Integration of Digital Television in Classroom Instruction: Students' Learning Experiences, Challenges, and Strategies

Fiona Rose V. Nablo[1], Daryl C. Nerva[1], Ria P. Relatores[1], Honeylyn A. Sandagon[1], Judith D. Sayno[1], Archie A. Perpetua[2]

[1]College of Education, Central Bicol State University of Agriculture, Sipocot, Philippines

[2]College of Education, Central Bicol State University of Agriculture, Sipocot, Philippines

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ABSTRACT

The rapid advancement of educational technology had led to the increasing integration of digital television as an instructional tool in classroom settings. This study aims to explore students' learning experiences, challenges, and strategies in integrating digital television into classroom instruction. Employing a descriptive-quantitative research design, the study consist of students from the College of Education at Central Bicol State University of Agriculture. A 30-item survey questionnaire, with high reliability (Cronbach's alpha > 0.97), was used to collect data on learning experiences, challenges, and strategies. The data were analyzed using weighted mean and ranking technique. Results revealed that students generally had positive learning experiences with digital television, particularly in terms of enhanced attention, visualization of lessons, and overall engagement. Challenges were experienced occasionally, with limited access to digital television in some classroom and technical issues emerging as the most common concerns. Students frequently employed adaptive learning strategies such as note-taking, maintaining focus, and staying positive during instructional challenges. Correlation analysis showed a highly significant and strong positive relationship between learning experiences and strategies, while challenges had minimal influence on learning experiences and a weak relationship with strategy use. The findings suggest that digital television is an effective instructional tool when supported by appropriate infrastructure and students' active learning strategies. These results highlight the importance of strategic implementation of digital television to enhance teaching and learning in higher education.

Keywords: digital television, classroom instruction, learning experiences, learning strategies, educational technology

INTRODUCTION

The 21st century has witnessed a rapid evolution in technology, reshaping every facet of human life, including education. As the world becomes increasingly interconnected and reliant on digital innovation, the role of technology in education has emerged as a pivotal driver of transformative learning experiences. Among various technological innovations, digital television has emerged as a promising audio-visual medium that can enhance classroom instruction by engaging learners through visual and auditory stimuli (Abuhmaid, 2014). The use of digital television in the classroom has become increasingly significant in promoting interactive and visually engaging instruction. According to Mayer's Cognitive Theory of Multimedia Learning (2009), students learn more effectively when information is presented through both visual and auditory channels, which enhances comprehension and retention. LED or digital TVs provide high-definition visuals, clear sound, and easy access to various multimedia materials such as videos, animations, and presentations making lessons more dynamic and stimulating. As educators continuously seek ways to make instruction more interactive and learner-centered, integrating digital television offers a flexible, dynamic medium for presenting visual learning materials. According to the Michigan Health System (2010), light-emitting diode (LED) televisions, as an example of audio-visual technology, have become commonly used learning resources for disseminating lessons in classrooms. Studies have shown that the use of LED TVs in classrooms is an effective educational technology

tool that benefits both teachers and students (Averion et al., 2020). In the Philippines, Batas Pambansa Blg. 232, also known as the Education Act of 1982, emphasizes the integration of appropriate technology in teaching and learning. At present, instructional technology such as TV has been a practice in the classroom in some areas in the Philippines. This study is guided by the Technology Acceptance Model (Venkatesh et al., 2003), which posits that perceived usefulness and ease of use influence users' attitudes toward adopting technological tools. This study sought to answer the following objectives; To describe the students' learning experiences in using digital television as a tool for classroom instruction, to identify the challenges encountered by students in the integration of digital television in their learning process and to determine the strategies employed by students to overcome the challenges associated with digital television-based instruction. Hence, this study aims to explore students' learning experiences, challenges, and coping strategies in integrating digital television into classroom instruction, with the goal of enhancing the effective use of educational technology.

MATERIALS AND METHOD

This study utilized a descriptive-quantitative research design employing a survey method to gather data on students' learning experiences, challenges, and strategies related to the integration of digital television in classroom instruction. It utilized descriptive approach, focusing on describing the current state of students' experiences, challenges, and strategies without manipulating or intervening in the variables. The study is non-experimental and aims to describe existing conditions rather than establish causal relationships. Stratified random sampling was employed to ensure proportional representation across year levels. The researchers categorized students by year level and randomly selected 15 participants from each group. Only enrolled students from the College of Education who had prior classroom experience with digital television-based instruction were included in the study. The sample consisted of 60 students (15 from each year level), with an estimated age range of 18–22 years.The researchers developed a 30-item questionnaire divided into three parts: students' learning experiences (10 items), challenges (10 items), and strategies (10 items). Each item was rated using a 5-point Likert scale ranging from 1 ('Never') to 5 ('Always'). The instrument underwent content validation by three education experts and was pilot-tested to ensure clarity and reliability. Prior to data collection, the researchers sought approval from the research adviser and obtained informed consent from all participants. Respondents were assured of the confidentiality and voluntary nature of their participation.The questionnaires were personally administered by the researchers after explaining the purpose of the study and assuring participants of the anonymity of their responses. The data collected were tabulated and analyzed using descriptive statistics, specifically the weighted mean and rank, to determine the extent of students' learning experiences, challenges, and strategies related to digital television integration.To further establish the quality of the instrument, a reliability test was conducted using Cronbach's Alpha to determine the internal consistency of each subscale. The results revealed exceptionally high reliability coefficients across all three components of the questionnaire. The subscale on Students' Learning Experiences obtained a Cronbach's alpha of 0.996, indicating excellent consistency among its ten items. Similarly, the Challenges Encountered by Students subscale yielded an alpha of 0.986, which also falls within the excellent reliability range. Lastly, the Strategies Used by Students subscale registered a Cronbach's alpha of 0.974, demonstrating excellent internal consistency. These results confirm that the items in the instrument are highly reliable and suitable for measuring the constructs intended in this study.

RESULTS

This section outlines the study's findings conducted among 60 College of Education Students in CBSUA-Sipocot Campus for the academic year 2025-2026, focusing on their learning experiences, challenges and strategies in using Digital television.

Table 1. Summary of mean, standard deviation, interpretation and rank of indicators for students' experiences

Indicators	Description (Implicit)	Mean	Standard Deviation (SD)	Interpretation	Rank by Mean
I find digital television engaging and interesting.	Positive Impact/engagement	4.25	0.94	Always	3

Digital television helps me understand the lesson better.	Improved Understanding	4.17	0.88	Often	5
Using Digital television enhances my attention during class discussion.	Motivation/Interest	4.37	0.81	Always	1
Digital television lesson make the topic easier to visualize.	Visual Learning Aid	4.33	0.89	Always	2
I find it easier to recall information presented through digital television.	Information Retention	3.97	1.01	Often	7
I am more motivated to learn when digital television is used.	Encouraged Participation	3.92	1.10	Often	9
Digital television provides more interactive learning experiences.	Made Learning Easier	4.08	1.05	Often	6
I can relate better to real-life examples shown through digital television.	Relevance to Real Life	3.80	1.10	Often	10
Digital television supports my comprehension of complex topics.	Promoted Collaboration	3.95	1.03	Often	8
Overall, digital television improves my learning experience in class.	Improved Critical Thinking	4.20	0.86	Often	4
OVERALL MEAN		4.06	0.96	Often	

Mean Score range	**Verbal Interpretation**
4.21 - 5.00	Always
3.41 - 4.20	Often
2.61 - 3.40	Sometimes
1.81 - 2.60	Rarely
1.00 - 1.80	Never

This table presents the students' experiences in using digital television as an instructional tool, with an overall mean of 4.06 (SD = 0.96) interpreted as Often, indicating that students generally experience positive learning outcomes when digital television is used in class. The highest-rated indicators were enhanced attention during class discussions (M = 4.37) and easier visualization of lesson topics (M = 4.33), both interpreted as Always, showing that digital television is particularly effective in sustaining focus and supporting visual learning. Students also consistently found digital television engaging and interesting (M = 4.25) and perceived an overall improvement in their learning experience (M = 4.20). Other indicators such as improved understanding, making learning easier, information retention, motivation, and comprehension of complex topics were all rated as Often, reflecting frequent positive effects on learning. Although relevance to real-life examples ranked lowest (M = 3.80), it was still interpreted as Often, suggesting that students are generally able to connect digital television content to real-world contexts. The results indicate that digital television frequently enhances student engagement, understanding, and overall classroom learning experience.

Table 2. Summary of mean, standard deviation, interpretation and rank of indicators for challenges

Indicators	Description (Implicit)	Mean	Standard Deviation (SD)	Interpretation	Rank by Mean
There frequent technical problems when using Digital television.	Technical Glitches/Setup	3.40	1.35	Sometimes	2
The sound or visual quality of the digital television is poor.	Poor Video/Audio Quality	3.22	1.34	Sometimes	4
It is difficult to focus when digital television malfunctions.	Distraction/Attention	2.62	1.38	Sometimes	9
Some lessons become too dependent on digital television content.	Inadequate Content	2.97	1.33	Sometimes	6
I experienced difficulty understanding lessons presented too quickly on screen	Too Fast/Too Slow Pace	2.95	1.30	Sometimes	7
Digital television content does not match the lesson objectives	Content Irrelevance	2.60	1.38	Rarely	10
Lack of teacher guidance reduces the effectiveness of digital television used.	Lack of Teacher Training	3.08	1.30	Sometimes	5
The time spent setting up digital television reduces learning time.	Time Constraints	2.78	1.25	Sometimes	8
There is limited access to digital television in some classroom.	Infrastructure Issues	3.52	1.29	Often	1
Overall, I face challenges when digital television is used for instruction.	Difficulty Interacting	3.10	1.29	Sometimes	3
OVERALL MEAN		2.97	1.33	Sometimes	

Mean Score range	Verbal Interpretation
4.21 - 5.00	Always
3.41 - 4.20	Often

2.61 - 3.40 Sometimes

1.81 - 2.60 Rarely

1.00 - 1.80 Never

This table presents the challenges encountered by students in using digital television as instruction. The overall mean of 2.97 (SD = 1.33) indicates that students sometimes experience challenges when digital television is used in the classroom. The most prominent challenge is limited access to digital television in some classrooms (M = 3.52), followed by technical glitches and setup problems (M = 3.40), indicating that infrastructure and technical issues are the main concerns. Other challenges such as difficulty interacting, lack of teacher guidance, poor audio and video quality, lesson pacing, content dependence, and time constraints were also rated as sometimes, reflecting moderate levels of difficulty. The least reported challenge is content irrelevance (M = 2.60), interpreted as rarely, suggesting that digital television content is generally aligned with lesson objectives. The findings show that students face occasional challenges in using digital television for instruction, with access and technical reliability being the most significant factors affecting its effective use.

Table 3. Summary of mean, standard deviation, interpretation and rank of indicators for strategies

Indicators	**Description (Implicit)**	**Mean**	**Standard Deviation (SD)**	**Interpretation**	**Rank by Mean**
I take notes while watching lessons on digital television to remember key points.	Note-taking	4.33	0.85	Always	1
I maintain focus even when technical issues occur during digital television sessions.	Focusing/Minimizing Distractions	4.02	0.99	Often	4
I ask the teacher for clarification when I do not understand a topic from digital television.	Asking Clarifying Questions	3.88	0.97	Often	6
I review related materials online or in textbooks after watching digital television.	Reviewing Materials Later	3.73	1.05	Often	8
I discuss unclear topics with classmates after watching digital television lessons.	Discussing with Peers	3.70	1.05	Often	9
I give feedback to teachers regarding the quality of digital television lessons.	Seeking Additional Resources	4.03	0.97	Often	3
I stay positive and adaptable when challenges arise in digital television instruction.	Active Viewing/Engagement	4.20	0.97	Often	2
I suggest ways to improve the use of digital television during class discussions.	Relating to Existing Knowledge	3.97	1.01	Often	5

I practice self-study to reinforce lessons shown through digital television.	Self-Regulation/Pacing	3.67	1.10	Often	10
I develop time management skills to adjust to lessons using Digital television.	Time Management	3.97	1.07	Often	5
OVERALL MEAN		3.89	0.99	Often	

Mean Score range	**Verbal Interpretation**
4.21 - 5.00	Always
3.41 - 4.20	Often
2.61 - 3.40	Sometimes
1.81 - 2.60	Rarely
1.00 - 1.80	Never

This table presents the strategies employed by students when engaging with digital television based instruction, with an overall mean of 3.89 (SD = 0.99) interpreted as Often, indicating that students frequently use learning strategies to support their understanding during digital television lessons. The most frequently used strategy is note-taking while watching lessons (M = 4.33), interpreted as Always, highlighting students' active effort to retain key information. This is followed by staying positive and adaptable despite challenges (M = 4.20) and providing feedback to teachers (M = 4.03), suggesting that students demonstrate engagement and responsibility in improving the learning process. Strategies such as maintaining focus during technical issues, managing time effectively, suggesting improvements, and asking for clarification were all rated as Often, reflecting consistent but moderate use of self-regulated and interactive learning behaviors. Meanwhile, reviewing materials independently, discussing topics with peers, and self-study for reinforcement ranked lowest yet were still interpreted as Often, indicating that these strategies are practiced but less frequently. Overall, the findings suggest that students generally adopt constructive and adaptive strategies when using digital television, with strong emphasis on active engagement and personal responsibility for learning.

Table 4. Correlation of student learning experiences, challenges and strategies

Relationships	**Pearson's r**	**Statistical Significance**	**Strength and Direction**
LE (Experiences) vs. ST (Strategies)	0.870	Highly Significant	Extremely Strong, Positive
LE (Experiences) vs. CH (Challenges)	0.045	Not Significant	Very Weak, Negligible
CH (Challenges) vs. ST (Strategies)	0.249	Weakly Significant	Weak, Negative

Table 4 presents the correlation among students' learning experiences, challenges, and strategies in the use of digital television. The results show a very strong and positive relationship between learning experiences and strategies (r = 0.870), which is highly significant, indicating that students who report more positive learning experiences are also more likely to employ effective learning strategies. In contrast, the relationship between

learning experiences and challenges is not significant (r = 0.045), suggesting that the challenges encountered by students do not substantially affect their overall learning experiences. Lastly, the correlation between challenges and strategies is weak and negative (r = 0.249) but weakly significant, implying that as challenges slightly increase, the use of learning strategies tends to decrease, although the relationship is minimal. The findings indicate that students' learning strategies play a crucial role in enhancing positive learning experiences, while challenges have limited influence on both experiences and strategy use.

DISCUSSION

This study aimed to understand how the integration of digital television in classroom instruction influences students' learning experiences, challenges, and strategies. The findings reveal several key insights into the effectiveness and impact of digital television in education. Firstly, the reliability analysis of the survey instrument demonstrated excellent internal consistency across all three scales: Students' Learning Experiences (LE), Challenges Encountered by Students (CH), and Strategies Used by Students (ST). This high reliability, with Cronbach's alpha values ranging from 0.974 for ST to 0.996 for (LE), confirms that the instrument is highly suitable for measuring the constructs intended in this study. The results indicate that students generally have positive learning experiences with digital television. The highest-rated item was the enhancement of attention during class discussions (mean = 4.37), suggesting that digital television is effective in engaging students.

However, the study also identified challenges, with limited access to digital television in some classrooms being the most significant (mean = 3.52). Technical issues and the quality of video and audio (mean = 3.40 and 3.22, respectively) were also noted as recurring problems. Regarding the strategies students use, note-taking was the most common (mean = 4.33), indicating that students actively engage with the content presented on digital television. Staying positive and adaptable when challenges arise was also a frequently used strategy (mean = 4.20), highlighting students' resilience in overcoming obstacles. The correlation analysis revealed a strong positive relationship between learning experiences and the strategies students use (r = 0.870). This suggests that when students have positive experiences with digital television, they are more likely to employ effective learning strategies. Additionally, there was a very weak, negligible correlation between learning experiences and challenges (r = 0.045). Conversely, there was a weak negative correlation between challenges and strategies (r = -0.249), implying that as challenges increase, the use of certain strategies might decrease slightly.

The findings of the present study are supported by related studies. Nacion et al. (2025) suggested that positive learning experiences can be sustained when learners employ effective strategies despite existing challenges. Similarly, Perpetua et al. (2025) found that positive student perceptions enhance engagement, reinforcing the present finding that the integration of digital television improves students' attention and overall learning experiences. Moreover, Sali et al. (2025) noted that students are able to maintain positive learning attitudes despite external challenges, supporting the conclusion that learners continue to demonstrate favorable learning experiences even in the presence of moderate difficulties.These findings suggest that the integration of digital television in classroom instruction positively supports students' learning experiences and promotes the use of effective learning strategies despite existing challenges. The results underscore the importance of improving accessibility on using Digital television for classroom intruction, strengthening teacher guidance, and enhancing instructional design to fully maximize the educational benefits of digital television and foster a more engaging and effective learning environment.

CONCLUSION AND RECOMMENDATION

Conclusion

This study concludes that the integration of digital television in classroom instruction generally provides positive learning experiences for students in the College of Education at CBSUA–Sipocot Campus. The findings reveal that students often find digital television engaging, visually supportive, and effective in enhancing attention, understanding, and overall learning experiences. Despite these benefits, students also encounter occasional challenges, particularly related to limited access to digital television, technical issues, and time constraints, although these challenges are not severe enough to significantly hinder their learning experiences. Notably,

students demonstrate adaptability and active engagement by employing various learning strategies such as note-taking, maintaining focus during disruptions, staying positive, and providing feedback to teachers. The correlation results further highlight that learning strategies have a strong and positive relationship with students' learning experiences, while challenges show minimal influence. Overall, the study affirms that digital television is an effective instructional tool when supported by students' strategic learning behaviors, reinforcing the importance of active engagement and adaptability in technology-enhanced classrooms.

Recommendation

Based on the findings of the study, it is recommended that teachers maximize the instructional potential of digital television by integrating interactive activities and guided discussions to further enhance student engagement and understanding. School administrators and the College of Education are encouraged in improving access to digital television in some classroom and ensuring reliable technical support to minimize disruptions during instruction. Professional development programs focusing on effective instructional use of digital television may also be conducted to strengthen teacher competence and guidance. Additionally, students should be encouraged to continue practicing effective learning strategies such as note-taking, self-study, and collaborative discussions to further enhance their learning experiences. For future researchers, conducting similar studies with a larger and more diverse sample, as well as exploring other variables such as academic performance or teacher perspectives, is recommended to provide a more comprehensive understanding of the impact of digital television in classroom instruction.

REFERENCES

1. Abuhmaid, A. (2014). Teachers' perspectives on interactive whiteboards as instructional tools in four Jordanian schools. Contemporary Educational Technology, 5(1), 73–89. https://doi.org/10.30935/cedtech/6116
2. Averion, R. F., Montebon, D. R. M., Villalobos, E. S., & Dela Cruz, J. P. (2020). LED TV in the classroom: Its acceptability and effectiveness in the Philippines. PUPIL: International Journal of Teaching, Education and Learning, 4(2), 33–56. https://doi.org/10.20319/pijtel.2020.42.3356
3. Mayer, R. E. (2009). Multimedia learning (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9780511811678
4. Nacion, S. C., San Buenaventura, J. M. I., Zuela, E., Aycocho, M., Palacay, L. J., Inocencio, A., & Perpetua, A. (2025). Pre-service teachers in action: Experiences and challenges during internship. International Journal For Multidisciplinary Research, 7(3), Article 46288. https://doi.org/10.36948/ijfmr.2025.v07i03.46288
5. Perpetua, A., Guiao, A. M. B., Amaro, K. A., Magdamit, P. A., Ole, B. M., & Villanueva, F. R. (2025). Students' perception, attitude, and engagement towards project-based learning. International Journal For Multidisciplinary Research, 7(3), Article 48151. https://doi.org/10.36948/ijfmr.2025.v07i03.48151
6. Philippines. (1982, September 11). Batas Pambansa Blg. 232: An Act providing for the establishment and maintenance of an integrated system of education. https://elibrary.judiciary.gov.ph/thebookshelf/showdocs/2/13524
7. Sali, A. M. S., Malapo, M. C. L., Ortiz, J. K. C., Ibarra, N. A., Aviñante, D. B., Yome, P. M. E., & Perpetua, A. (2025). It's hot in here: Effect of heat index to the academic participation and learning attitudes of students on blended learning. International Journal For Multidisciplinary Research, 7(3), Article 46248. https://doi.org/10.36948/ijfmr.2025.v07i03.46248
8. University of Michigan Health System. (2010). Television (TV) and children: Your child. http://www.med.umich.edu/yourchild/topics/tv.htm
9. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478. https://doi.org/10.2307/30036540