 0.161$, suggesting that the effect of treatment on attitude was consistent across genders. The estimated marginal means in Table 8 provide further insight into these results. Male students in the experimental group had a mean attitude score of 88.59, while females in the same group had a mean score of 88.23. In the control group, male students scored 49.59, and females scored 57.96. The close similarity between males and females within each group supports the non-significant main effect of gender and the non-significant interaction effect. The large difference in means between the experimental and control groups confirms the

significant positive effect of the treatment on students' attitudes. The treatment effectively improved students' attitudes toward BSAT, while gender did not influence attitude outcomes, and the treatment effect was equally effective for both male and female students.

Discussion

The findings of this study revealed that students taught Basic Science and Technology using television telecasts developed significantly more positive attitudes than those taught using the conventional teaching method. The experimental group recorded a higher post-test attitude mean score than the control group, while the ANCOVA results confirmed that the difference was statistically significant. The adjusted mean scores further showed that students in the experimental group had a higher attitude score than those in the control group. This finding suggests that television telecasts provided an interesting and stimulating learning environment that attracted students' attention and encouraged active participation in classroom activities. The combination of sound, pictures, demonstrations, and explanations may have made the lessons more meaningful and enjoyable, thereby improving students' attitudes towards Basic Science and Technology. The improvement in attitude also suggests that television telecasts can support learner-centred instruction and sustain students' concentration by presenting scientific concepts in engaging audiovisual formats. This finding agrees with Okaka (2017), who reportedly found that students taught Fine and Applied Arts using instructional charts developed more positive attitudes and achieved higher learning outcomes than those taught without charts. Although Okaka's study focused on instructional charts rather than television telecasts, both instructional approaches involve the use of visual media to support teaching and learning. Similarly, Asogwa and Ike (2019) reportedly found that students taught with real instructional objects demonstrated greater enthusiasm and more positive attitudes towards learning than those taught without such materials. These findings suggest that instructional materials that make lesson content more concrete and accessible may encourage students to develop positive attitudes towards learning.

The present finding further agrees with Oyetunde (2019), who reportedly found that instructional video clips improved students' attitudes towards Music by providing more interactive and engaging learning experiences. Likewise, Murtala (2018) reportedly found that teachers and pupils demonstrated greater enthusiasm during lessons supported by instructional media because the combination of sound, visuals, and entertainment made learning more meaningful. Simpson and Kenneth (2018) also reportedly observed that teachers acknowledged the potential of television as an instructional medium, despite challenges such as inadequate television sets, irregular broadcast schedules, and unstable electricity supply. Wada and Mohammed (2021) examined the influence of television programmes on students' learning experiences and academic behaviour, highlighting the importance of distinguishing educational programmes from unrestricted television viewing. The present finding also agrees with Ahmed (2025), who found that learner-centred instructional strategies significantly enhanced students' attitudes towards Basic Science. Collectively, these findings suggest that television telecasts and other instructional media can provide engaging learning experiences that encourage positive attitudes towards school subjects. However, the findings of these related studies should be interpreted in relation to their respective subjects, instructional approaches, and study populations.

The findings further revealed that there was no significant difference between the post-test attitude scores of male and female students exposed to television telecasts after controlling for their pre-test attitude scores. Although the estimated marginal means showed a slight difference between

the two groups, the difference was not statistically significant. Male students recorded an adjusted mean score of 88.37, while female students recorded an adjusted mean score of 88.11. This finding indicates that there was insufficient statistical evidence to conclude that male and female students differed in their post-test attitudes towards Basic Science and Technology after controlling for their pre-test scores. It suggests that the television telecast strategy was associated with similarly positive attitude outcomes among male and female students in the experimental group. The finding is consistent with the reported findings of Asogwa and Ike (2019), who suggested that instructional materials improved students' attitudes towards learning irrespective of gender. Similarly, Oyetunde (2019) reportedly found that instructional video clips enhanced students' attitudes by making learning more engaging. Ahmed (2025) also found that learner-centred instructional strategies significantly improved students' attitudes towards Basic Science, while the interaction effect between instructional strategy and gender was not statistically significant. These findings suggest that instructional strategies can promote positive attitudes among both male and female learners, although the extent of their effectiveness should be established through appropriate statistical analysis.

However, the finding differs from that of Awofala (2020), who reportedly found significant gender differences in components of students' attitudes towards mathematics among senior secondary school students in Nigeria, with the differences favouring male students. The difference between Awofala's findings and those of the present study may be associated with differences in the subjects investigated, instructional approaches, participants, and educational contexts. While Awofala examined attitudes towards mathematics, the present study focused on attitudes towards Basic Science and Technology among junior secondary school students exposed to television telecasts. These differences may help explain the contrasting findings. Nevertheless, the absence of a statistically significant gender difference in the present study does not establish that gender disparities were eliminated; rather, it indicates that the observed difference between male and female students in the experimental group was not statistically significant.

The findings also revealed that the interaction effect between treatment and gender on students' attitudes towards Basic Science and Technology was not statistically significant. The ANCOVA results showed that the interaction between treatment and gender yielded ($F(1,97)=1.998$), with a p-value of .161, which was greater than the .05 level of significance. Therefore, the null hypothesis of no significant interaction effect was not rejected. This finding indicates that there was insufficient statistical evidence to conclude that the effect of television telecast strategy on students' attitudes differed according to gender. Although the estimated marginal means showed some differences between male and female students across the experimental and control groups, these differences did not produce a statistically significant interaction effect. The finding suggests that the positive effect of television telecast strategy on students' attitudes was not significantly moderated by gender in this study.

This finding agrees with Ahmed (2025), who reported that the interaction between instructional strategy and gender was not statistically significant in influencing students' attitudes towards Basic Science. It also corresponds with the reported findings of Asogwa and Ike (2019), which suggested that instructional materials benefited learners irrespective of gender. The agreement between these findings suggests that appropriately implemented instructional strategies may support positive learning outcomes among both male and female students without necessarily producing different treatment effects by gender. Differences in instructional media, duration of treatment, participant characteristics, and study contexts may account for variations in findings across studies. Overall,

the present study demonstrates that television telecast strategy significantly improved students' attitudes towards Basic Science and Technology compared with the conventional teaching method, while neither a significant gender difference within the experimental group nor a significant interaction effect between treatment and gender was established.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Basic Science and Technology teachers should adopt the television telecast instructional strategy in classroom teaching to improve students' attitudes towards Basic Science and Technology.
2. Teacher education institutions should incorporate training on the use of the television telecast instructional strategy into Basic Science and Technology teacher preparation programmes to equip prospective teachers with the skills needed to develop and implement the strategy effectively.
3. School administrators should provide the instructional resources required for implementing the television telecast instructional strategy in Basic Science and Technology classrooms.

Conclusion

Based on the findings of the study, it was concluded that the television telecast instructional strategy significantly improved students' attitudes towards Basic Science and Technology compared with the conventional teaching method. Students taught using the television telecast strategy recorded a higher increase in attitude scores than those taught using the conventional method. This suggests that the use of television telecasts can make the teaching and learning of Basic Science and Technology more interesting and engaging, thereby encouraging positive attitudes among students. The study also revealed that there was no statistically significant difference between the adjusted attitude scores of male and female students taught using the television telecast strategy. This indicates that the strategy was similarly effective for both genders. Furthermore, the interaction effect between treatment and gender was not statistically significant, implying that the effectiveness of the television telecast strategy did not differ significantly between male and female students. Therefore, the study concluded that the television telecast instructional strategy is an effective approach for improving students' attitudes towards Basic Science and Technology, irrespective of gender, and should be considered as a useful instructional method in junior secondary schools.

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