

Concept Analysis of the Utilization of Artifacts in Nursing Practice Instruction

Takeshi Matsumoto^{1,2}

¹Department of Nursing Sciences, Tokyo Metropolitan University, Tokyo, Japan

²Graduate School of Nursing, Osaka Metropolitan University, Osaka, Japan

Email: tk-matsumoto@umin.ac.jp

How to cite this paper: Matsumoto, T. (2025) Concept Analysis of the Utilization of Artifacts in Nursing Practice Instruction. *Open Journal of Nursing*, 15, 21-29. <https://doi.org/10.4236/ojn.2025.151003>

Received: December 21, 2024

Accepted: January 18, 2025

Published: January 21, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This study aims to clarify the conceptual characteristics of artifact utilization in nursing practice instruction. Five selected articles were analyzed using the concept analysis method by Walker and Avant. The attributes, antecedents, and consequences of the concept were extracted from the target literature. The analysis revealed two attributes (“connecting people to people” and “connecting people to objects”); two antecedents (“recognition of artifacts” and “selection of artifacts”); and two consequences (“designing a fulfilling learning environment” and “improving the quality of education”). The concept was defined as “promoting the utilization of artifacts by recognizing and selecting them, connecting people to people and people to objects, designing a fulfilling learning environment, and improving the quality of education”.

Keywords

Artifacts, Nursing Practice Instruction, Concept Analysis

1. Introduction

According to a report by the Ministry of Health, Labour and Welfare on nursing education content and methods, it is necessary for nursing training institutions and practice facilities to cooperate and enhance the learning environment by providing resources, such as books and IT environments, for students’ use [1]. Kon identified six factors in the self-evaluation index for the role performance of clinical practice instructors, including “preparation for practice instruction”, which involves setting up the practice environment [2].

Yamauchi identified four elements of the learning environment: space, activities, community, and artifacts. Artifacts play a role in organically linking spaces, activities, and communities [3]. Therefore, they are also applicable to practical

training in nursing education. The concept of artifacts was introduced by the Russian psychologist Vygotsky and is used in various fields, such as education and psychology [4]. Artifacts are human-made objects, including physical tools, systems, and language structures [5]. In clinical practice, student perceptions of artifacts are organically related, and artifacts arranged in the environment constitute the learning environment [6]. Understanding artifacts is essential to understanding their impact on nursing practice [7]. Examples of artifacts present in the clinical setting include electronic medical records, nursing supplies, and professional books. In the clinical learning environment, it is suggested that the use of artifacts by clinical instructors is important to support students' active learning during clinical practice [8]. Therefore, it is important for practice instructors to use artifacts consciously during practice instruction.

2. Research Purpose

The study aimed to clarify the concept and structure of "utilization of artifacts" in nursing practice instruction.

3. Research Method

3.1. Analysis Method

Walker and Avant described concept analysis as the process of examining the elements that form a concept's basis, identifying what is important when explaining its nature, and gaining insights by analyzing the similarities and differences in all its possible uses [9]. In Japan, artifacts are discussed in fields such as education and psychology; however, they are not widely recognized in nursing. Therefore, a concept analysis of the "utilization of artifacts" was conducted based on Walker and Avant's procedures to examine its applicability in nursing practice instruction.

3.2. Data Collection Method

The usage of "artifacts" was explored using general and English dictionaries. The search covered the period from the 1980s, when Vygotsky's ideas began to be re-evaluated [10], to 2022. Journal of Health Care and Society constituted this study's utilized database. Keywords included "artifact" or "jinkoubutsu," and the search included original articles and reviews/special issues. Consequently, 3,164 articles were extracted from the database. After excluding articles that did not use the term "artifact" in the sense of "tool" or "artifact" and those that did not meet the research objectives, three articles were selected. In addition, two articles obtained through manual searching that met the research purpose were included. Five articles in total were selected for concept analysis (**Figure 1**).

3.3. Ethical Considerations

As this study used existing literature, all references were publicly available. Appropriate citations are provided to avoid copyright infringement.

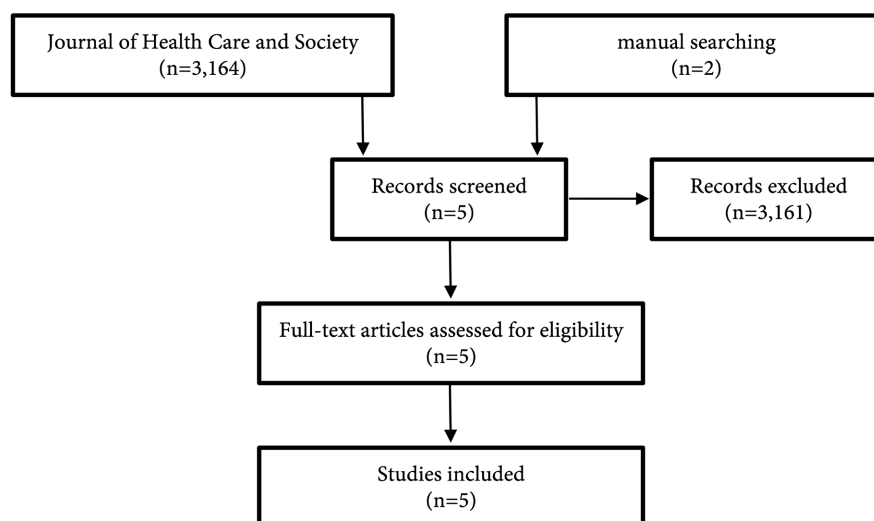


Figure 1. Literature extraction flow diagram.

4. Results

4.1. Background of the Concept of “Artifact”

According to the “Britannica International Encyclopedia,” artifacts refer to artificial products or objects that did not originally exist, including substances or structures that arose secondarily because of inappropriate handling during biological fixation or death. Artifacts also refer to noise or extraneous signals that become mixed with the target signal during measurement. Artifacts can cause errors in the results, making it necessary to eliminate them during testing or measurements [11]. The “Medical Dictionary” translates artifacts as artificial structures or results, referring to things that do not originally exist in the body. Various voltage changes of biological or non-biological origin may become mixed with electroencephalogram (EEG), electromyography, or magnetic resonance imaging recordings. For example, muscle or heart signals from the subject are common artifacts in EEG recordings. Artifacts arising from indoor wiring are also common [12]. The “Random House English-Japanese Dictionary” defines artifacts as 1) artificial products, tools, weapons, ornaments, and so on; 2) archaeological artifacts; 3) mass-produced items of modern society; 4) artificial structures; and 5) fabrications or artificial results [13]. In the field of education, artifacts include tools such as books, writing instruments, and experimental equipment used for learning, as well as learning contents and systems on the Internet, language systems, and visual expressions, all of which are historically accumulated human-made artifacts [10]. In cognitive psychology, cognitive artifacts are designed as artificial tools that hold, display, and manipulate information to fulfill expressive functions [14]. However, these artifacts are rarely used in nursing. It is, therefore, necessary to examine the application of the meaning used in education to nursing.

4.2. Differences from Similar Concepts

A thorough literature review revealed no similar concepts. However, the term

“artifact” is primarily used in medicine and education, with different meanings in each field.

Thus, it became clear that the meanings of artifacts varied depending on the academic field in which they were used.

4.3. Attributes of the Concept

Two attributes of artifact utilization in nursing practice instruction were extracted: “connecting people to people” and “connecting people to objects” (Table 1).

“Connecting people to people” refers to the use of artifacts to connect practice instructors and students, students and students, and students and patients. Specific examples include spaces available for students, understanding the use of items by observing nurses, using self-made items to assist patients, practice-specific notebooks, creating instruction time tailored to students, and proactively communicating. “Connecting people to objects” refers to the use of artifacts to help people understand things better. Specific examples include new ways of using items, incorporating knowledge learned in training into practice instruction, using notes for nursing assistance and practice records, differentiating towel colors in surgical and medical wards, explaining ward characteristics and structure, explaining while observing the patient’s environment, and explaining while showing actual items used in the hospital.

Table 1. Attributes of artifact utilization in nursing practice instruction.

| Attributes | Contents | Articles |
|------------------------------------|---|----------|
| Connecting People to People | Spaces available for students | [6] |
| | Understanding the use of items by observing nurses | [6] |
| | Using self-made items to assist patients | [6] |
| | Practice-specific notebooks | [8] |
| | Creating instruction time tailored to students | [8] |
| | Proactively communicating | [8] |
| Connecting People to Objects | New ways of using items through use | [6] |
| | Incorporating knowledge learned in training into practice instruction | [8] |
| | Using notes for nursing assistance and practice records | [6] |
| | Differentiating towel colors in surgical and medical wards | [15] |
| | Explaining ward characteristics and structure | [8] |
| | Explaining while observing the patient’s environment | [8] |
| | Explaining while showing actual items used in the hospital | [8] |

4.4. Presentation of Model Examples

Presenting model examples with clearly defined attributes helps illustrate the concept and shows its defining characteristics through supplementary examples [9]. Some relevant model examples are provided below.

4.4.1. Typical Example

Practice instructor A, who had just completed a practice instructor training course, prepared for basic nursing practice starting the following week. To improve the ward's physical environment, a small room and supplies were prepared exclusively for students' use. On the first day of practice, A conducted a ward orientation, explaining the environmental and safety aspects of the patient rooms assigned to students. Before students returned to school, A provided time for individual reflection with each student. As a different nurse was to be the practice instructor the next day, A wrote down the day's activities and instructions in a handover notebook for the next instructor.

4.4.2. Borderline Example

Practice instructor B, who was appointed by the head nurse, had no interest in student instruction and conducted the practice instruction haphazardly. When encountering difficulties, B consulted an educational head nurse but did not use knowledge or materials from the practice instructor training course. To secure a place for students, B allocated a corner of the nurse station. Though reflection on the day's activities was also conducted, the noisy environment made it difficult for students to concentrate. As B was also to be the practice instructor the next day, no notes were written in the handover notebook, and the next day's instructions proceeded without any issues. However, the following day, practice instructor C, who wanted to review the past instructions in the handover notebook, found it blank and had to call B to confirm the instructions.

4.5. Antecedents

Table 2. Antecedents of artifact utilization in nursing practice instruction.

| Antecedents | Contents | Articles |
|--|--|----------|
| Recognition of Artifacts | Recognition of applying what was learned in class to practice | [6] |
| | Distrust of information found on the internet | [6] |
| | Misconception that ward items should not be touched | [6] |
| | Recognition of the rules that must be followed during practice | [6] |
| | Lack of pre-study content conducted with limited information | [6] |
| | Showing how to communicate with patients | [8] |
| Selection of Artifacts | Using teaching materials together with students | [8] |
| | How to select books to use | [6] |
| | Using nursing items with consideration for the patient | [6] |
| | Using sticky notes to save time | [6] |
| | Preparing items exclusively for students | [8] |
| | Reviewing self-made records during practice evaluation | [8] |
| Referring to the teacher's methods of instructing students | [8] | |

Two antecedents were extracted: “recognition of artifacts” and “selection of artifacts” (Table 2). “Recognition of artifacts” involves starting with recognizing artifacts and then utilizing them. “Selection of artifacts” involves selecting the best artifacts for utilization.

4.6. Consequences

The consequences of artifact utilization in nursing practice instruction were divided into two categories: “designing a fulfilling learning environment” and “improving the quality of education” (Table 3). “Designing a fulfilling learning environment” involves using artifacts to enhance the design of the learning environment, including constituting the learning environment; providing a good learning environment; mediating learners’ recognition of space, activities, and community; and creating a physical and social environment by organizational members. “Improving the quality of education” involves using artifacts to enhance the quality of education, including the effect of advice on task performance, the impact of words on continuing practice, awareness of effective time use, and significant impact on learning outcomes.

Thus, the effectiveness of utilizing artifacts was clarified.

Table 3. Consequences of artifact utilization in nursing practice instruction.

| Consequences | Contents | Articles |
|---|--|----------|
| Designing a Fulfilling Learning Environment | Constituting the learning environment | [8] |
| | Providing a good learning environment | [6] |
| | Mediating learners’ recognition of space, activities, and community | [10] |
| | Creating a physical and social environment by organizational members | [16] |
| Improving the Quality of Education | The effect of advice on task performance | [6] |
| | The impact of words on continuing practice | [6] |
| | Awareness of effective time use | [6] |
| | Significant impact on learning outcomes | [10] |

4.7. Concept Model

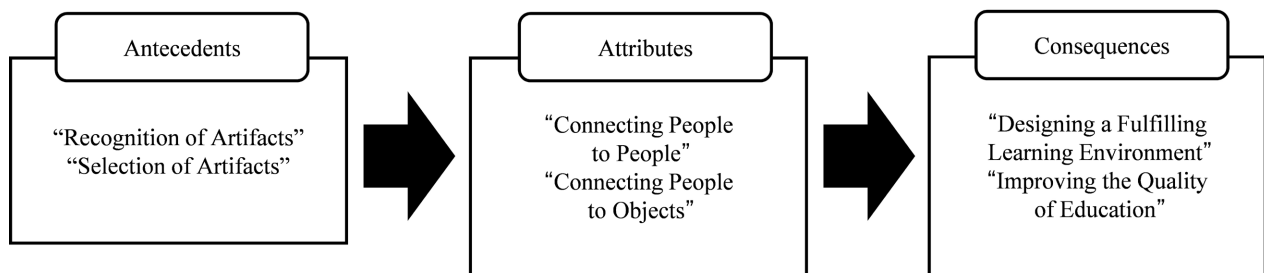


Figure 2. Concept model.

Figure 2 illustrates the concept model derived from the concept analysis. Artifact utilization in nursing practice instruction is defined as “promoting the utilization of artifacts by recognizing and selecting them, connecting people to people and people to objects, designing a fulfilling learning environment, and improving the quality of education.”

5. Discussion

The current study’s concept analysis identified attributes that pertain to the aspects of artifact utilization in practice instruction, and antecedents, which indicate the direction for promoting artifact utilization in practice instruction.

5.1. Suggestions for Promoting Artifact Utilization in Practice Instruction

Mima and Yamauchi view the process of participating in social practices as learning and emphasize the importance of designing a learning environment [17]. Organizing activities for the people involved, preparing space, and building a community are crucial for the development and success of a society or an organization [17]. Learning environments must be designed comprehensively by integrating spaces, activities, communities, and artifacts [3]. Using artifacts to interact with the object reorganizes and changes the object’s meaning, in turn, changing the way the subject confronts the object [15]. Therefore, promoting the utilization of artifacts is essential for connecting spaces, activities, and communities and designing the learning environment.

5.2. Limitations of the Study

This study’s relevant concepts were extracted from the literature. The search was conducted using the Journal of Health Care and Society database and a manual search; however, only five relevant articles were found. Therefore, future research should consider using other databases, such as CINAHL and PubMed, to conduct a broader concept analysis. Additionally, such a broad concept analysis makes the applicability of its results to other fields challenging. Therefore, utmost care is required when applying the results of this study.

6. Conclusion

Using Walker and Avant’s method [9], a conceptual analysis of artifact utilization in nursing practice instruction was conducted. Two attributes, two antecedents, and two consequences were extracted. The concept was defined as “promoting the utilization of artifacts by recognizing and selecting them, connecting people to people and people to objects, designing a fulfilling learning environment, and improving the quality of education.” It has been suggested that practice instructors can achieve positive effects with regard to students by recognizing, selecting, and utilizing artifacts.

Acknowledgements

This work was supported by JSPS KAKENHI Grant Number JP24K1325. We would like to thank Editage (<https://www.editage.jp/>) for English language editing.

Conflicts of Interest

The author declares that there were no conflicts of interest associated with this study.

References

- [1] Ministry of Health, Labour and Welfare (2011) Report of the Study Group on Content and Methods of Nursing Education. <http://www.mhlw.go.jp/stf/houdou/2r98520000013l0q-att/2r98520000013l4m.pdf>
- [2] Kon, N., Yamada, S., Nakajima, K. and Makino, Y. (2022) Development of a Self-Evaluation Index to Assess Clinical Nursing Instructors' Role Performances. *Journal of Japan Academy of Nursing Education*, **31**, 1-10. https://doi.org/10.51035/jane.31.3_1
- [3] Yamauchi, Y. (2010) Designing Learning Environments. In: Yamauchi, Y., Ed., *Learning Space Transforms University: Development of Learning Studio, Learning Commons and Communication Space*, Boix, 180-183.
- [4] Moro, Y. (2008) Context-Based Activities. *International Nursing Review*, **31**, 27-29.
- [5] Harada, E. (1997) Cognitive Artifacts: Usability and Communication from User's Point of View. Kyoritsu Shuppan Co.
- [6] Okajima, N. and Hosoda, Y. (2014) Nursing Students' Cognition Regarding Artifacts in Fundamental Nursing Practicum. *Journal of Japan Academy of Nursing Education*, **24**, 1-14. https://doi.org/10.51035/jane.24.1_1
- [7] McLane, S., Turley, J.P., Esquivel, A., Engebretson, J., Smith, K.A., Wood, G.L., et al. (2010) Concept Analysis of Cognitive Artifacts. *Advances in Nursing Science*, **33**, 352-362. <https://doi.org/10.1097/ans.0b013e3181fb2ed6>
- [8] Matsumoto, T., Hosoda, Y. and Kamino, Y. (2021) Preceptors' Utilization of Artifacts in Clinical Learning Environments. *Journal of Japan Academy of Nursing Education*, **31**, 83-95.
- [9] Walker, L.O. and Avant, K.C. (2018) Strategies for Theory Construction in Nursing. 6th Edition, Prentice Hall.
- [10] Yamauchi, Y. (2020) Innovation of Learning Environments. University of Tokyo Press.
- [11] Britannica Japan K.K. (2007) International Encyclopedia Britannica, Small Encyclopedia. LogoVista Electronic Dictionary Series, LogoVista. (In Japanese)
- [12] Ito, M., Imura, H. and Takaku, F. (2009) Igaku Shoin Igaku Daijiten. 2nd Edition, IGAKU-SHOIN Ltd.
- [13] (1993) Shogakukan Random House English-Japanese Dictionary. Vol. 1, 2nd Edition, Random House Eiwa Daijiten. <https://www.shogakukan.co.jp/books/09510101>
- [14] Anzai, Y. (1992) Handbook of Cognitive Science. Kyoritsu Shuppan Co.
- [15] Suzuki, E. (2016) Learning Theory of Participation Metaphors. Japan Society for Educational Technology (Supervisor). In: Oshima, J. and Masukawa, H., Eds., *Designing Learning: Learning Science*, Minerva Shobo, 76-92.

- [16] Inada, K. (2006) A Concept Analysis of Organizational Culture in Nursing Organization. *Journal of Japan Academy of Nursing Science*, **26**, 23-30.
https://doi.org/10.5630/jans.26.2_23
- [17] Mima, N. and Yamauchi, Y. (2005) Design for Learning Environments: Space, Activity and Community. University of Tokyo Press.