

Research Literacy Report

- **Section 1 (Introducing the Research paper and Topic Development**

The research paper selected for this report is “**A Cross-Sectional Study of Discipline-Based Self-Perceived Digital Literacy Competencies of Nursing Students**” by **Martzoukou et al.**, published in the **Journal of Advanced Nursing** in **2023**. The study investigates how nursing students view their own digital literacy skills and identifies areas where further development is needed to prepare them for modern healthcare practice.

The research focuses on the importance of digital literacy within nursing education. Digital literacy includes the ability to use computers, digital devices, online communication, information searching, research skills and digital health technologies safely and effectively. As healthcare services continue to become more digital, nurses are expected to use electronic patient records, online communication systems, digital learning platforms, and evidence-based research throughout their careers. Therefore, developing these skills during university education is essential. The researchers explain that although many nursing students use technology in everyday life, they may not have the digital competencies needed for professional healthcare practice.

The participants in the study were nursing, midwifery and paramedic students studying at Robert Gordon University in Scotland. A total of **182 students** completed the online survey between November and December 2021. Most participants were female undergraduate nursing students studying adult, mental health, or children’s nursing. The researchers also compared students of different ages and those enrolled in pre-registration and post-registration nursing programmes to identify whether digital literacy levels differed between these groups.

This study is highly relevant to health and social care in the United Kingdom because digital technology is now central to patient care. Nurses must be able to access reliable information, use electronic healthcare systems, communicate professionally online, and make evidence-based clinical decisions. The findings

show that while students were confident using everyday technology, they reported lower confidence in information literacy, digital research, and digital innovation. These findings highlight areas where universities can improve nursing education and better prepare students for modern healthcare practice. Improving digital literacy will help future nurses deliver safer, higher-quality patient care while adapting to continued technological developments within the NHS and wider health and social care services.

- ***Section 2 (understanding the purpose and research questions)***

The main aim of the research was to examine nursing students' self-perceived digital literacy competencies and identify areas where additional support may be needed during their education. The researchers wanted to understand how confident students felt in using digital technologies for learning, communication, information management, research, and future professional practice. They also investigated whether digital literacy differed according to students' age and registration status (pre-registration or post-registration). The findings were intended to help universities improve nursing curricula by finding gaps in digital skills and developing educational strategies that better prepare nursing students for increasingly digital healthcare environments.

- ***Section 3 (understanding the research methods) part 1***

The researchers used a **cross-sectional study design**, which is a type of quantitative research that collects information from participants at one point in time. This design was chosen because it allowed the researchers to measure nursing students' digital literacy competencies efficiently across a large group of participants without following them over an extended period. A cross-sectional survey is useful for identifying current knowledge, attitudes, and behaviours and for comparing diverse groups of participants. In this study, the researchers compared students of different ages and levels of nursing education to determine whether differences existed in their digital literacy competencies.

- Although the study was quantitative, it also included three **open-ended questions** where students described their experiences in their own words. These qualitative responses gave the researchers a better understanding of how students learned digital skills, how they kept those skills up to date and how digital technologies supported their learning. By combining numerical survey data with written comments, the researchers obtained a broader understanding of nursing students' digital literacy.
- The study used a **mixed-methods approach**, although quantitative methods formed the main part of the research. The quantitative data came from structured survey questions that asked students to rate their confidence across different areas of digital literacy using rating scales. These responses were analysed statistically to identify patterns and differences between groups of students.
- The qualitative data came from the three open-ended questions included in the survey. Students explained how they developed their digital skills, how they maintained those skills and how digital technology helped them during their studies. These written responses provided additional detail that supported the statistical findings and helped explain the reasons behind students' experiences.

• **Part 2**

The researchers collected data from **182 students** studying within the School of Nursing, Midwifery and Paramedic Practice at **Robert Gordon University** in Scotland. Participants included undergraduate and postgraduate students from different healthcare programmes, although most were nursing students. The sample included adult nursing, mental health nursing, children's nursing, midwifery, and other health-related courses. Most participants were female (93.4%), reflecting the gender balance commonly found within the nursing profession. Students also represented different age groups and study modes, including full-time, part-time, and blended learning.

The researchers used **voluntary convenience sampling**. Students were invited to participate through university email and completed the survey online. Participation was voluntary, meaning students chose whether to take part. Although convenience sampling is simple and cost-effective, it has limitations because participants are not randomly selected. Therefore, the findings may not represent all nursing students across the UK. The response rate was approximately **15%**, which the authors stated is common for online surveys.

The researchers collected **primary data** because the information came directly from students who completed the questionnaire. Primary data are original data collected specifically for a research project rather than information that already exists.

Data were gathered using an **online questionnaire** between **November and December 2021**. The survey contained closed questions where students rated their digital skills using a five-point scale. These questions measured several areas of digital literacy, including ICT proficiency, information literacy, digital communication, digital research, digital innovation, digital wellbeing, and digital identity management. The questionnaire also included **three open-ended questions** that allowed students to describe how they learned digital skills, how they kept those skills updated and how digital technologies supported their studies. These responses provided additional information that could not be obtained from numerical scores alone.

An online survey was an appropriate method because much teaching during the COVID-19 pandemic was delivered online. It also allowed researchers to reach many students quickly and economically. However, online surveys may exclude individuals who choose not to respond, increasing the possibility of **response bias**.

After the surveys were completed, the researchers analysed the data using both **quantitative and qualitative techniques**.

The quantitative data were analysed using **IBM SPSS Statistics**. The researchers calculated descriptive statistics to summarise participants' responses and used **Cronbach's alpha** to assess the reliability of the questionnaire. High Cronbach's alpha scores showed that the questionnaire had good internal consistency and measured digital literacy reliably. They also used **Mann–Whitney U tests** and **Kruskal–Wallis H tests** to compare digital literacy scores between diverse groups of students, including different age groups and registration status. These statistical tests were appropriate because the data were measured using ordinal rating scales.

The responses to the open-ended questions were analysed using **thematic analysis**. The researchers read each response carefully, identified common ideas and grouped them into themes. The main themes included how students developed digital skills, how they maintained those skills and how digital skills helped them overcome challenges during their studies. This method enabled the researchers to explore students' individual experiences alongside the statistical findings.

Ethics are essential in health and social care research because they protect participants' rights and wellbeing. In this study, participation was voluntary, and students could decide whether to complete the survey. Responses were anonymous, helping to protect participants' privacy and confidentiality. Ethical approval was obtained before the research began, ensuring that the study met recognised standards for research involving human participants. These ethical procedures increased the credibility of the research and helped participants feel comfortable providing honest responses

One of the strengths of this study is that it combined quantitative survey data with qualitative comments, providing both statistical evidence and detailed private experiences. The questionnaire also demonstrated high reliability through strong Cronbach's alpha scores, increasing confidence in the findings. Furthermore, the study investigated a topic that is becoming increasingly important within modern healthcare, making the research highly relevant for nursing education.

However, there were several limitations. The study was conducted in only one university, meaning the findings cannot be generalised to all nursing students. The response rate was low, and the use of convenience sampling may have introduced selection bias. In addition, students assessed their own digital skills rather than being tested objectively, meaning some participants may have overestimated or underestimated their abilities. The researchers acknowledged that self-assessment can sometimes be influenced by personal confidence rather than actual competence.

• Section 4 conclusion

This report has analysed the research paper by Martzoukou et al. (2023), which investigated the self-perceived digital literacy competencies of nursing students. The study highlighted the growing importance of digital literacy within nursing education and demonstrated that digital skills are now essential for providing safe, effective, and evidence-based healthcare. The researchers found that students were confident using everyday digital technologies and online communication tools. However, they found lower confidence in key areas such as information literacy, digital research, digital innovation, and critical appraisal skills. These findings suggest that nursing programmes should provide additional support to help students develop the digital competencies needed for professional practice.

The report also examined the research methods used in the study. The researchers used a cross-sectional survey that combined quantitative and qualitative methods. The quantitative data allowed statistical comparisons between diverse groups of students, while the qualitative responses provided a deeper understanding of students' experiences. Overall, the chosen method was appropriate because it produced reliable evidence and enabled the researchers to show both strengths and areas requiring improvement in nursing students' digital literacy.

Completing this report has improved my understanding of research literacy and the importance of evaluating research methods critically. I have learned how to find a study's aims, research design, data collection methods, sampling techniques, and data analysis. I also understand why evidence-based research is important in health and social care and how high-quality research supports safe patient care. These research skills will help me throughout my university studies and will also benefit my future career as a healthcare professional by enabling me to evaluate evidence, apply research findings in practice and continue developing my professional knowledge.

• Reference list

- Martzoukou, K., Luders, E.S., Mair, J., Kostagiolas, P., Johnson, N., Work, F., and Fulton, C. (2023) *A cross-sectional study of discipline-based self-perceived digital literacy competencies of nursing students. Journal of Advanced Nursing*, 80(2), pp.656–675. (Use the exact volume, issue and page numbers from the article or your university library if they differ.)

