

Evaluation of Continuous Practice by Mobile Learning in Nursing Practical Training

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Abstract. Nursing students can learn many things through practical training by experiencing actual medical practice and by coming in contact with patients. Therefore practical training is an effective learning opportunity for developing the practical nursing care ability of nursing students. Moreover, at hospitals, which are important training facilities, with regard to medical safety, the use of learning tools that produce electrical waves is not possible. So, we created a learning support environment that facilitates the imagination of nursing techniques, and enables effective preparation, review, and learning at anytime and anywhere using a portable digital assistant (PDA) device for practical training. As described in this paper, we report on the outline of the educational materials named “digital nursing dictionary” that we developed and the evaluation of the practices using it.

Keywords: Mobile Learning, Nursing Practical Training, Nursing Education, Evaluation Practice, Ubiquitous.

1 Introduction

In nursing education, nursing students can learn many things through practical training by experiencing actual medical practice and by coming in contact with patients. Therefore practical training is an effective learning opportunity for developing the practical nursing care ability of nursing students. However, training facilities are scattered at various locations, and do not necessarily provide the environment required for learning (library, internet, or IT equipment). Furthermore, depending on where practical training takes place, there are also students who spend a lot of time commuting, and thus, it is important to provide an environment where effective learning is possible during practical training. Moreover, at hospitals, which are important training facilities, with regard to medical safety, the use of learning tools that produce electrical waves is not possible. Therefore, we created a learning support environment that facilitates the imagination of nursing techniques, and enables effective preparation, review, and learning at anytime and anywhere using a portable digital assistant (PDA) device for practical training. We call this PDA “digital nursing dictionary”. This study purpose is to evaluate the mobile learning methods like using the PDA during the three-year period of nursing practical education.

2 Background

To respond to that social need for human resources, we believe that it is necessary to improve the education and instruction of nursing more qualitatively, and to provide nursing students with a new environment in which they can study efficiently.

Among all educational activities, the most effective way for students to acquire actual nursing capabilities is to have the learner join on-site practice training, which is a required part of the nursing education curriculum. Through on-site practice, students can learn comprehensively by communicating directly to patients or those who require nursing care. However, such practicing facilities are spread out in various locations. For that reason, the situation available on site is not necessarily as good a study environment as that available on campus. The campus might provide facilities such as libraries, Internet capability, and IT equipment. By making e-Learning available at every on-site practice location, we believe that we can not only improve the learning environment situation, but also help to raise the quality level of the learning itself.

So we developed the nursing e-learning environment in 2005 as shown in the Figure 1. This e-learning environment consists of nursing training materials with examples for each specialized nursing area based on the training frames for e-Learning of nursing[1]-[4] and “digital nursing dictionary”[5]. Nursing students can download examples of nursing from the nursing training materials server machine. Each student is allowed to compile a “digital nursing dictionary” by downloading the necessary sub-training materials before the on-site practice starts. A “digital nursing dictionary” is shown in Figure 2. In the other mobile method, Maag^[6] introduced an emerging technology using by podcasting in nursing education and the PDA e-portfolio tool^[7] was developed by Bernard et al.

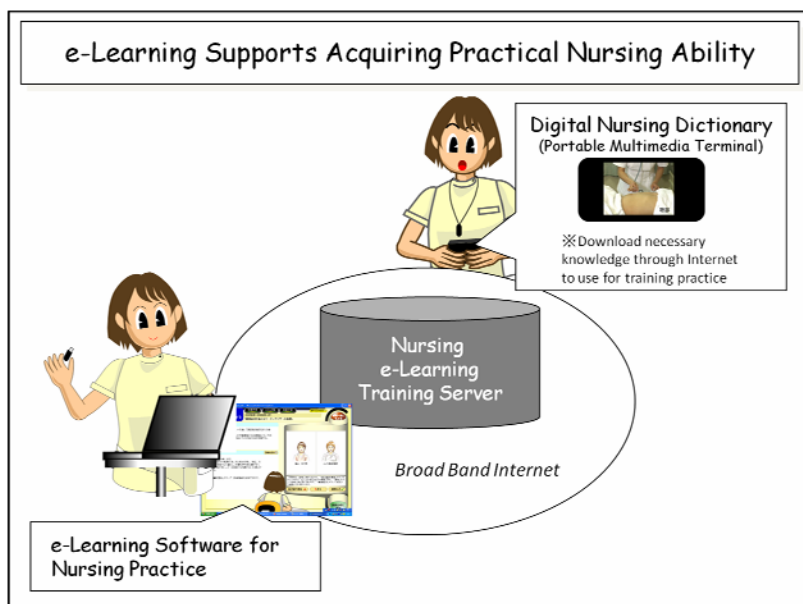


Fig. 1. Nursing e-learning environment in Osaka Prefecture University

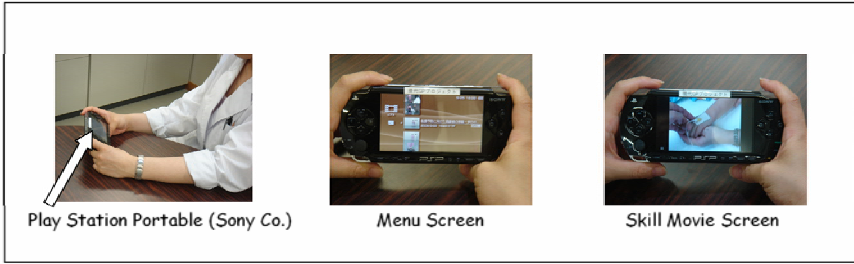


Fig. 2. Digital nursing dictionary

3 Methods

During the three years (2007, 2008, and 2009) of practical training at the school of nursing in our university, we prepared portable multimedia terminals (PSP, Play Station Portable; Sony Corp.) loaded with training material contents (digital nursing dictionary) prepared for the associated nursing practice areas, and lent them each to students who agreed to monitor them. Subsequently, we requested that they use them during the entire practice period. We requested them to give us opinions regarding the operability of the training materials and other information when they had to return the PDA.

Practical training for continuous practice was of three types: practical training II (second-year students), basic practical training (third-year students), and applied practical training (fourth-year students). During the three years of continuous practice by mobile learning, students could borrow this dictionary multiple times.

When returning the digital nursing dictionary after training was completed, a self-administered anonymous survey was conducted. The survey content consisted of free comments on the usage of the digital nursing dictionary and the usefulness of its content. The protocol of the survey was approved by the research ethics committee of the university. The survey period ranged from April, 2007 to March, 2010. We compared the interannual data for each practical training.

The ethical affairs committee for research of the school to which all of our study group members belong approved the study project we conducted.

4 Results

4.1 Actual Borrowing of Digital Nursing Dictionaries

Table 1 shows the borrowing rate of the digital nursing dictionaries for each school year from 2007 to 2009. In 2007, the borrowing rate of the dictionaries for applied practical training (subjects in the first term of the fourth grade) was 26.2%, which was low. This may be because 2007 was the first year continuous practice by mobile learning was conducted, and due to the schedule of the preparation of the content, the dictionary was borrowed by the students after practical training had begun (May to June). Therefore, in the same year for basic practical training (subjects in the second

term of third year), the date of issue was set immediately after the orientation on practical training, and lending of this dictionary was arranged in a way that it could be borrowed at places where students gathered when they felt motivated.

Thus, from the second term of practical training in 2007, as a result, >90% of students wished to borrow this dictionary. Furthermore, in 2007 there were many free comments such as “there is not enough time for getting used to this new teaching material and to become able to use it.” Thus, setting the date of issue at the earliest possible time caused the borrowing rate to increase from 60% to 90%.

Table 1. The borrowing rate of the digital nursing dictionaries for each school year and practical training from 2007 to 2009

year	First Practical Training	Basic Practical Training	Applied Practical Training	total
	2 nd grade (2 weeks)	3 rd grade (4 months)	4 th grade (3 months)	
2007	78.4% [98/125]	93.3% [111/119]	26.2% [33/126]	65.4% [242/370]
2008	88.2% [105/118]	91.5% [119/130]	65.4% [85/130]	81.7% [309/378]
2009	77.1% [91/118]	76.9% [90/117]	87.3% [117/134]	80.8% [298/369]

[borrowing student number/all student number]

4.2 Usage of the Digital Nursing Dictionary in the Different Types of Practical Training

Regarding first practical training (second-year students) (Figure 3), there were annual variations in the percentage of students who responded “I often used it” or “I used it”. The learning goal of this practical training was to investigate the requirements for nursing, such as how to communicate well with and gain a comprehensive understanding of the patient. Due to diversity of the patients that students have to deal with, the teaching material content of the digital nursing dictionary is difficult to use in cases that do not match the provided examples.

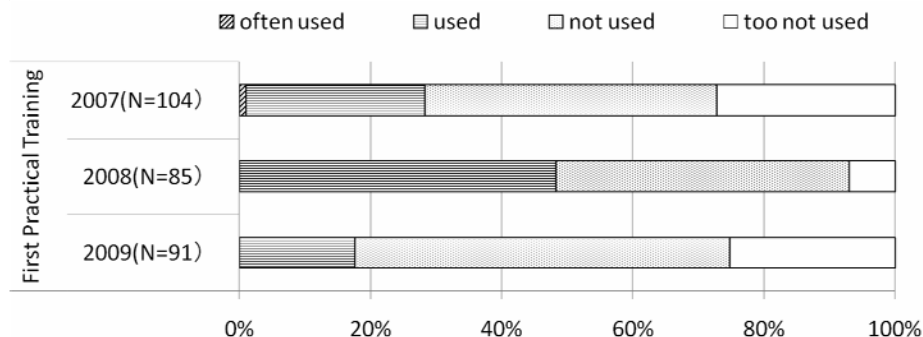


Fig. 3. Usage of the digital nursing dictionary in the first practical training

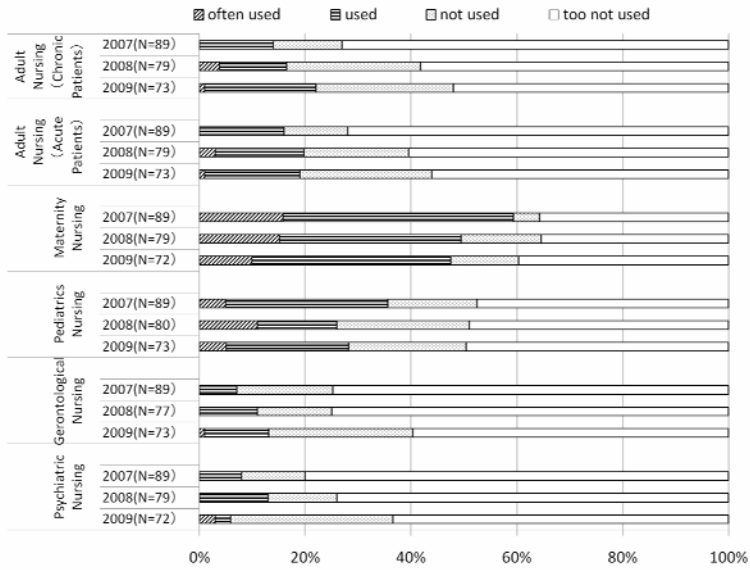


Fig. 4. Usage of the digital nursing dictionary in the basic practical training

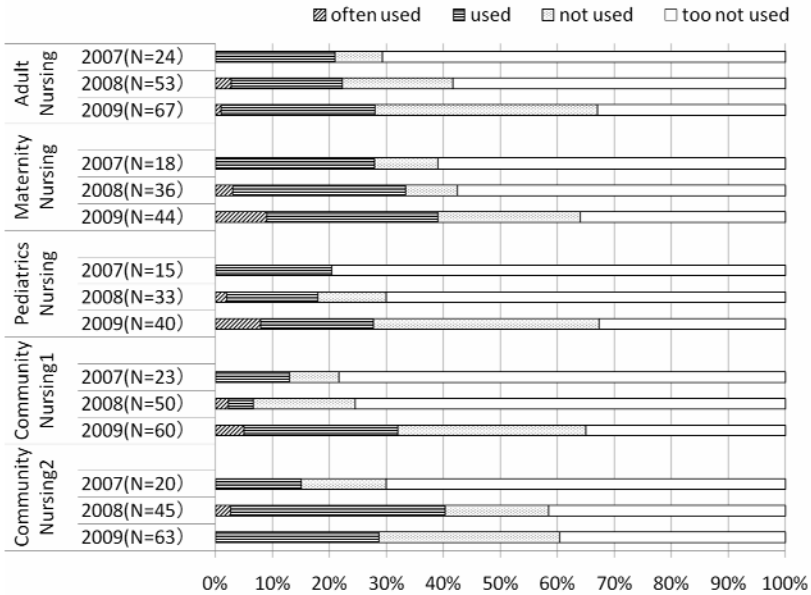


Fig. 5. Usage of the digital nursing dictionary in the applied practical training

On the other hand, for basic practical training (Figure 4) and applied practical training (Figure 5), the teaching material focuses on practical training in a subject-dependent manner; thus, necessary nursing techniques and knowledge are narrowed down. The rate of utilization was in particular high in the fields of maternity and pediatrics because the content featured in these fields is strongly related to the content necessary for the practical training. In addition, the rate of its utilization has been increasing over the years for adult nursing (chronic patients) in basic practical training and community nursing in applied practical training. For community, nursing images on nursing techniques, which are included in the digital nursing dictionary, were developed and used as preliminary study tasks for practice at the nursing school prior to nursing practical training.

4.3 Usefulness of the Digital Nursing Dictionary Contents

This dictionary included nursing technique images, and knowledge cards. The results of their respective usefulness in 2008 and 2009 for practical training are shown in Figure 6. Approximately >60% of the students responded that the images on nursing techniques were “very helpful” or “helpful” for the entire practical training, and approximately >50% responded that knowledge cards were “very helpful” or “helpful” for the entire practical training. Furthermore, regarding the evaluation of the use of the dictionary, >40% of the students responded that “it was helpful that they could study at home,” “videos were easy to understand,” and “images were clear and easy to understand” during the entire practical training.

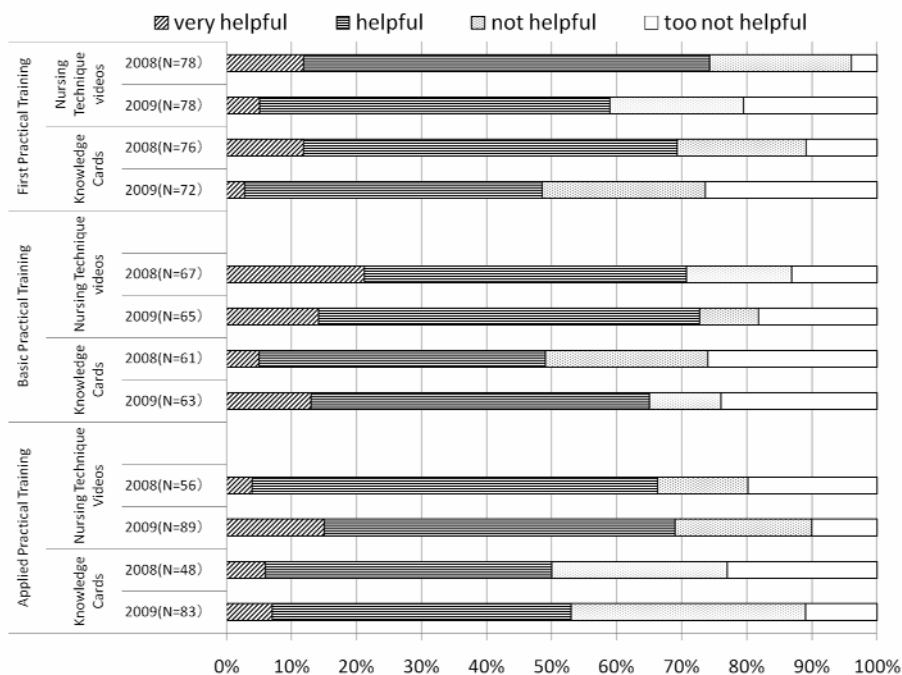


Fig. 6. Usefulness contents of the nursing dictionary

5 Discussion

After examination of the borrowing rate throughout basic and applied practical training in 2007 and 2008 (Table1), we found that borrowing rate decreased with regard to applied practical training. This indicates that among the various learning methods students choose learning methods that suit their own needs when borrowing teaching material. The results of this study showed that the reason why the borrowing rate was >60% for nursing practical training was that students want teaching material that enables them to imagine nursing techniques, which they then can continuously practice by themselves. We believe that this method in which teaching material was provided in easily PDAs that can be used at home and/or during commuting and that provide clear images was helpful. Furthermore, it was suggested that having the opportunity to actually use this dictionary prior to the practical training at school leads to more effective use in the course of continuous practice. We believe that it is necessary to actively increase the opportunities for students to use such learning materials, and at the same time to make its content widely known and promote it among the teaching.

6 Conclusion

In this paper, we reported on the outline of the educational materials named “digital nursing dictionary” that we developed and the evaluation of the continuous practices using it during the three years (2007, 2008 and 2009). We found the usages and the usefulness of the digital nursing dictionary for nursing students in the practical training at hospitals.

Finally, this paper suggested that having the opportunity to actually use this digital nursing dictionary prior to the practical training at school leads to more effective use in the course of our continuous practice.

We believe that it is necessary to actively increase the opportunities for students to use such learning materials

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