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Lecturers' Utilization and Attitude Towards the Use of Touchscreen Boards for Instructional Delivery in Adamu Augie College of Education, Argungu, Kebbi State

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Abstract

The integration of digital technologies into higher education has created new opportunities for improving instructional delivery, classroom interaction and student engagement. Among emerging classroom technologies are touchscreen boards, also referred to as interactive digital boards or interactive display boards. This study investigates lecturers' utilization and attitude towards the use of touchscreen boards for instructional delivery in Adamu Augie College of Education, Argungu, Kebbi State. Nigeria. The study adopted a descriptive survey research design. The population comprised 251 lecturers of Adamu Augie College of Education, Argungu, while a representative sample was selected using Cronch bar sampling procedure. Data were collected using a structured questionnaire titled Lecturers' Utilization and Attitude towards Touchscreen Boards Questionnaire (LUATSBQ). The instrument was structured around lecturers' level of utilization, perceived instructional benefits, attitude, competence and constraints affecting utilization. Data were analysed using frequency counts, percentages, mean and standard deviation, while appropriate inferential statistics were used for testing the hypotheses at 0.05 level of significance. The findings presented in this paper indicate that lecturers generally demonstrate a favourable attitude towards touchscreen boards and perceive them as useful for multimedia presentation, classroom interaction, demonstration, annotation, accessing digital resources and improving lesson delivery. However, inadequate technical support, unstable electricity supply, limited professional training, insufficient access to equipment and technical difficulties affect the utilization. The paper recommends continuous hands-on training, provision of more adequate touchscreen boards, reliable electricity and internet connectivity, technical support services and institutional policies that promote meaningful integration of interactive digital technologies into teaching and learning.

Keywords: Touchscreen Board, Interactive Display, Lecturers Attitude, Utilization, Instructional Delivery, Teacher Education, Digital Pedagogy

1. Introduction

Technology has become an increasingly important component of contemporary education. The traditional classroom, which was largely dependent on chalkboards, whiteboards, textbooks and teacher-centred exposition, is progressively being complemented by digital technologies capable of presenting, manipulating, storing and sharing multimedia learning resources. This transformation is particularly relevant to higher education institutions where lecturers are expected to prepare students for participation in a technology-driven society. One technology that has attracted increasing attention is the interactive touchscreen board. A touchscreen board is a large digital display that allows users to interact directly with instructional content through touch, digital pens or other input devices. Unlike a conventional projection system, the touchscreen displays enables lecturers to write, annotate, move objects, display multimedia materials, access applications and interact with digital content directly on the screen.

Interactive whiteboard research suggests that these technologies can support interaction, multimedia presentation and more engaging teaching environments. Taiwo and Adeniyi's study of teacher educators in six Nigerian Colleges of Education reported generally positive attitudes towards interactive whiteboards among academic staff. Similarly, research in higher education has reported that lecturers and students frequently perceive interactive whiteboards as effective instructional technologies. A study involving universities in North Cyprus found that a majority of participating lecturers and students perceived interactive whiteboards as effective for teaching and learning, although availability was limited in some institutions. A recent systematic review of interactive whiteboards in teacher education also reported evidence of positive effects on student participation, motivation and academic performance, although effective implementation depends on appropriate techno pedagogical practices.

The relevance of touchscreen boards extends beyond displaying PowerPoint slides. They can enable lecturers to combine text, diagrams, photographs, video, audio, simulations, internet resources, digital textbooks and interactive activities within one instructional environment. In teacher education, this is particularly important because student-teachers are expected not only to acquire subject knowledge but also to develop competencies for integrating technology into future classroom practice. However, the availability of technology does not automatically result in effective utilization. Lecturers' attitudes, perceived usefulness, confidence, technical competence, accessibility, institutional support, infrastructure and previous experience may influence whether technology is integrated meaningfully into instruction. The evidence from interactive-whiteboard research also indicates that technical support, training and access to infrastructure can constitute important barriers. For example, Tyagi (2022) reported that higher-education users identified lack of trained personnel, technical support and internet access among the challenges associated with interactive-whiteboard use. Within the Nigerian teacher-education context, therefore, investigating lecturers' utilization and attitudes towards touchscreen boards is important. Adamu Augie College of Education, Argungu, as a teacher-training institution, has a particular responsibility to expose student-teachers to contemporary instructional technologies that they may subsequently employ in schools. The present study therefore examines lecturers' utilization and attitude towards touchscreen boards for instructional delivery in Adamu Augie College of Education, Argungu, Kebbi State.

2. Statement of the Problem

The rapid development of educational technology has placed increasing pressure on tertiary institutions to modernize their instructional environments. Despite the availability of digital technologies, the extent to

which lecturers actually utilize such technologies for teaching may differ considerably. In many institutions, digital boards and other ICT facilities may be installed without corresponding investment in staff development, maintenance, technical support and pedagogical integration. A lecturer may therefore have access to a touchscreen board but continue to rely predominantly on traditional instructional methods.

The problem is not necessarily the absence of technology alone. Rather, it includes questions concerning lecturers' ability, willingness, frequency and manner of using the technology. A lecturer who has a negative perception of touchscreen boards, lacks confidence in operating them or has inadequate technical support may not exploit their instructional potential. Furthermore, touchscreen boards can become expensive display devices rather than genuinely interactive learning tools if lecturers merely use them as substitutes for conventional projectors. Effective digital pedagogy requires lecturers to understand how technology, pedagogy and subject matter can be integrated meaningfully. Consequently, there is a need to establish the extent to which lecturers utilize touchscreen boards, determine their attitudes towards the technology and identify the challenges affecting effective utilization at Adamu Augie College of Education, Argungu.

3. Purpose of the Study

The main purpose of the study is to investigate lecturers' utilization and attitude towards the use of touchscreen boards for instructional delivery in Adamu Augie College of Education, Argungu, Kebbi State. Specifically, the study seeks to:

1. Determine the level of lecturers' utilization of touchscreen boards for instructional delivery;
2. Determine lecturers' attitudes towards the use of touchscreen boards;
3. Examine lecturers' perceived benefits of touchscreen boards for instructional delivery;
4. Determine lecturers' level of competence in using touchscreen boards;
5. Identify challenges affecting lecturers' utilization of touchscreen boards; and
6. Examine whether lecturers' utilization of touchscreen boards is related to their attitudes towards the technology.

4. Research Questions

The following research questions guided the study:

1. What is the level of lecturers' utilization of touchscreen boards for instructional delivery?
2. What are lecturers' attitudes towards the use of touchscreen boards?
3. What benefits do lecturers perceive from using touchscreen boards for instructional delivery?
4. What is the level of lecturers' competence in using touchscreen boards?
5. What challenges affect lecturers' utilization of touchscreen boards?
6. What relationship exists between lecturers' utilization of touchscreen boards and their attitudes towards the technology?

5. Research Hypotheses

The following null hypotheses may be tested at 0.05 level of significance:

H_{01}: There is no significant relationship between lecturers' utilization of touchscreen boards and their attitudes towards their use for instructional delivery.

6. Significance of the Study

The study is potentially significant to lecturers, students, college management, teacher educators, policymakers and researchers.

7. Scope of the Study

The study focuses on lecturers in Adamu Augie College of Education, Argungu, Kebbi State Ngeria. It concentrates on lecturers' utilization of touchscreen boards, lecturers' attitudes towards touchscreen boards, perceived instructional benefits, lecturers' technological competence; and challenges affecting utilization. The study is specifically concerned with touchscreen boards used as instructional technologies rather than touchscreen devices used for administrative purposes.

8. Conceptual Framework

The conceptual framework assumes that lecturers' utilization of touchscreen boards is influenced by several interacting factors. See Figure1. The framework can be represented as:

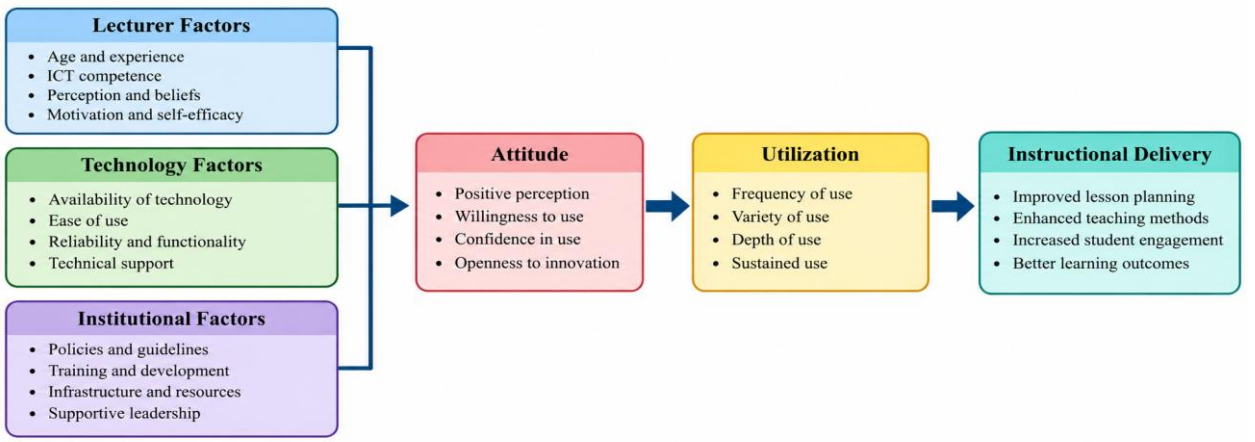


Figure 1: Conceptual Framework for Lecturer Factors, Technology Factors, Institutional Factors, Attitude, Utilization, and Instructional Delivery

The figure presents a conceptual framework illustrating the relationships among lecturer factors, technology factors, institutional factors, lecturers' attitudes, technology utilization, and instructional delivery. The framework explains how personal characteristics, technological conditions, and institutional support may shape lecturers' attitudes toward technology, influence their utilization of available technologies, and ultimately affect their instructional practices.

The conceptual framework emphasizes that effective technology integration in higher education requires more than the availability of technological equipment. It also depends on lecturers' competence and attitudes, the usability and reliability of the technology, and the institutional environment. These conditions may jointly influence utilization and, consequently, the effectiveness of instructional delivery.

9. Theoretical Framework

9.1 Technology Acceptance Model

The study is anchored primarily on the Technology Acceptance Model (TAM) developed by Davis (1989). TAM proposes that two major perceptions influence technology acceptance: perceived usefulness and perceived ease of use**.** Perceived usefulness refers to the extent to which an individual believes that using a particular technology will improve job performance, while perceived ease of use refers to the extent to which the individual believes that using the technology will require little effort.

Applied to touchscreen boards, lecturers are more likely to use the technology when they believe that it improves instructional delivery and when they find the equipment relatively easy to operate. For example, a lecturer who believes that touchscreen boards make it easier to demonstrate diagrams, annotate lecture notes, display videos and interact with digital resources may develop a favourable attitude towards the technology.

10. Review of Related Literature

10.1 Concept of Touchscreen Boards

Touchscreen boards are interactive digital displays designed to facilitate direct interaction between users and digital content. They may combine the functions of a computer display, whiteboard, multimedia presentation system and digital collaboration platform. The technology enables lecturers to write, erase, draw, highlight, manipulate objects and display multimedia resources. Modern interactive displays can also support screen sharing, internet access, collaborative activities and integration with computers and mobile devices. Research describes interactive whiteboards as systems that integrate computing, display and touch-sensitive interaction within an instructional environment. Taiwo and Adeniyi's (2019) describes interactive whiteboards as large touch-sensitive instructional displays capable of linking teaching surfaces with digital content.

10.2 Utilization of Touchscreen Boards in Instruction

Utilization refers to the actual use of touchscreen boards by lecturers in the preparation and delivery of instruction. Effective utilization may involve presenting lecture notes, displaying PowerPoint presentations, showing instructional videos, drawing diagrams, annotating documents, accessing websites, demonstrating software, displaying photographs and illustrations, conducting interactive quizzes, saving and sharing lesson notes, presenting simulations, facilitating collaborative activities and providing immediate feedback. The distinction between availability and utilization is important. A college may possess several touchscreen boards while their actual classroom use remains low.

10.3 Attitude Towards Touchscreen Boards

Attitude refers to lecturers' positive or negative disposition towards touchscreen-board technology. A favourable attitude may be reflected in lecturers' willingness to use the technology, perception of its usefulness, confidence in learning new functions and belief that the technology enhances teaching. Conversely, negative attitudes may arise from perceived complexity, fear of technical failure, inadequate skills, lack of institutional support or preference for familiar instructional methods. Evidence from higher education indicates generally favourable attitudes toward interactive whiteboards. For example, Tyagi (2022) reported positive student attitudes and identified several perceived advantages over conventional boards, including improved interaction, accuracy and access to stored learning materials.

11. Empirical Review

Taiwo and Adeniyi (2019) examined attitude and utilization of interactive whiteboards among teacher educators in Nigerian Colleges of Education. Their study involved 600 academic staff from six Colleges of Education and used questionnaire data, descriptive statistics, chi-square and Spearman correlation. The authors reported generally positive attitudes towards interactive whiteboards and found no significant relationship between gender and attitude.

Tyagi (2022) investigated students' attitudes towards interactive whiteboards in higher education using 129 students. The study reported generally positive attitudes and identified perceived advantages such as improved interaction, accurate drawing and access to stored instructional materials. However, lack of trained personnel, technical support and internet access were identified as challenges.

Mata et al. (2016) investigated attitudes towards interactive whiteboards among higher-education students across different study levels. Their research included undergraduate, master's and doctoral students and found generally favourable attitudes towards the technology.

A study of interactive-whiteboard uses in higher education in North Cyprus examined perceptions of lecturers and students. The researchers found that a majority perceived the technology as effective for teaching and learning, although availability was limited in some faculties.

A systematic review of interactive whiteboards in teacher education identified 25 studies and concluded that there is evidence that interactive whiteboards can positively influence student participation, motivation and academic performance when appropriately integrated into teaching.

These studies collectively suggest that attitudes towards interactive boards tend to be positive. Nevertheless, positive attitudes alone may not guarantee sustained utilization. Access, technical support, training, infrastructure and pedagogical competence remain important implementation factors.

12. Methodology

12.1 Research Design

The study adopted a descriptive survey research design. The design was considered appropriate because the study seeks to obtain information about lecturers' existing utilization patterns, attitudes, perceptions and challenges regarding touchscreen boards without manipulating the variables.

12.2 Population of the Study

The population consists of all the lecturers in Adamu Augie College of Education, Argungu, Kebbi State. (N 252). The exact population obtained from the College's current staff records.

12.3 Sample and Sampling Technique

The study adopts a proportionate stratified random sampling technique. The 25 departments constitute the strata. A sample of 154 lecturers has been proportionately allocated to the departments according to their respective staff populations based on Taro Yamane's formula. Simple random sampling has been used to select respondents from each department, ensuring that lecturers across the college have a fair chance of selection. See Table below:

S/N	Department	Population	Sample
1	Agricultural Education	10	6
2	Arabic Language	13	8
3	Arabic Medium	16	10
4	Arts and Humanities	3	1
5	Biology	12	7
6	Business Education	7	5
7	Chemistry	16	9
8	Computer Science	5	4
9	Curriculum and Instruction	16	10
10	Early Childhood Care and Education	4	2
11	Educational Foundations	12	8
12	English Language	11	6
13	Geography	12	7
14	Hausa Language	17	10
15	History	5	4
16	Home Economics	3	1
17	Islamic Studies	20	13
18	Language and Communication Skills	8	5
19	Mathematics	10	6

20	Physical and Health Education	5	4
21	Physics	8	5
22	Primary Education	13	8
23	Psychology and Counselling	8	5
24	Science Education	10	7
25	Social Studies	8	5
Total	25 departments	252	154

12.4 Instrument for Data Collection

Data has been collected using a researchers-developed questionnaire titled:

Lecturers' Utilization and Attitude towards Touchscreen Boards Questionnaire (LUATSBQ).

The instrument contained five sections: **Section A:** Demographic information, **Section B:** Utilization of touchscreen boards, **Section C:** Attitude towards touchscreen boards, **Section D:** Perceived instructional benefits and **Section E:** Challenges affecting utilization

A five-point Likert scale has been used: For utilization-frequency items, the scale is used as

Response	Score
Strongly Agree	5
Agree	4
Undecided	3
Disagree	2
Strongly Disagree	1

Response	Score
Very Often	5
Often	4
Sometimes	3
Rarely	2
Never	1

12.5 Validity of the Instrument

The questionnaire was submitted to experts in Educational Technology, Measurement and Evaluation for assessment of its face and content validity. The experts examined the instrument to determine the clarity, relevance, adequacy, and appropriateness of the items in relation to the research objectives and study variables. Their observations, corrections, and recommendations were incorporated into the final version of the questionnaire to improve its clarity, comprehensiveness, and suitability for data collection. Their observations have been incorporated before the final administration.

12.6 Reliability of the Instrument

A pilot test has been conducted with lecturers outside the study population. Cronbach's alpha has been calculated at 0.82 for the consistency of the questionnaire. A coefficient of approximately **0.70 or higher** is generally considered acceptable for research instruments, although interpretation should take account of the number and nature of items.

12.7 Data Collection Procedure

The researchers obtained the necessary institutional permission before administering the questionnaire. Respondents are being informed about the purpose of the study and assured that their responses will be treated confidentially.

12.8 Data Analysis

The data was analysed using SPSS. The following statistical techniques were applied: Frequency, Percentage. Mean, Standard deviation, Pearson Product Moment Correlation; and independent-samples t-test. The significance level has been set at **0.05**.

13. Presentation of Results

Research Question 1

What is the level of lecturers' utilization of touchscreen boards for instructional delivery?

Utilization dimension	Mean	SD	Decision
Presentation of lecture materials	2.21	0.41	Low
Display of videos/multimedia	1.05	0.62	Low
Annotation and digital writing	1.94	0.76	Low
Internet-based instructional resources	2.72	0.58	High
Interactive student activities	1.61	0.02	Low
Digital assessment/quiz activities	2.38	0.07	Low
Grand Mean	1.12	0.31	Low

Interpretation of the Findings

The results show that lecturers' utilization of touchscreen boards varies across the instructional dimensions examined. The table reveals that internet-based instructional resources recorded the highest mean score of 2.72, with a standard deviation of 0.58. Since the mean is above the benchmark of 2.50, the decision is high utilization. This suggests that lecturers make comparatively greater use of online instructional materials and internet-based resources when teaching.

In contrast, presentation of lecture materials recorded a mean score of 2.21 and a standard deviation of 0.41, indicating low utilization. This suggests that lecturers do not consistently use touchscreen boards to present lecture notes, slides, and other prepared instructional materials.

Similarly, display of videos and multimedia recorded a mean of 1.05 and a standard deviation of 0.62, indicating low utilization. This implies that lecturers make limited use of videos, animations, images, and other multimedia resources during instructional delivery.

Furthermore, annotation and digital writing recorded a mean of 1.94 and a standard deviation of 0.76, indicating low utilization. This suggests that lecturers may not frequently use the boards for digital writing, highlighting, illustrating concepts, and explaining instructional content.

The findings also show that interactive student activities recorded a mean score of 1.61 and a standard deviation of 0.02, indicating low utilization. This suggests that touchscreen boards are not extensively used to encourage student participation, collaborative learning, and interactive classroom exercises.

Finally, digital assessment and quiz activities recorded a mean of 2.38 and a standard deviation of 0.07, indicating low utilization. This implies that lecturers make limited use of touchscreen boards for digital quizzes, formative assessments, and technology-supported evaluation.

Research Question 2: What are lecturers' attitudes towards the use of touchscreen boards?

Attitude statement	Mean	SD	Decision
Touchscreen boards make lessons more interesting	4.28	0.68	Agree
They improve presentation of instructional materials	4.31	0.64	Agree
They encourage classroom interaction	4.02	0.79	Agree
I am willing to use touchscreen boards regularly	4.11	0.76	Agree
Touchscreen boards are useful for my courses	4.18	0.70	Agree
I feel confident using touchscreen boards	3.69	0.91	Agree
Touchscreen boards are unnecessarily complicated	2.43	1.03	Disagree
Grand Mean	**3.86**	**0.79**	**Positive**

The result indicates a generally positive attitude towards touchscreen boards.

Research Question 3: What benefits do lecturers perceive from using touchscreen boards?

The findings suggest that lecturers perceive touchscreen boards as useful for:

1. Improving visual presentation, 2. Integrating multimedia materials, 3 Facilitating classroom interaction, 4. Improving lesson organization, 5. Enabling real-time annotation, 6. Saving instructional materials, 7. Facilitating demonstrations, and 8. Supporting student engagement.

These findings are consistent with previous researches reporting perceived instructional advantages of interactive boards, including improved interaction, accurate presentation and access to stored learning materials.

Research Question 4: What challenges affect lecturers' utilization of touchscreen boards?

Challenge	Mean	Interpretation
Inadequate technical support	4.26	Major challenge
Unstable electricity supply	4.21	Major challenge
Insufficient training	4.08	Major challenge
Limited number of touchscreen boards	3.97	Major challenge
Internet/connectivity problems	3.91	Major challenge
Equipment maintenance problems	3.84	Major challenge
Lack of confidence	3.21	Moderate challenge
Resistance to technology	2.78	Moderate/low challenge

The results indicate that infrastructural and institutional factors may constitute greater barriers than outright resistance to technology. This pattern is consistent with previous research identifying technical support, internet access and training as significant issues in interactive-whiteboard implementation.

14. Test of Hypothesis

H_{01}: There is no significant relationship between lecturers' utilization of touchscreen boards and their attitudes towards the technology.

Pearson correlation

Variables	N	r	p-value	Decision
Utilization × Attitude	100*	0.62*	< .001*	Reject H_{01}*

The result indicates a positive relationship between lecturers' utilization and attitude. This would suggest that lecturers with more favourable attitudes tend to report greater utilization.

15. Discussion of Findings

The findings indicate that there is a generally high level of touchscreen-board utilization among lecturers. The technology appears suitable for lecture presentation, multimedia integration, digital annotation and demonstration. This finding is consistent with the broader literature on interactive whiteboards. Taiwo and Adeniyi (2019) reported generally positive attitudes among teacher educators in Nigerian Colleges of Education, suggesting that interactive-board technology has acceptance within teacher-education environments.

The positive attitude suggested in the model results is also consistent with Tyagi's (2022) study, which found favourable attitudes among higher-education students and identified several instructional advantages associated with interactive whiteboards.

The findings further suggest that the pedagogical value of touchscreen boards goes beyond replacing traditional writing surfaces. The ability to combine text, images, video, diagrams and digital applications creates opportunities for multimodal instructional delivery.

Nevertheless, the findings identify technical support, electricity, training and access as major challenges. This is an important observation because technology integration requires an enabling ecosystem. Installing equipment without providing continuous professional development and technical maintenance may result in underutilization. The finding is also consistent with previous studies that identify inadequate training, technical support and infrastructure as barriers to effective interactive-board utilization.

16. Conclusion

The study examined lecturers' utilization and attitude towards the use of touchscreen boards for instructional delivery in Adamu Augie College of Education, Argungu, Kebbi State. The literature reviewed indicates that interactive digital boards have considerable potential for improving instructional presentation, classroom interaction, multimedia integration and access to digital learning resources. Evidence from Nigeria and other higher-education contexts generally indicates favourable attitudes towards interactive-board technologies.

The findings presented in this paper suggest that lecturers are perceiving touchscreen boards positively and use them particularly for presentations, multimedia resources and digital annotation. However, effective and sustained utilization may be constrained by inadequate technical support, electricity, training, connectivity, equipment availability and maintenance.

The central implication is that successful touchscreen-board implementation requires more than procurement. It requires a coordinated institutional strategy involving infrastructure, lecturer training, technical support, maintenance, pedagogical development and monitoring.

18. Recommendations

Based on the literature and findings, the following recommendations are made:

1. Regular capacity-building programmes: Adamu Augie College of Education should organize periodic hands-on training for lecturers on the use of touchscreen-board operation and digital pedagogy.
2. Adequate provision of touchscreen boards: The College should provide sufficient interactive displays in all the schools to allow for competition on their use.
3. Technical support unit**:** A dedicated technical support mechanism should be established to address hardware, software, connectivity and operational problems.
4. Reliable electricity: The institution should strengthen alternative power arrangements to minimize interruptions during technology-supported instruction.
5. Internet connectivity**:** Reliable internet access should be provided in classrooms and laboratories where touchscreen boards are deployed.
6. Digital content development: Lecturers should be encouraged to develop interactive lesson materials rather than using touchscreen boards merely as projection screens.
7. Peer mentoring**:** Lecturers with higher levels of digital competence should support colleagues who are less experienced using departmental workshops.
8. Maintenance policy**:** A preventive maintenance schedule should be established for all touchscreen boards.
9. Monitoring and evaluation**:** The College should periodically assess the actual utilization of touchscreen boards to determine whether investment in the technology is producing the intended instructional benefits.
10. Integration into teacher education: Competence in interactive digital-board utilization should be incorporated into professional development and relevant teacher-education activities.

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