

Research Article

Division IV: Health, Science, and Wellness

The Role of DocuCONnect, an Electronic Health Record Simulator, As a Supplementary Tool in Enhancing Nursing Documentation Skills

.Ma. Nicole M. Dela Cruz^{1*}, Janelle Bea E. Bulaong¹, Jet Marty T .Concepcion¹, Ma. Kristel B. Cruz¹, Sofia Marie C. De Leon¹, Jhilyne V Domingo¹, Fatima Grace G. Robles¹

Bulacan State University, Philippines ¹

Abstract

Modern healthcare delivery is reshaping how patient data is managed globally, increasing the need for medical personnel skilled in digital charting. This study was done to assess whether a single exposure session to DocuCONnect, an electronic health record simulator, can enhance nursing documentation skills. A pre-experimental quantitative design was employed, involving 123 third-year nursing students. Data were collected using questionnaires and the QNOTE checklist. The weighted mean and paired t-test were used for the analysis of the results. Pre-test scores show students have "Good knowledge, skills, and attitude" toward electronic health records (mean = 5.14). Post-test increased to "Excellent knowledge, skills, and attitude" after usage of DocuCONnect (mean = 6.35), indicating an improvement. The paired t-test results show a significant difference across all variables ($p < .001$). In terms of documentation quality, students' output was rated "Partially Compliant" (mean = 2.18), highlighting areas needing improvement. The study revealed that DocuCONnect significantly improved nursing students' knowledge, skills, and attitudes, suggesting that hands-on exposure to digital charting can effectively bridge the theory-practice gap. Despite these improvements, nursing documentation showed only partial compliance, highlighting the need for greater exposure and collaboration among the nursing academe, practitioners, administrators, and researchers to strengthen digital documentation skills by integrating simulators such as DocuCONnect into education, training, policy, and research.

Keywords: electronic health records, digital charting, simulator, technology, nursing documentation

Received: 04/29/26 Revision: 06/25/26 Accepted: 07/27/26

Correspondence: Ma. Nicole M. Dela Cruz, Bulacan State University, Philippines; manicolemdc@gmail.com

Recommended Citation:

Dela Cruz, M. N. M., Bulaong, J. B. E., Concepcion, J. M. T., Cruz, M. K. B., De Leon, S. M. C., Domingo, J. V., & Robles, F.G. G. (2026). The role of DocuCONnect, an electronic health record simulator, as a supplementary tool in enhancing nursing documentation skills. *Sidhaya: The Official Research Journal of Bulacan State University*, 2(1), 12–25.



This is Open Access article distributed under the terms of CC-BY-NC-ND 4.0 International License
.Author(s) ©

Introduction

The use of Electronic Health Records (EHRs) in healthcare has significantly transformed the documentation of patient information, clinical work, and healthcare delivery. As healthcare systems continue to adopt electronic documentation, nurses are also expected to develop competencies in digital documentation and health informatics. Additionally, it aims to optimize clinical workflows and enhance care coordination (Ge et al, 2022). As a result, the demand for medical personnel skilled in using these devices has increased dramatically worldwide. Moreover, as a vital component of job-readiness, nursing education needs to keep pace with the times. Significantly, it can provide aspiring nurses with the digital skills they need

(Kleib, 2021). Despite the growing reliance on EHR systems, many nursing students still have limited exposure to electronic documentation tools during their clinical duties. This gap between the theoretical principles taught to them and the practical experience gained through clinical duties may affect students' readiness and confidence as they transition to real healthcare settings. To address this gap, the study introduces DocuCONnect, an Electronic Health Record simulator designed to provide a realistic experience, allowing nursing students to practice nursing documentation tasks such as recording patient information, documenting assessments, and completing nursing records.

This study follows three theoretical frameworks. First was the Technology Acceptance Model, which explains how perceived usefulness and ease of use influence the users' acceptance of information technology (Davis, 1989). Second was Benner's theory, which describes the progression of nursing competence from novice to expert through clinical experience (Benner, 1982). Lastly, Kolb's Experiential Learning Theory emphasizes learning through concrete experience, reflection, conceptualization, and active experimentation (Kolb, 2014). By providing a simulated environment for documentation practice, the study aims to enhance nursing students' readiness for digital healthcare systems and to improve nursing informatics education.

Specifically, this study seeks to answer the following questions:

1. What is the pre-test level of nursing documentation skills (knowledge, skills, and attitude) of the participants before using DocuCONnect?
2. What is the post-test level of nursing documentation skills (knowledge, skills, and attitude) of the participants after exposure to DocuCONnect?
3. Is there a significant difference between the pre-test and post-test of nursing documentation skills (knowledge, skills, and attitude) of the participants before and after using DocuCONnect?
4. What is the level of documentation quality of the participants after using DocuCONnect?

Methods

Research Design

This study employed a pre-experimental quantitative research design with a one-group pretest–posttest design to evaluate the effectiveness of the DocuCONnect Electronic Health Record simulator in improving the nursing documentation skills among students. Using a one-group pretest-posttest design, participants were assessed twice: before and after exposure to the simulator. Thus, the pre-test serves as a baseline for comparison with the post-test result. This design is particularly suitable, as it allows evaluation of differences in participants' performance after exposure to the intervention, thereby determining the effectiveness of electronic health record simulators.

Participants

Cochran's formula, with a 95% confidence level and a $\pm 5\%$ margin of error, was used to determine a sample size of 123 participants from a total population of 179 enrolled third-year nursing students. Although a minimum sample size was calculated to ensure statistical power, all eligible participants within the target population were invited to participate. This approach was employed to maximize the likelihood of achieving the required sample size while upholding ethical principles, specifically voluntariness. All eligible participants are currently enrolled as third-year nursing students for Academic Year 2025-2026 at Bulacan State University - Main Campus, have completed at least one clinical rotation, have basic computer literacy, have no prior EHR simulator experience used in the study, and are 18 years old and above.

Instrument

The data were collected using the tool adapted from the study of Yu & Qian (2008). The survey questionnaire developed in this study is entitled “Electronic Health Record System Usage Survey”. This is a 7-point Likert scale self-administered questionnaire that measures the eight variables that were also tested in the model produced in the same study, namely: (1) training, (2) self-efficacy, (3) system quality, (4) information quality, (5) use, (6) user, and (7) net benefits. To ensure relevance to the study, the researchers sought guidance from three experts. The experts are clinical instructors with experience in working with EHR. They assessed content relevance and appropriateness for third-year nursing students. Revisions were made based on their recommendations prior to data collection.

Reliability was assessed through Partial Least Squares (PLS) path modeling. The composite reliability ranged from 0.88 to 1.00, exceeding the commonly accepted minimum threshold of 0.70. This result indicates strong internal consistency reliability. In terms of discriminant validity, the tool was established by high item loadings (> 0.70) on their respective constructs, indicating the distinction of each construct from the others. To support validity, convergent validity was tested using Average Variance Extracted (AVE), which ranged from 0.61 to 1.00. This exceeds the recommended minimum of 0.50, indicating that the items within each construct explain a high proportion of the variance, effectively measuring the same concept.

To better assess participants' documentation quality when using DocuCONnect, a validated checklist, “QNOTE,” was also employed in the study. This assesses 12 elements in the clinical note to provide a standard, validated instrument for measuring the quality of an EHR tool. QNOTE has an inter-rater agreement of 0.82 and a note quality of 65. Globally, this has an inter-rater agreement of 0.24 with its note quality score of 52 (Burke et al., 2014). Each element was scored using a four-point scale: 0 = Missing, 1 = Unacceptable, 2 = Partially Compliant, 3 = Fully Compliant.

Data Collection

The questionnaire was administered twice: first as a pre-test before the exposure to the DocuCONnect simulator, and second as a post-test after students completed simulation-based documentation activities.

The simulation sessions were conducted in the E-Library of Bulacan State University, where participants were oriented to using the DocuCONnect system and guided through simulated patient documentation tasks.

Data Analysis

The data gathered from the questionnaires were statistically analyzed using the weighted mean, standard deviation, and paired-samples t-test to determine the level of documentation skills and to identify any significant differences between the pre-test and post-test results.

Ethical Consideration

Ethical considerations such as voluntary participation, informed consent, confidentiality, and anonymity were strictly observed throughout the study.

Results and Discussion

Pre-test Level of Documentation Skills

Table 1 presents the pre-test level of nursing documentation skills of the respondents prior to exposure to DocuCONnect. Starting with the knowledge, the overall mean of 5.20 (SD = 0.83) was verbally interpreted as “Good Knowledge”, indicating a moderate level of knowledge in using the system. The highest mean score of 5.99 (SD = 0.97) was observed for the ease of understanding the system's information, while the lowest mean score was noted for the adequacy of the time allotted for system familiarization, suggesting limited initial exposure. These findings imply that although respondents recognize the usefulness, relevance, and

accuracy of the EHR system, their level of knowledge remains developing due to insufficient hands-on experience.

Table 1. Respondents' perceived knowledge, self-reported skills, and attitude towards EHR use prior to DocuCONnect exposure.

Knowledge	Mean	SD	Verbal Interpretation
The electronic health record system is easy to learn	4.80	1.21	Good Knowledge
.I believe that information I get from the system is accurate	5.24	1.04	Good Knowledge
.It is easy to understand information from the system	5.99	0.97	Very Good Knowledge
.The information is presented in a useful format	5.35	1.23	Very Good Knowledge
There was enough time for me to familiarise the system.	4.78	1.16	Good Knowledge
The training I received was relevant to how I should use the system.	5.05	1.17	Good Knowledge
Overall Mean	5.20	0.83	Good Knowledge
Skills	Mean	SD	Verbal Interpretation
.I can retrieve information I need easily	5.15	1.15	Good Skills
.I have access to ongoing training	4.45	1.48	Fair Skills
.Using the system has helped me to manage resident's care	4.89	1.23	Good Skills
Has improved communication with other health service providers	5.07	1.24	Good Skills
.Has facilitated me to exchange care strategies with co-workers	5.02	1.20	Good Skills
.Has facilitated the identification of trends and patterns	4.98	1.15	Good Skills
.Has facilitated the development of care plans	5.09	1.24	Good Skills
Gives me useful reminders that help me to identify the change of care needs for a resident in a timely manner	5.17	1.17	Good Skills
Overall Mean	4.98	1.03	Good Skills
Attitude	Mean	SD	Verbal Interpretation
.The electronic health record system is easy to use	4.90	1.20	Good Attitude
.The electronic health record system is useful	5.61	1.18	Very Good Attitude
I believe that information from the system is relevant to my program	5.70	1.14	Very Good Attitude
.Overall, I am satisfied with the electronic health record system	5.24	1.22	Good Attitude
When I enter data into the computer, I feel confident about what I am doing	4.85	1.28	Good Attitude
.I feel comfortable to use the electronic health record system	5.11	1.23	Good Attitude
Overall Mean	5.24	1.01	Good Attitude

This result is consistent with Poissant et al. (2015), who emphasized that early exposure to electronic documentation systems enhances perceived relevance but may not immediately translate to mastery. Similarly, McBride et al. (2023) reported that inadequate familiarization time may hinder the development of foundational informatics knowledge. Moreover, the results also aligned with Arikan et al. (2021), who stated that one of the major barriers that nurses face in fully adopting the use of the EHR system includes the heavy patient workload and having limited and insufficient knowledge about the system. They simply recognize the benefits, but more beneficial uses of the EHR system are hindered by these challenges.

With skills, the overall mean of 4.98 (SD = 1.03) was interpreted as “Good Skills”, reflecting a self-reported perception of proficiency in digital documentation. The highest mean score of 5.17 (SD = 1.17) was noted for the system’s ability to provide timely reminders to identify changes in patient care needs, whereas the lowest mean score of 4.45 (SD = 1.48) was observed for access to ongoing training, which received a neutral interpretation. These results suggest that respondents perceived themselves as capable of performing fundamental documentation tasks but lacked sufficient training opportunities to refine their skills.

This finding supports Zhu et al (2019), who highlighted that continuous training and guided practice are essential in strengthening nurses’ documentation competencies. Likewise, Moy et al. (2021) emphasized that limited access to training may hinder the optimal use of electronic health record systems. Similarly, the study by Weinschreider et al. (2022) found that newly graduated nurses faced difficulties with EHR use and familiarization, as they only had the opportunity to try it once they graduated from nursing education. This aligns with the “Fair Skills” result from the student responses regarding the presence of ongoing training. This indicates that the respondents perceived limited opportunities for training and practice related to EHR use within their curriculum.

Lastly, with attitude, the overall mean of 5.24 (SD = 1.01) was verbally interpreted as “Good Attitude”, indicating a generally positive attitude toward electronic nursing documentation. The highest mean score was observed in the perceived relevance of system information to the respondents’ academic program, while the lowest mean score was related to confidence when entering data into the system.

The results evidently show how the respondents accept that EHR systems are useful and relevant to their program. However, looking at the items that check their confidence and comfort level in using one shows a “Good Attitude” response only. These results under the attitude aspect show a gap between acceptance of EHR use and the respondents’ actual confidence in using it.

These findings imply that respondents were receptive to the use of the EHR system but experienced some degree of uncertainty that is likely attributed to limited prior experience. This result aligns with Holden and Davidson (2017), who reported that perceived usefulness significantly influences users’ attitudes toward health information systems. Similarly, Kuo et al. (2018) noted that confidence in EHR use tends to improve as users gain increased exposure and hands-on practice.

Post-test Level of Documentation Skills

Table 2 presents the respondents’ post-test level of documentation skills of the respondents after exposure to the EHR simulator. With the knowledge, the overall mean of 6.32 (SD = 0.75) was interpreted as “Excellent Knowledge”, indicating a high level of knowledge in using the system. The highest mean was observed in the information from the system being easy to understand, while the lowest mean was noted in the adequacy of time for familiarization, suggesting that exposure duration may influence mastery.

Table 2. Respondents' knowledge, skills, and attitude to EHR use after DocuCONnect exposure.

Knowledge	Mean	SD	Verbal Interpretation
.The electronic health record system is easy to learn	6.29	0.96	Excellent Knowledge
I believe that information I get from the system is .accurate	6.26	0.84	Excellent Knowledge
.It is easy to understand information from the system	6.57	0.62	Excellent Knowledge
.The information is presented in a useful format	6.44	0.76	Excellent Knowledge
There was enough time for me to familiarise with the .system	6.09	1.19	Very Good Knowledge
The training I received was relevant to how I should use .the system	6.28	0.85	Excellent Knowledge
Overall Mean	6.32	0.75	Excellent Knowledge
Skills	Mean	SD	Verbal Interpretation
.I can retrieve information I need easily	6.23	1.00	Excellent Skills
.I have access to ongoing training	6.02	1.14	Very Good Skills
Using the system has helped me to manage resident's .care	6.29	0.88	Excellent Skills
Has improved communication with other health service .providers	6.33	0.80	Excellent Skills
Has facilitated me to exchange care strategies with co- .workers	6.34	0.83	Excellent Skills
.Has facilitated the identification of trends and patterns	6.34	0.86	Excellent Skills
.Has facilitated the development of care plans	6.36	0.84	Excellent Skills
Gives me useful reminders that help me to identify the .change of care needs for a resident in a timely manner	41 .6	0.80	Excellent Skills
Overall Mean	6.29	0.78	Excellent Skills
Attitude	Mean	SD	Verbal Interpretation
.The electronic health record system is easy to use	6.33	0.99	Excellent Attitude
.The electronic health record system is useful	6.59	0.61	Excellent Attitude
I believe that information from the system is relevant to .my program	6.65	0.54	Excellent Attitude
Overall, I am satisfied with the electronic health record .system	6.51	0.68	Excellent Attitude
When I enter data into the computer, I feel confident .about what I am doing	6.18	0.96	Excellent Attitude
I feel comfortable to use the electronic health record .system	6.37	0.84	Excellent Attitude
Overall Mean	6.44	0.67	Excellent Attitude

This finding supports Kleib et al. (2022), who emphasized that academic EHR exposure enhances respondents' informatics understanding and documentation familiarity. Similarly Jabour (2021) highlighted that structured EHR integration in nursing education bridges the gap between general digital literacy and healthcare-specific informatics knowledge, as most of the students were adept at using computers with their general functions, but with health technologies, only a small portion of knowledge was demonstrated.

Evidently, after one exposure to DocuCONnect, most of the results increased to “Excellent Knowledge,” leaving the duration with only “Very Good Knowledge”. This indicates that the respondents, after trying DocuCONnect, saw its potential to help them become knowledgeable about EHR. However, due to limited exposure, they needed more time to familiarize themselves with the system.

With the skill findings, respondents exhibited a high level of self-reported documentation skills, with an overall mean of 6.29 (SD = 0.78), interpreted as “Excellent Skills.” Participants reported improved ability to retrieve information, manage patient care, communicate with healthcare providers, and identify trends and care needs using the system. These outcomes are consistent with Britiller (2023), who found that EHRs moderately to highly improve quality of care delivery, team-based collaboration, and workload management after comprehensive training in their effective use. Furthermore, Nuamah et al. (2022) confirmed that EHR simulation training enhances user performance, particularly in documentation accuracy and operational efficiency. This is evident in the study's results, which show an increase in respondents' perceived skills and confidence after an orientation and exposure to DocuCONnect. Surely, if more time and exposure were provided for using this website application developed by the researchers, improvements in respondents' perceptions of their skills may be observed across all items within the skills domain. The enhancement in communication and care planning also supports Adeniyi et al. (2024), who noted that EHR systems streamline coordination and promote evidence-based practice. Although access to ongoing training received a slightly lower mean, the overall strong agreement suggests that DocuCONnect effectively improved students' perceptions of their confidence and preparedness for EHR use.

Lastly, the post-test results show a very positive attitude toward the EHR system, with an overall mean of 6.44 (SD = 0.67), interpreted as “Excellent Attitude.” Respondents expressed satisfaction, confidence, comfort, and perceived usefulness of the system, indicating strong acceptance of digital documentation tools. Among the items, relevance to the program received the highest mean, indicating greater acceptance of EHR among respondents, while confidence in using EHR still had the lowest mean; however, it increased from “Good Attitude” to “Excellent Attitude”. This shows how exposure to DocuCONnect helped respondents gain courage and confidence in using it.

These findings support Reiersen et al. (2025), who found that positive attitudes toward EHR use are shaped by guided learning experiences and structured exposure in academic settings. The high confidence levels also align with Kim et al. (2025), who reported that simulated EHR use significantly improves respondents' confidence and competency in documentation. Moreover, De Mesa et al. (2024) emphasized that when users feel supported and prepared, their acceptance of EHR systems increases substantially. The consistently high attitude scores suggest that the EHR simulator not only enhanced technical ability but also fostered psychological readiness for digital healthcare environments.

This study not only provides respondents with exposure to DocuCONnect but also increases their nursing documentation skills, including knowledge, skills, and attitudes, to equip them for the evolving clinical field that is slowly transitioning from traditional to digital charting.

Level of Documentation Skills (Pre-test vs. Post-test)

Table 3 shows a side-by-side comparison of participants' pre- and post-test responses regarding their knowledge, skills, and attitudes towards EHR use before and after using DocuCONnect.

Table 3. Significant difference between pre-test and post-test knowledge, skills, and attitude of respondents towards EHR

Knowledge	Pre-test		Post-test	
	Mean	SD	Mean	SD
.The electronic health record system is easy to learn	4.80	1.21	6.29	0.96
.I believe that information I get from the system is accurate	5.24	1.04	6.26	0.84
.It is easy to understand information from the system	5.99	0.97	6.57	0.62
.The information is presented in a useful format	5.35	1.23	6.44	0.76
.There was enough time for me to familiarise with the system	4.78	1.16	6.09	1.19
The training I received was relevant to how I should use the system	5.03	1.17	6.28	0.85
Overall Mean	5.20	0.83	6.32	0.75
Skills	Pre-test		Post-test	
	Mean	SD	Mean	SD
.I can retrieve information I need easily	5.15	1.15	6.23	1.00
.I have access to ongoing training	4.45	1.48	6.02	1.14
.Using the system has helped me to manage resident's care	4.89	1.23	6.29	0.88
Has improved communication with other health service providers	5.07	1.24	6.33	0.80
Has facilitated me to exchange care strategies with co-workers	5.02	1.20	6.34	0.83
.Has facilitated the identification of trends and patterns	4.98	1.15	6.34	0.86
.Has facilitated the development of care plans	5.09	1.24	6.36	0.84
Gives me useful reminders that help me to identify the change of care needs for a resident in a timely manner	5.17	1.17	6.41	0.80
Overall Mean	4.98	1.03	6.29	0.78
Attitude	Pre-test		Post-test	
	Mean	SD	Mean	SD
.The electronic health record system is easy to use	4.90	1.20	6.33	0.99
.The electronic health record system is useful	5.61	1.18	6.59	0.61
I believe that information from the system is relevant to my program	5.70	1.14	6.65	0.54
Overall, I am satisfied with the electronic health record system	5.24	1.22	6.51	0.68
When I enter data into the computer, I feel confident about what I am doing	4.85	1.28	6.18	0.96
.I feel comfortable to use the electronic health record system	5.11	1.23	6.57	0.84
Overall Mean	5.24	1.01	6.44	0.67

The results indicate that the respondents rated their knowledge of the electronic health record system as “Good Knowledge” in the pre-test, which increased to “Excellent Knowledge” in the post-test. This indicates that respondents initially had basic awareness of EHR concepts but developed stronger understanding of system accuracy, relevance, format, and training application after exposure to the DocuCONnect. The higher weighted mean reflects improved cognitive competence in electronic documentation.

This finding is supported by Zhang et al. (2020), who reported significant improvement in nurses' knowledge after structured electronic record training. Similarly, Hussain et al. (2024) identified knowledge gaps and emphasized the need for targeted training programs and the development of standardized guidelines to improve nursing documentation. In addition, Lewis et al. (2023) further stressed that accurate and complete EHR documentation depends on adequate knowledge. The result implies that integrating EHR simulation in nursing education strengthens foundational understanding, reduces documentation errors, and promotes patient safety in clinical practice.

This table also revealed that respondents rated their documentation skills as "Good Skills" in the pre-test and "Excellent Skills" in the post-test, with the overall weighted mean increasing from "Good Skills" to "Excellent Skills". This demonstrates that respondents initially had limited hands-on proficiency in electronic documentation but showed marked improvement in retrieving information, managing care, enhancing communication, identifying trends, and developing care plans after simulator exposure. The increased weighted mean signifies enhanced practical and technical competence in EHR use.

This finding aligns with Kuwabara et al. (2020), who emphasized that digital systems improve communication and continuity of care. The result suggests that simulator-based training enhances clinical readiness, supports accurate charting, and strengthens interdisciplinary collaboration. Moreover, the study by Hussain et al. (2024) aligns with this study, as it recommended structured, skill-based interventions, such as the integration of DocuCONnect, to address inconsistencies in documentation and promote consistency, accuracy, and accountability in clinical practice as early as possible.

Lastly, this table indicates that respondents rated their attitude toward the electronic health record system as "Good Attitude" in the pre-test and "Excellent Attitude" in the post-test. This shows that respondents initially had moderate acceptance of EHR systems but developed greater confidence, satisfaction, perceived usefulness, and ease of use after exposure to the simulator. The higher weighted mean reflects improved system acceptance and positive behavioral intention to use digital documentation in practice.

Saab et al. (2021) reported that nursing students demonstrate positive attitudes toward healthcare technology when adequately prepared, which aligns with this study's results. In addition, the Technology Acceptance Model (Davis, 1989) explains that perceived usefulness and ease of use influence user acceptance. As the respondents show their increased scores in their attitude and acceptance of EHR use, according to the Technology Acceptance Model, it will positively affect their ease of use to DocuCONnect. More importantly, if this is integrated into nursing education as early as possible to equip students before entering the clinical field, with proper allocation of exposure time for familiarization. Overall, the findings imply that early EHR simulation fosters positive technology adoption and prepares student nurses for digital healthcare environments.

Meanwhile, Table 4 presents the pre-test and post-test differences following exposure to DocuCONnect. All three domains—knowledge, skills, and attitude—show positive mean differences with $p < .001$, indicating a statistically significant improvement. A Wilcoxon Signed-Rank Test was conducted to determine whether there was a significant difference between respondents' pre-test and post-test knowledge scores. The results showed a statistically significant increase in knowledge after the intervention ($Z = -7.95$, $p < .001$). On average, respondents' knowledge scores increased by 1.12 points, indicating a meaningful improvement. This finding suggests that the intervention was effective in enhancing the respondents' knowledge. The second domain, skills, shows the greatest improvement in respondents' competencies in using EHR, such as data entry and care planning, as it has the largest mean difference. Lastly, the improvement in the respondents' attitudes was highlighted, as it enhanced their confidence and acceptance of EHR, benefiting the actual nursing field. A Paired Samples t-test was conducted to determine whether there was a significant difference between pre- and post-test scores for self-reported skills, attitude, and overall documentation skills. The results revealed statistically significant improvements across all three variables after the intervention. Specifically, skills scores increased by an average of 1.31 points, $t(122) = -11.51$, $p < .001$;

attitude scores increased by 1.21 points, $t(122) = -12.26$ $p < .001$. These findings indicate that the intervention was effective in enhancing the respondents' skills, attitude, and documentation skills. Overall, a meaningful shift in respondents' nursing documentation skills was observed, enhancing their ability to create complete and accurate charting.

Table 4. Paired Samples t-test Results for Skills, Attitude, and Documentation Skills

Variable	Mean	Z/t	df	p-value	Result	Cohen's <i>d</i>	Effect Size Interpretation
Knowledge	1.12	95 .7-		001. >	Significant	1.42	Very large effect
Skills	1.31	51 .11-	122	001. >	Significant	1.43	Very large effect
Attitude	1.20	85 .10-	122	001. >	Significant	1.40	Very large effect
Documentation Skills	1.21	26 .12-	122	001. >	Significant	1.57	Very large effect

Moreover, the results showed uniformly significant p -values ($p < .001$) across all domains, indicating a reliable intervention effect and that the improvements were not due to chance. The mean differences ranging from 1.12 to 1.31 show moderate to strong beneficial effects in different domains of nursing documentation directly connected to hands-on simulator use and exposure. There is also an inter-domain relationship that suggests an integrated learning encompassing knowledge, skills, and attitude towards EHR use.

One limitation of this study is the implementation of a pre-experimental one-group pre-test and post-test design without a control group. Without a comparison group, it is difficult to determine whether the observed improvements in respondents' knowledge, skills, and attitudes were solely attributable to DocuCONnect. Additionally, the possible Hawthorne effect and pre-test sensitization cannot be ruled out. With this, we ensured that we provided orientation to the respondents before the study, informing them that this would not affect their grades or academic standing, so they could answer as truthfully as possible.

Level of Documentation Quality

Overall, the results in Table 5 showed a mean score of 2.18 (SD = 0.70), which indicates partial accomplishment of respondents' output with the use of DocuCONnect.

Table 5. Summary table of level of documentation quality of respondents after using DocuCONnect

Checklist	Mean	SD	Verbal Interpretation
Chief Complaint	2.35	0.79	Fully
History of Present Illness (HPI)	2.29	0.76	Fully
Problem	2.01	1.04	Partially
Past Medical History	2.28	0.90	Fully
Medication List	2.47	0.61	Fully
Adverse Drug Reactions And Allergies	2.16	1.03	Partially
Social And Family History	1.60	1.33	Partially
Review Of Systems	2.46	0.79	Fully
Physical Findings	2.50	0.74	Fully
Assessment	1.92	1.16	Partially
Plan Of Care	2.12	1.09	Partially
Follow-Up Information	2.02	1.12	Partially
Overall Mean	2.18	0.70	Partially

Items like Chief Complaint ($M = 2.35$, $SD = 0.79$), History of Present Illness (HPI) ($M = 2.29$, $SD = 0.76$), Past Medical History ($M = 2.28$, $SD = 0.90$), Medication List ($M = 2.47$, $SD = 0.61$), Review of Systems ($M = 2.46$, $SD = 0.79$), and Physical Findings ($M = 2.50$, $SD = 0.74$) all have verbal interpretation of “Fully” reflecting a relatively complete documentation of information needed in these areas. Verbal interpretations of “Partially” resulted from the items Problem ($M = 2.01$, $SD = 1.04$), Adverse Drug Reactions and Allergies ($M = 2.16$, $SD = 1.03$), Social and Family History ($M = 1.60$, $SD = 1.33$), Assessment ($M = 1.92$, $SD = 1.16$), Plan of Care ($M = 2.12$, $SD = 1.09$), and Follow-Up Information ($M = 2.02$, $SD = 1.12$). These highlight the areas that still require improvement to create comprehensive patient care documentation.

The need for improvements was also shown in the study by Kowitlawakul (2012), which demonstrates how EHR enhances respondents’ awareness of electronic documentation and how barriers can be overcome by providing educators with training before integrating it into the nursing curriculum. The overall results significantly helped this study identify gaps in respondents’ documentation quality, thereby providing a strong empirical basis for better interventions and enhancements for future research.

An important finding of this study is the discrepancy between the respondents’ highly positive self-reported knowledge, skills, and attitude scores and the actual quality of their documentation, as measured by the QNOTE checklist. While the respondents rated themselves as “Excellent” in knowledge, skills, and attitude after their exposure to DocuCONnect, the overall documentation quality remained as “Partially Compliant”. This suggests that increased confidence and perceived competence do not necessarily translate immediately into mastery of documentation practices. These findings indicate that a single exposure to an EHR simulator may be enough to provide enhancement in terms of perceived preparedness, but may still not be enough to develop higher clinical reasoning and documentation competencies.

In relation to the study’s statement of the problem, which seeks to determine the level of documentation quality after using DocuCONnect, the findings suggest that the respondents showed an overall partially accomplished level of documentation quality, indicating the need for further training to strengthen their ability to produce complete and clear documentation.

Conclusion

The study, *The Role of DocuCONnect, an Electronic Health Record Simulator, As A Supplementary Tool in Enhancing Nursing Documentation Skills*, revealed that using DocuCONnect significantly improved the nursing students’ knowledge, self-reported skills, and attitude toward nursing documentation immediately after exposure.

Before exposure, participants only showed responses with “Good knowledge,” indicating a good amount of information regarding the use of EHR. After one exposure to the website application, the result increased to “Excellent knowledge,” showing that the respondents felt more knowledgeable about EHR with just one exposure to DocuCONnect. This shift significantly shows clear improvement in this area. However, this reflects the respondents’ immediate perceptions following exposure and does not necessarily indicate long-term knowledge retention. This supports previous studies highlighting that simulation-based EHR training enhances respondents’ confidence and accuracy in documentation.

The results also showed that before exposure to DocuCONnect, the respondents only had “Good Skills” in using EHR systems, indicating that although they have digital literacy, there is still room for improvement with their nursing documentation skills. After one exposure to the website application, the results shifted to “Excellent skills. This suggests that simulation-based training may enhance respondents’ perceived competence and confidence with digital charting immediately after exposure.

Regarding attitudes toward the use of EHR systems like DocuCONnect, the results showed only “Good attitude” prior to exposure. After the exposure, it shifted to “Excellent Attitude,” as respondents perceived themselves as better equipped with the necessary attitude to confidently create accurate and complete digital documentation using DocuCONnect.

The increase in respondents’ knowledge, self-reported skills, and attitudes after one session of exposure suggests that hands-on interaction with EHR systems may help bridge the gap between theoretical learning and clinical practice by improving confidence and perceived preparedness.

Despite these improvements, the overall quality of nursing documentation still showed only partial compliance with standard evaluation tools. Areas such as Problems, Adverse Drug Reactions, Social and Family History, Assessment, Plan of Care, and Follow-up Information were documented only partially. This aligns with literature emphasizing that while EHR simulators improve familiarity and confidence, continuous practice, sufficient exposure, and proper guidance are necessary for full competency in documentation. Overall, DocuCONnect proved to be an effective tool in improving nursing students’ perceptions of their nursing documentation knowledge, skills, and attitude; however, repeated training and structured experiences are needed to develop and validate long-term competency in real clinical settings.

Conflict of Interest

The researchers declare that no conflict of interest is present in this study. The study was conducted in the absence of any commercial or financial relationships that could be a potential conflict of interest.

Acknowledgement

The researchers would like to express their gratitude to the third-year nursing students of Bulacan State University - Main Campus for participating in our study. Also, to the clinical instructors for evaluating the actual outputs of students. We would never forget the help and assistance from our former research adviser Mart Juaresa C. Yambao, RN, MAN and to our current research adviser Liezel DG. Estoninos, RN. Lastly, to the valuable insights from our panelists: Alex Borromeo, RN, MN, Allan Manaloto, PhD, RN, LPT Fritzie Dela Cruz, RN, MAN, Mart Juaresa Yambao, RN, MAN, and Brian Bernard Alfonso, RN, MS, PgD-HSM.

References

- .Adeniyi, N. a. O., Arowoogun, N. J. O., Chidi, N. R., Okolo, N. C. A., & Babawarun, N. O. The impact of electronic health records on patient care and outcomes: A .(2024) –comprehensive review. *World Journal of Advanced Research and Reviews*, 21(2), 1446 <https://doi.org/10.30574/wjarr.2024.21.2.0592> .1455
- Arikan, F., Kara, H., Erdogan, E., & Ulker, F. (2021). Barriers to Adoption of Electronic Health ,Record Systems from the Perspective of Nurses. *CIN Computers Informatics Nursing* <https://doi.org/10.1097/cin.0000000000000848> .243–236 ,(4)40
- Benner, P. (1982). From novice to expert. *AJN The American Journal of Nursing*, 82(3), 402-40
- Brittiller, Amponin, & Pring. (2023). Effectiveness and challenges: The current situation of Electronic health records (EHRs) to improve health care outcomes. *South East Asia .Nursing Research* https://www.researchgate.net/publication/373882712_Effectiveness_and_Challenges_T he_Current_Situation_of_Electronic_Health_Records_EHRs_to_Improve_Health_Care_Outcomes/citations

- ., Burke, H. B., Hoang, A., Becher, D., Fontelo, P., Liu, F., Stephens, M., Pangaro, L. N., Sessums, L. L., O'Malley, P., Baxi, N. S., Bunt, C. W., Capaldi, V. F., Chen, J. M., Cooper, B. A., Djuric, D. A., Hodge, J. A., Kane, S., Magee, C., Makary, Z. R., . . . Gimbel, R. W. QNOTE: an instrument for measuring the quality of EHR clinical notes. *Journal of the American Medical Informatics Association*, 21(5), 910–916 <https://doi.org/10.1136/amiajnl-2013-002321>
- : Davis, F. D. (1989). Technology acceptance model: TAM. *Information Seeking Behavior and Technology Adoption*, 205(219), 5
- . De Mesa, R. Y. H., Galingana, C. L. T., Tan-Lim, C. S. C., Javelosa, M. a. U., Panganiban, J., M. S., Fabian, N. M. C., Calderon, Y., Rey, M. P., Bernal-Sundiang, N., Sanchez, J. T Dans, L. F., Casile, R. U., & Dans, A. L. (2024). Facing the digital frontier: exploring user acceptance of electronic health records in an urban, rural and remote setting in the Philippines. *BMJ Open Quality*, 13(2), e002621. <https://doi.org/10.1136/bmj-2023-002621>
- Ge, S., Song, Y., Hu, J., Tang, X., Li, J., & Dune, L. (2022). The development and impact of adopting electronic health records in the United States: A brief overview and implications for nursing education. *Health Care Science*, 1(3), 186–192 <https://doi.org/10.1002/hcs2.21>
- Holden, K., & Davidson, E. J. (2017). Sorting out EHR adoption and assimilation in the Meaningful Use incentive program in Hawaii. *Proceedings of the ... Annual Hawaii International Conference on System Sciences*. <https://doi.org/10.24251/hicss.2017.414>
- Hussain, M., et al. “Knowledge Attitude and Practices of Nurses Regarding Nursing Documentation.” *Biological and Clinical Sciences Research Journal*, vol. 2024, no. 1, 23 .Dec. 2024, p. 1393, <https://doi.org/10.54112/bcsrj.v2024i1.1393>
- Jabour, A. (2021). Knowledge of E-health concepts among students in health-related specialties in Saudi Arabia. *Informatics in Medicine Unlocked*, 25, 100654 <https://doi.org/10.1016/j.imu.2021.100654>
- Kim, M. J., et al. (2025). Use of electronic medical records in simulated nursing education: A scoping review. *Nursing Simulation Journal*, S1876-1399(25)00020-? <https://www.sciencedirect.com/science/article/pii/S1876139925000209>
- : Kleib, M. (2021). Academic Electronic Health Records in Undergraduate Nursing Education Mixed Methods Pilot Study. *ProQuest*, 4(2). <https://doi.org/10.2196/2694>
- Kleib, M., Nagle, L. M., Furlong, K. E., Paul, P., Duarte Wisnesky, U., & Ali, S. (2022). Are Future Nurses Ready for Digital Health? *Nurse Educator*, Publish Ahead of Print(5) <https://doi.org/10.1097/nne.0000000000001199>
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development* (2nd ed.). Pearson Education, Inc
- Kowitlawakul, Y., Wang, L., & Chan, S. W. (2012). Development of the electronic health records for nursing education (EHRNE) software program. *Nurse Education Today* <https://doi.org/10.1016/j.nedt.2012.12.001> .1535–1529 ,(12)33
- : Kuo, A.M.H., et al. (2018) Evaluating the Usability of Health Information Exchange Platforms Insights from a Systematic Review of the Literature. *International Journal of Medical Informatics*, 114, 1-10
- Kuwabara, A., Su, S., & Krauss, J. (2020). Utilizing digital health technologies for patient education in lifestyle medicine. *American Journal of Lifestyle Medicine*, 14(2), 137–142 <https://doi.org/10.1177/1559827618823528>
- , Lewis, A. E., Weiskopf, N., Abrams, Z. B., Foraker, R., Lai, A. M., Payne, P. R. O., & Gupta A. (2023). Electronic health record data quality assessment and tools: a systematic review. *Journal of the American Medical Informatics Association*, 30(10), 1730–1740 <https://doi.org/10.1093/jamia/ocad120>

- McBride, S., Alexander, G. L., Baernholdt, M., Vugrin, M., & Epstein, B. (2023). Scoping review: Positive and negative impact of technology on clinicians. *Nursing Outlook* .<https://doi.org/10.1016/j.outlook.2023.101918> .101918 ,(2) 71
- Moy, A., Schwartz, J., Chen, R., Sadri, S., Lucas, E., Cato, K., & Collins Rossetti, S. (2021) Measurement of clinical documentation burden among physicians and nurses using electronic health records: a scoping review. *Journal of the American Medical Informatics Association*. <https://doi.org/10.1093/jamia/ocaa325>
- Nuamah, J. K., et al. (2022). State of the evidence on simulation-based electronic health records training in educational and clinical environments. *Health Informatics Journal*. Advance online publication.<https://journals.sagepub.com/doi/10.1177/14604582221113439?icid=int.sj-abstract.citing-articles.1&utm>
- Poissant, L., Pereira, J., Tamblyn, R., & Kawasumi, Y. (2005). The Impact of Electronic Health Records on Time Efficiency of Physicians and Nurses: A Systematic Review. *Journal of the American Medical Informatics Association*, 12(5), 505–516 <https://doi.org/10.1197/jamia.m1700>
- Reierson, I. A., Mofossbakke, R., & Solli, H. (2025). Nursing students' perspectives on learning electronic health record documentation in an academic setting and during clinical placement: A qualitative study. *BMC Nursing*. Advance online publication.<https://pmc.ncbi.nlm.nih.gov/articles/PMC12211296/?utm>
- Saab, M. S., Gholizadeh, L., & Gholizadeh, M. (2021). Nursing students' readiness for technology and digital health: A cross-sectional survey. *BMC Nursing*, 20(1), 1–9 <https://doi.org/10.1186/s12912-021-00569-4>
- Weinschreider, J., Sisk, H., & Jungquist, C. (2022). Electronic Health Record Knowledge Skills, and Attitudes Among Newly Graduated Nurses: A Scoping Review. *The Journal of Continuing Education in Nursing*, 53(11), 505-512
- Yu, P., & Qian, S. (2018). Developing a theoretical model and questionnaire survey instrument to measure the success of electronic health records in residential aged care. *PLoS ONE* e0190749. <https://doi.org/10.1371/journal.pone.0190749> ,(1) 13
- Zhang, Li, et al. "Nurses' Knowledge-Attitude-Practice of the Importance of Quality Control of Nursing Documents and the Influence of Intensive Training: A Study from a Tertiary Hospital in China." *BMC Medical Education*, vol. 25, no. 1, 24 Apr. 2025 .<https://doi.org/10.1186/s12909-025-07168-w>
- Zhu, X., Tu, S.-P., Sewell, D., Yao, N. (Aaron), Mishra, V., Dow, A., & Banas, C. (2019) Measuring electronic communication networks in virtual care teams using electronic health records access-log data. *International Journal of Medical Informatics*, 128, 46–52 <https://doi.org/10.1016/j.ijmedinf.2019.05.012>