# Development of a Human Resource Promotional Tool to Visualize Skills Acquired by Newcomer Nurses at Home- Visit Nursing Stations in Japan

Sachiko Somaki [*] [†], Yukie Majima [‡],

Seiko Masuda [‡], Yumiko Nakamura [§],

## Abstract

The authors developed a human resource promotional tool using spreadsheet software (Excel®; Microsoft Corp.) to support the education of newly appointed nurses working at home-visit nursing stations. The newly appointed nurses shared the developed tool with their educators. The tool enabled them to visualize the acquired skills and the experiential learning by design, based on instructional design.

*Keywords:* Experiential learning, instructional design, learning design, skills, visualization

## 1    Research Background and Purpose

The Japanese population has one of the highest average ages in the world. While Japan's universal health insurance system provides necessary medical care to everyone, the increasingly large elderly population have led to concerns about shortages of medical and nursing care staff. Consequently, home care services have been improved to create a society in which people can live in their familiar communities until the end of their life while receiving medical and nursing care services. The number of these home-visiting stations ("stations"), where nurses provide medical and nursing care under the direction of the family physician, are increasing rapidly; however, home care nurses do not work in these stations for very long periods.

Most home care nurses working at the stations have clinical experience at hospitals; therefore, their educators are inclined to consider them as ready-to-work nurses [3]. While newly appointed nurses have clinical experience in hospitals, home care nursing differs significantly from clinical nursing in hospitals. They visit alone, and general practice, information gathering, communication skills, and the ability to evaluate information from multiple perspectives are required [1].

Newly appointed nurses feel anxious and confused, as they feel that their clinical experience will not be utilized [1]. It is also reported that educational support is needed to help newly appointed nurses understand the differences between home nursing and clinical experience [7].

---

[*] Osaka Medical and Pharmaceutical University, Faculty of nursing, Osaka, Japan
[†] Osaka Prefecture University, Graduate School of Humanities and Sustainable System Sciences, Osaka, Japan
[‡] Osaka Metropolitan University, Graduate School of Informatics, Osaka, Japan
[§] Osaka Metropolitan University, Research Institute for Advanced Nursing Technology, Osaka, Japan

From the above, even though newly appointed nurses have clinical experience, they have other need to education at home-visiting nursing stations. If newly appointed nurses can effectively learn the necessary education and utilize their clinical experience, they will be an immediate asset to the station and will improve the quality of nursing care at the home-visit nursing station. Accordingly, this report describes a human resource promotional tool ("tool") to help educate newly appointed nurses based on their characteristics.

# 2 Definition of Terms

**(1) Newcomer nurses:** Nursing who are working at the stations for the first time.

**(2) Newly appointed nurses:** Nurses who have clinical experience at hospitals and are working at the stations for the first time.

**(3) New graduate nurses:** Nurses working at the station for the first time after graduating from nursing school.

**(4) Home-visit nursing stations:** A station is a facility from which nurses visit homes to provide medical and nursing care for patients receiving home health care under the direction of their family physician. The service is available through subscribed medical and long-term care insurance. Stations must have at least 2.5 full-time nurses. Thus, there are many microenterprises.

# 3 Specifications of the Human Resource Promotional Tool

## 2.1 Initialization Screen

An educator sets the initialization screen. Here, the necessary skills (knowledge, techniques, and attitudes) for a newly appointed nurse are classified by short-term goals. Short-term goals are divided into basic and professional competencies. The items of these skills were preset by the author using training programs published in Japan for new graduates and new nurses, and were assigned to knowledge, skills, and attitudes. The educators could then customize the input items or confirm the preset items. The educator is free to edit these items to set the skills needed by the newly appointed nurses. In this way, the educator can set up original skills that fit their station.

## 2.2 Evaluating the Clinical Experience of Newly Appointed Nurses Screen

## 1) Check the acquired skills (Fig.1)

A newly appointed nurse checks the Acquired Skills Check Sheet, and assigns a check mark against the skills that were acquired. In this way, skills that have not been acquired can be reflected in the Settings Screen (Fig.4). In this way, the newly appointed nurses can confirm the skills that they need to acquire.
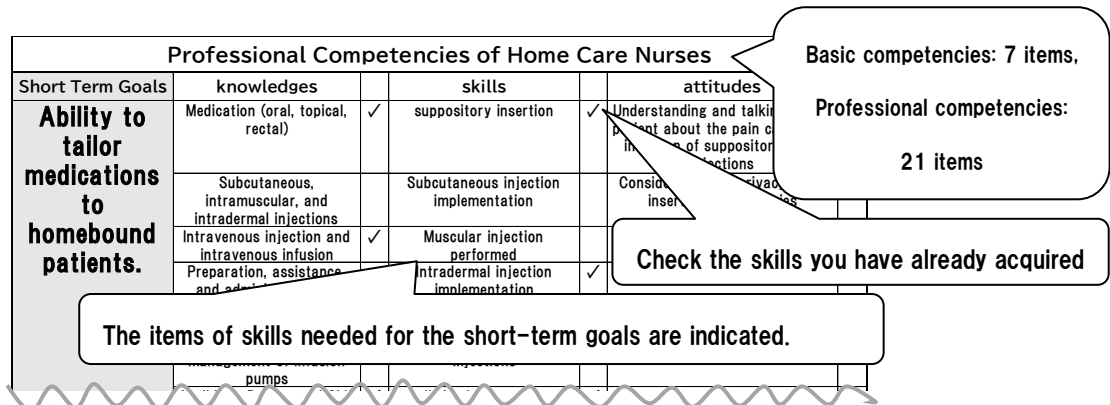
Figure 1: Skills for newly appointed nurses

## 2) Check the educational needs (Fig.2)

A newly appointed nurse checks the applicable items on the sheet using a four-point Likert scale in the Education Need Assessment Tool [6] to identify needs for education before receiving education. In this way, a newly appointed nurse can recognize the items were they require education or training. The newly appointed nurse would then be evaluated again based on the scale after six months or one year of learning with the tool. These scores can be confirmed on a radar chart and compared before and after their learning. Additionally, it enables them to recognize their growth after undergoing training.
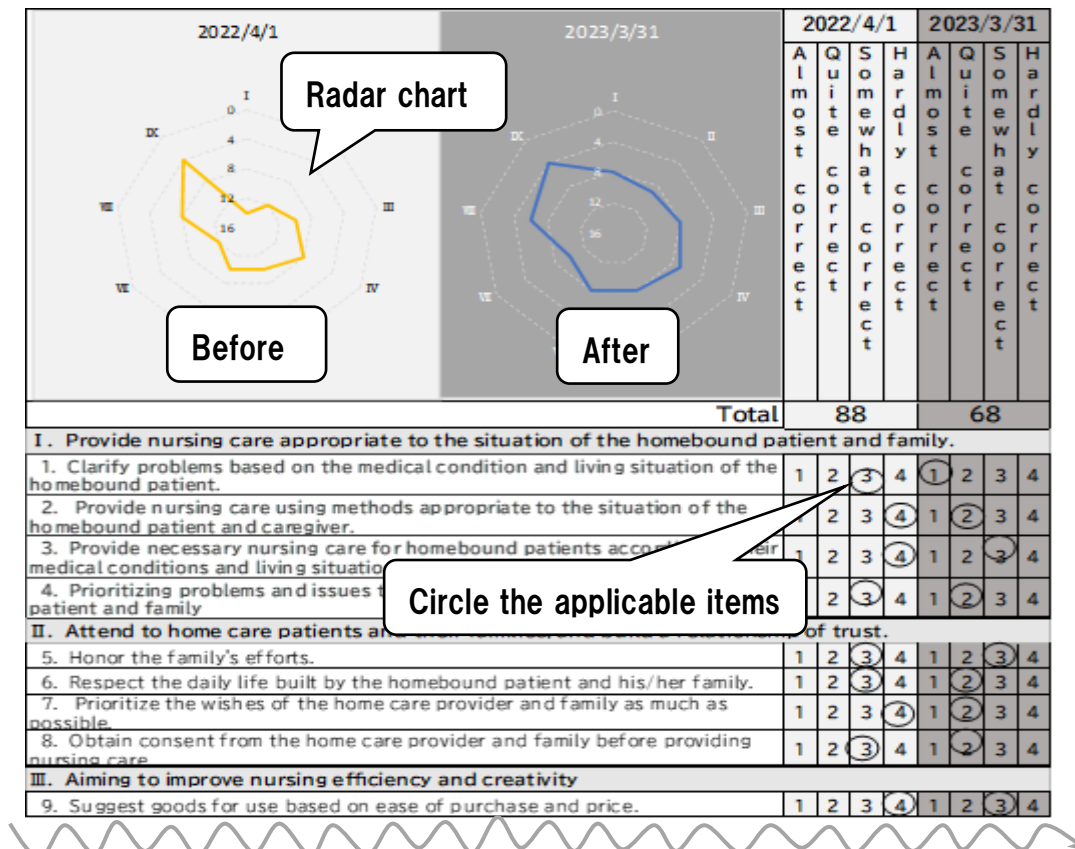


Figure 2: Education Needs Assesment Tool

*S. Somaki, Y. Majima, S. Masuda, Y. Nakamura*

## 2.3 Settings for Short-term Goals and Target Dates Screen (Fig.3)

A newly appointed nurse selects goals with the educator from Short-term Goals (28items), which are basic competencies (7 items) and professional competencies (21items). A maximum of five goals can be set at a time from basic competencies and professional competencies. They set the priority and evaluation date for each goal. In this way, they can visually confirm the entire learning schedule.

| Short-term Goals | 2022,4 | 2022,5 | 2022,6 | 2022,7 | 2022,8 | 2022,9 | Evaluation Date |
|---|---|---|---|---|---|---|---|
| Work as part of a home health care agency | | | | | | | 2022/5/30 |
| Able to see the life of the user/family | | | | | | | 2022/9/30 |
| Able to explain and listen | | | A schedule of when to study and achieve is displayed | | | | |
| Provide safe home nursing services | | | | | | | 2022/12/15 |
| Ability to manage information appropriately | | | | | | | 2022/8/31 |

Figure 3: Schedule for achieving goals

## 2.4 Settings for the Learning Design Screen (Fig.4)

An educator set the learning design of the preset short-term goals. The Learning Design screen automatically displays skills not yet acquired in the "Weakness" column. A newly appointed nurse reflects on clinical experiences to identify skills that are useful for them to acquire. The educator then sets up learning opportunities based on the descriptions in the column. The newly appointed nurse would then learn them during the on-the-job training (OJT).

Skills not acquired are displayed here

| Professional Competencies | | | Goal achievement period: 2023/10/30 | | |
|---|---|---|---|---|---|
| Short Term Goals: Ability to tailor to homebound patients. | | | | | |
| Weakness: Lack of skills | | | Strengths: Skills that can be applied from experience | | |
| Knowledges | Skills | Attitudes | Knowledges | Skills | Attitudes |
| Medication (oral, topical, rectal) | Subcutaneous injection implementation | Consideration for privacy when inserting suppositories | | | |
| Preparation, assistance, and administration of central intraveneous injections | Intradermal injection implementation | | Describe clinical experiences to acquire the skills | | |
| Main and side effects of narcotics | Performing intravenous injections | | | | |
| Hypoglycemia and hyperglycemia symptoms | Administration of central intraveneous injections | | | | |
| | Response to side effects | | | | |
| | Blood glucose determination | | | | |
| | Blood sugar control | | | | |
| | Pain control | | | | |
| Learning opportunities | | | | | |
| Describe learning opportunities to use clinical experience to acquire skills | | | | | |

Figure 4: Setting up learning opportunities

## 2.5 Screen for Reflection on Learning (Fig.5)

This Reflection Sheet enables the newly appointed nurses to reflect on their own improvement. This was included as we believe that them reflecting on their growth and feeling self-efficacy is more important than objective evaluation by others.

First, on the evaluation day, a newly appointed nurse checks the acquired skills in the "Weakness" column of the Learning Design screen. These checked skills are reflected in the Settings Screen and registered as the acquired skills. Second, the newly appointed nurse reflects on the goal achievement status and writes it in text on the Reflection Sheet. Third, the newly appointed nurse selects the number of stars to be accorded based on the level of goal achievement (on a five-point scale) and inputting the percentage of experience used. Subsequently, the newly appointed nurse consults with the educator, who checks the screen of reflection and comments on it.



Figure 5: Reflection Sheet

## 2.6 Visualization Screen for Acquired Skills (Fig. 6)

The newly appointed nurses inputs illustrations from the visualization screen for acquired skills after reflection. Newly acquired skills are displayed as different-size berries and different-colored leaves. And the leaves are assigned respectively to knowledge, techniques, and attitudes: A short-term goal for basic competencies is demonstrated as a brownish leaf; professional competencies are a greenish leaf; and a berry represents the level of goal achievement. The number of stars are represented by the berry's size. And the percentage of experience used is represented by the berry's color: 100 (red) to 0 (yellow-green). The newly appointed nurse arranges these leaf and berry illustrations on a tree. The newly appointed nurses can place the leaves and berries in their desired location on the tree, allowing them to create an unique image of the tree. Whether or not experience is being applied can be confirmed by the presence of the berries on the illustration. Therefore, it becomes an indicator that the learning is based on experiential learning. The educator can judge whether or not the newly appointed nurse was able to make clinical experience useful. When all the skills set as

short-term goals have been acquired, the short-term goal items can be hidden from display on the Setting for Learning Design screen (Fig.4).This function enables the visualization of the mastery of short-term goals and unlearned skill items.
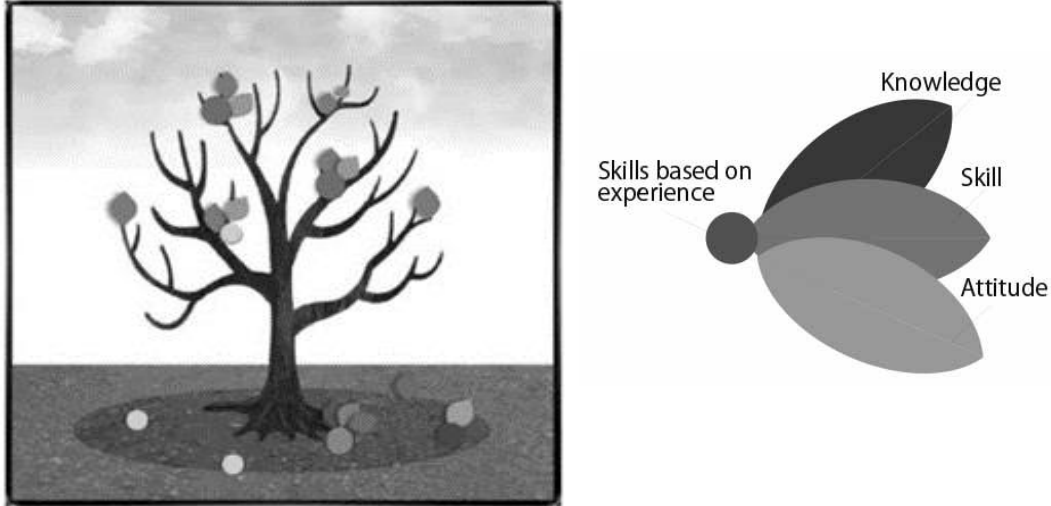


Figure 6: Visualization of acquired skills

# 4 Expected Effects of Using The Human Resource Promotional Tool

The tool is a system to realize a learning support environment that includes instructional design elements [8]. In this design, the learner's (the newly appointed nurse's) pre-learning situation is assessed before the goals are set. Therefore, the learner knows the skills that must be learned to reach those goals.

If the newly appointed nurses can learn how to study based on learning design, they will be able to constantly check their own situation and analyze the aspects they lack and how they ought to achieve those goals, which is expected to lead to self-improvement after the new term.

## 4.1 Improvement of Educational Efficiency and Effectiveness

Using this tool, the educator can set the short-term goals and learning design of the newly appointed nurses, which have individual clinical experiences. This tool is expected to increase the readiness of the newly appointed nurses as they can use their clinical experience based on experiential learning theory. Experiential learning [2] is the process where learners create meaning from direct experience. Thus, this tool is expected to help the newly appointed nurses utilize their clinical experience to acquire skills on home care.

In addition, it is difficult for the newly appointed nurses to get instruction from their educators at patient's home as they often have to undertake the visits alone. Thus, the newly appointed nurses must reflect on their practice to analyze whether they have been good with the help of their educators. We think this tool will help them engage in regular reflection and set new short-term goals.

Furthermore, educators can recognize the newly appointed nurse' individual characteristics, and set up short-term goals and learning opportunities within a reduced amount of time by using this tool. Traditional methods take a longer period to achieve these as the existing educational programs are paper-based, with a wide range of goals and evaluation items.

## 4.2 Enhancement of Attraction to Education

ARCS (Attention, Relevance, Confidence, Satisfaction) model is a method to increase learning motivation [4]. Using this tool, the newly appointed nurses can visually confirm their growth by comparing their growth to the leaves and berries of a tree, which can be expected to increase their motivation to learn.

In addition, educators can instantly check the status of skill acquisition through visuals without having to check multiple evaluation items. Thus, educators can communicate with the newly appointed nurses and provide feedback for their effort and growth instantly. It is reported that the factors associated with visiting nurse's intent to continue working are the items "pleasure in work," and "I believe that I am recognized and expected by my supervisor and colleagues at work." [5] Therefore. this tool will induce communication between an educator and a newly appointed nurse, whereby, the educator can provide positive feedback to the nurse. Thus, this tool is expected to enable the newly appointed nurses to feel their self-efficacy and encourage them to continue working.

## 4.3 Digitization of Home-Visit Nursing Education

We developed this tool using spreadsheet software (Excel®; Microsoft Corp.). Thus, this tool can be used at anytime and anywhere by connecting it to the cloud on the Internet. This will enable the newly appointed nurses, who visit homes alone, to acquire the skills to provide medical and nursing care to patients with the educators' support.

In addition, the ICT enables collecting the data of the newly appointed nurse's educational attributes and educational effect. This will promote the function of this tool and enable us to build an educational system that can be connected with any other home-visiting stations.

## Acknowledgment

## References

[1] Chieko Yao, "Developing Home-Visit Nurses and Organizations: What Educational Programs Aim to Achieve," Community Care, 12(3), 2010, pp. 52-55.

[2] David A. Kolb, "Experiential Learning: Experience as the Source of Learning and Development," Second Edition. 19, Pearson Education, Upper Saddle River. 1984.

[3] Kanagawa Prefecture Home Care Nurse Promotion Council, "Report on the Actual Conditions of Human Resource Development in Home-visit Nursing Stations," 2015: http://www.pref.kanagawa.jp/uploaded/life/951216_3011643_misc.pdf (2022/3/17)

[4] Keller, J. M., translation supervised by Katuaki Suzuki, "Motivational Design for Learning & Performance: The ARCS Model Approach," Kitaohji Shobo, Kyoto, 1984.

[5] Midori Mimaya, "To Elucidate Factors Associated with Visiting Nurse's Intent to Continue Working by Focusing on Personal Attributes and Pleasure in Work," Journal of Japan Academy of Home Care, No.18 (2), 2014, pp. 37-45.

[6] Naomi Funasima, "File of Measurement Tools for Nursing Practice and Education," Third Edition, Igaku-Shoin Ltd, 2015, pp.403-413.

[7] Rie Narahara, Nami Tanimizu, "A Study of Aspect of Difficulties Experienced by New Visiting Nurses: During the Transition Period of Visiting Nursing after Experiencing Hospital Work-A Visiting Nurse Interviews-," Nursing Journal of Shijonawate Gakuen University, 4, 2020, pp.3-22.

[8] Suzuki Katuaki, "Instructional Design for e-Learning Practices, Japan Society for Educational Technology, 2005, pp. 197-205.