

## Electronic-Portfolio: A Tool For Nursing Students' Evaluation

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Article Info	ABSTRACT
<b>Article History</b> Received: 19.08.2021 Accepted: 13.10.2021 Published: 25.04.2022	<b>Purpose:</b> Technology has changed our life, and the health care system is no exception. So, the way nursing faculties teach and evaluate students must be integrated into the recent advances in the health care system. Nowadays, the assessment of nursing students has changed from the traditional techniques with written tests to a more structured techniques in clinical settings. As a result, using information technology such as electronic portfolios has become prevalent in nursing students' evaluations. Many studies have been done and assessed the effect of e-portfolio. So, this study aimed to review the literature regarding e-portfolio.
<b>Keywords:</b> E-portfolio, Nursing, Evaluation.	<b>Method:</b> This study was a literature review. The published articles were reviewed in Pubmed and Google Scholar from 2000 to 2020. The inclusion criteria were English language, articles related to the portfolio in nursing, and the accessibility to full-text. We found and reviewed 15 articles.
	<b>Results:</b> Our review showed that an e-portfolio is a new learning and evaluation method that can encourage students to self-reflect, tracks their progress in skill acquisition, and increase teacher-students interaction.
	<b>Conclusion and Suggestions:</b> Moreover, this tool can be used as a valuable tool instead of traditional evaluation systems in clinical settings, although it may have some disadvantages that can be prevented by some strategies.

## Elektronik Portfolyo: Hemşirelik Öğrencilerinin Değerlendirmesi İçin Bir Araç

Makale Bilgileri	ÖZ
<b>Makale Geçmişi</b> Geliş: 19.08.2021 Kabul: 13.10.2021 Yayın: 25.04.2022	<b>Amaç:</b> Teknoloji hayatımızın birçok alanı gibi sağlık sistemini de değişime uğratmıştır. Bu yüzden, sağlık sistemindeki son gelişmeler hemşirelik fakültelerindeki öğrenciler için öğretme ve değerlendirme yöntemlerine entegre edilmelidir. Son zamanlarda, hemşirelik öğrencilerinin klinik ortamlarda değerlendirilmesi, yazılı sınavlar ve eğitmen liderliğindeki değerlendirmeler geleneksel modelden daha yapılandırılmış bir yönetime dönüşmüştür. Sonuç olarak, hemşirelik öğrencilerinin değerlendirmelerinde elektronik portfolyo gibi bilgi teknolojilerinin kullanılması yaygın hale gelmiştir. Bu konu ile ilgili birçok çalışma yapılmış ve e-portfolyonun etkisi değerlendirilmiştir. Bu çalışmada e-portfolyo ile ilgili literatürü gözden geçirmek amaçlanmıştır.
<b>Anahtar Kelimeler:</b> E-portfolyo, Hemşirelik, Değerlendirme.	<b>Yöntem:</b> Bu çalışma bir literatür taramasıdır. Pubmed ve Google Scholar'da 2000 yılından 2020 yılına kadar yayınlanmış makaleler incelenmiştir. Makale dilinin İngilizce olması, hemşirelik portföyü ile ilgili olması ve tam metne erişilebilir olması çalışmanın dahil edilme kriterleridir. Toplam onbeş makale incelenmiştir.
	<b>Bulgular:</b> Yapılan incelemeler; bir e-portfolyo, hemşirelik öğrencilerini kendi kendine düşünmeye teşvik edebilen, beceri edinmedeki ilerlemelerini takip edebilen, öğretici ve öğrenciler tarafından yüksek düzeyde kabul gören, öğrenci-öğretici etkileşimini artırabilen yeni bir öğrenme ve değerlendirme yöntemi olduğunu göstermiştir.
	<b>Sonuç ve Öneriler:</b> Stratejilerle önlenebilecek bazı dezavantajları olsa da bu araç klinik ortamlarda geleneksel değerlendirme sistemleri yerine kullanılacak değerli bir araç olarak kullanılabilir.

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## INTRODUCTION

Technology is pervasive and has changed our lives even more than the printing press did in its period. How we learn, communicate, travel, conduct business, and even play are all influenced by technology, and the health care system is no exception (Bayramzadeh & Aghaei, 2021; Curran, 2008). The health care system experiencing quick change, so the providers have to be self-directed, self-aware, and resource-effective members who like technology and be able to communicate, decrease errors, and balance health needs (Spickard et al., 2016).

There is a popular fable about a penguin colony quoted by Kotter and Rathgeber in 2006. This penguin colony lived on an iceberg in Antarctica area for several years. But when they identified the problematic symptom of the iceberg, they eventually realized that the environment had changed and it is a need to modify and change how they lived (Kotter & Rathgeber, 2006). The current health care system is dynamic and rapidly changing in line with modern technological breakthroughs. To keep pace with these trends, the nursing profession has to be vigilant and incorporate appropriate technologies, especially in educational settings.

Professional organizations such as the American Academy of Nurses (AAN) and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) are trying to find solutions to decrease errors in health care systems. They found that using emerging and new technology can be a key to these problems. Thus recently, the American Nurse Association revised the standards of nursing curriculum based on nursing informatics. Also, the necessity of including informatics in the nursing curriculum is well highlighted in nursing literature nowadays (McNeil et al., 2004). So, the way nursing faculties teach and evaluate students must be integrated into the recent advances in the health care system.

Traditional evaluation approaches were mostly including written exams, bedside assessments with tutor-led and rating reports. These methods depend on patient availability and do not always explicit and predefined learning objectives. Furthermore, behavioral competencies such as critical thinking, communication skills, professionalism, and teamwork could not be measured accurately. Therefore, the evaluation in clinical settings has changed from the traditional techniques to a more structured techniques. Also, changes in the environment have forced the use of new evaluation tools which benefit the student in several ways and change from a summative method to a more formative method. As a result, the use of information technology such as electronic portfolios (e-portfolios) has become prevalent for the evaluation of nursing students in clinical settings (O'Brien et al., 2016). E-portfolios are information system helps for teaching, learning, and evaluation (Tsai et al., 2015). The e-portfolio is an electronic one, that enables students to show a three-dimensional record of personal and professional growth and made it possible for self and others audit (Green et al., 2014). This method has been prevalent in Europe, Australia, and Canada for many years (O'Brien et al., 2016).

*What is an e-portfolio:* This word “portfolio” is derived from “Portare” which is an Italian word means “to carry” and “Folio” which means “leaf or sheet”. It has been used in different disciplines at university to encourage reflective practices in students. Nursing is a relatively late user of this method. According to Green et al. (2014), the portfolio has been used for the assessment as well as a professional and personal reflection over time (Green et al., 2014).

In the past, the use of paper-based portfolios was prevalent, but students have critiqued that paper-based portfolios are too bulky due to having too much papers. One study showed that a paper-based nursing portfolio can be as heavy as 0.5 to 1.5 kg. Excessive paperwork makes portfolios time-consuming, difficult, and stressful for students. The bulkiness of them may conceal

incomplete learning. This method can also be stressful and time-consuming for academic staff to assess its content. However, e-portfolios can overcome these problems and can significantly reduce the volume (Spickard et al., 2016).

An e-portfolio is an electronic system that can help to evaluate the learning process continuously. E-portfolios are online platform that integrates information technology and electronic files. This learning tool can help students to improve professional competency in job in the future. Different from the collection of learners' documentation, this platform allows students to store learning processes, outcomes, and reflections. It may include text, digital images, electronic documents, hyperlinks, multimedia to show evidence of learning. Learners can document their learning process based on the complexities of nursing practices and clinical settings. On the other hand, instructors and teachers can use this method to assess students and revise teaching plans (Tsai et al., 2015).

*Advantages of e-portfolio:* E-portfolios can be considered as a self-assessment tool too because it provides a mean to assess themselves, set their own goals, solve problems and think critically. Furthermore, the importance of e-portfolios is not only in assessing cognitive skills, but it also helps to assess affective skills, and the evaluation of peers (Green et al., 2014).

It provides a valuable tool to provide and evaluate evidence and may encourage self-directed learning and reflections. It facilitates a safe and suitable platform for discussing concerns and was recommended by students. Students can receive constructive feedback during the term on their achievements. Most importantly, students who have a problem are identified early, allowing instructors to intervene and provide appropriate support. While traditional methods could not detect these problems early enough to intervene (Bogossian & Kellett, 2010).

Portfolios allow authentic formative evaluation since they allow students to learn during evaluation. Students are provided with constructive feedback during the semesters leading to increasing progression which may lead to improve their performance. Furthermore, portfolios allow students to track the history of their improvements at different times during the apprenticeship (Duque et al., 2006).

Other advantages of e-portfolio for students include improving their creativity, giving them the ability to recognize different aspects of education; identification of weaknesses and strengths; and understanding of their progress.

For faculty, the e-portfolio provide the opportunity for multiple staff to assess the progress of students or a staff to guide and assess multiple students (Bogossian et al., 2009). Also, it has been associated with reduced workloads for staff (Spickard et al., 2016).

An E-portfolio can encourage autonomy and accountability since it asks the students to take direction of learning as well as the responsibility for their learning. The e-portfolio can create a bridge between practice and theory by connecting the learning in the classroom with the practice environment (Green et al., 2014).

Many studies have been done and assessed the effect of e-portfolio. So, this study aimed to review the literature regarding e-portfolio in nursing.

### **METHOD**

This study was a literature review. The published articles were reviewed in Pubmed and Google Scholar from 2000 to 2020. The keywords were electronic portfolio and nursing. The inclusion criteria were English language, articles related to the portfolio in nursing, and the accessibility to full-text. We found and reviewed 15 articles.

## RESULTS

The review of the literature showed that an e-portfolio is a new learning and evaluation method that can encourage students to self-reflect, tracks their progress in skill acquisition, and increase teacher-students interaction. Moreover, this tool can be used as a valuable tool instead of traditional evaluation systems in clinical settings, although it may have some disadvantages that can be prevented by some strategies. In the following section, we summarized the results of these studies.

Moeinzadeh et al. in 2021 conducted a study to design, implement, and evaluate a comprehensive system for monitoring and evaluating the activities of students in clinical setting. Their result showed that students' satisfaction with the system was high or very high. So, they highlighted that the use of this portfolio in the future can affect learners' learning (Moeinzadeh et al., 2021).

In another study Lai Ch. in 2016 conducted a mixed method study to develop an e-portfolio. Their result showed that students made professional progress in both theory and practice after using the e-portfolio system. They finally recommended to adopt the appropriate mobile device and provide students with clear guidance on using the e-portfolio in a clinical setting (Lai & Wu, 2016).

Garrett et al. in 2006 developed and evaluated a tool for clinical reflection in clinical settings at the University of British Columbia School of Nursing. Their aim was to show the potential use of mobile technologies to improve clinical learning; increase reflective learning in clinical settings; encourage students in the process of knowledge translation; help contextualize and embed clinical knowledge whilst in the workplace; and to help prevent the isolation of students. Their result confirmed that students had positive attitude regarding this tool but they had some limitation due to internet access (Garrett & Jackson, 2006).

In a qualitative study, Chang et al. in 2019 conducted a study to explore the needs and perceptions of students regarding the use of e-portfolio in a baccalaureate nursing program in the final semester practice course. They concluded that e-portfolio can help in integrating knowledge, practical skills, and recognition into the learning. The use of e-portfolio can improve learning of clinical competencies in students in clinical settings (Chang et al., 2019).

One study by Tsai et al. (2015) showed that an e-portfolio can ease self-learning in students and assist instructors to plan for teaching objectives. The interaction between students and teachers can assist the learners to obtain skills for future jobs (Tsai et al., 2015).

Another study suggested that e-portfolios are effective for students because many of today's students are in favor of technology or other words they are "techno-savvy" and prefer to complete their work using computers" (Green et al., 2014).

Another study also showed that in nursing programs using e-portfolios could improve students' capability and competency in their profession (Tsai et al., 2015).

One study conducted by Cevik et al. (2018) showed that the e-portfolio is a useful instrument in clearing the learning activities of medical students in their final year during their emergency clerkship. This result can help curriculum designers and medical educators improve emergency medicine learning activities and teaching (Cevik et al., 2018).

A study by Shortis et al., (2006) confirmed that using tablet or PCs can improve communication, time management, and flexibility among students. Overall, the results showed that in the clinical setting the use of the tablet can provide advantages, while it might be limited by some physical and environmental limitations (Shortis et al., 2006).

Another study in 2009 reported that e-portfolio was highly accepted by faculty members and preceptors as well as students. However, poor accessibility to the devices in the clinical setting may limit the e-portfolio's use. The low number of computers, the inability to leave the bedside to use a PC, and the use of computers for clinical data entry may result in frustration in students (Bogossian et al., 2009).

Ramey and Hay (2003) said that e-portfolios can enhance the public's image of nursing profession as a dynamic and innovative major that can integrate new methodologies and technologies into its curriculum (Ramey & Hay, 2003).

Although some studies proved the positive effect of e-portfolio, some other research talked about its disadvantages that can be prevented by some strategies.

For example, staff and patients may express concerns about using wireless technologies. Older nurses that resistant to change cannot accept technology in clinical practice. Also, some may fear a nurse using a PC in front of a patient and regard it as 'unprofessional'. In this regard, Shaw et al. (2004) showed that wireless technologies are safe to use when located more than 1 meter from equipment (Shaw et al., 2004).

Also, Spickard et al. (2016) stated that these new trends in technologies may challenge traditional nursing culture. Older nurses may not agree with using these devices by students. So, cultural change is required and these resistance may be decreased if its benefits are recognized (Spickard et al., 2016).

A study evaluated the nursing students' attitudes regarding using an e-portfolio in the clinical setting and reported that security concerns could potentially limit its effectiveness but using lockers can be a solution (Bogossian et al., 2009).

Also, the debate regarding the virtue of learning evidence because students may not reflect honestly their performance and may show evidence that paints them in a positive way. But it can be prevented by an advisor by attesting that portfolios are representative of students performance (O'Brien et al., 2016).

### **CONCLUSION AND SUGGESTIONS**

Our review showed that e-portfolio is a new learning and evaluation method that can encourage students to self-reflect, follow student progress in acquisition of skill, and increase student-teacher interaction. Furthermore, this tool can be used as a valuable tool instead of traditional evaluation systems in clinical settings, although it may have some disadvantages that can be prevented by some strategies. So, it is highly recommended that nursing managers and instructors develop e-portfolio based on their clinical settings to track nursing students learning.

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#### **Author Contributions**

Design: R.S., E.G., Data collection or processing: R.S., S.K., Analysis or interpretation: R.H., E.G., Literature search: R.H., E.G., Writing: R.S., E.G., S.K.

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