Touch Deeply : A new educational approach for teaching nursing students about their humanity and the art of caring before and during the COVID-19 pandemic

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Report

Touch Deeply: A new educational approach for teaching nursing students about their humanity and the art of caring before and during the COVID-19 pandemic

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Objective: Thoughtful human touch and acute tactile recognition are important nursing skills. In Japanese nursing education, first-year lectures provide few opportunities for students to develop their sense of touch. Due to the COVID-19 pandemic, physical distancing requirements have caused educators to shift to distance learning, further reducing the exploration of touch. We developed and analyzed Touch Deeply — a new educational method that can be used in classroom settings and through distance learning to inspire nursing students to explore their sense of touch and think deeply about the importance of touch in their work.

Methods: This project started in 2019 developing a new tactile educational method using ordinary objects to guide first-year students in classroom settings through a process of narrative inquiry. Bubble wrap was found to be a highly effective material for focusing students' attention on their sense of touch. In distance learning sessions, sheets of ordinary paper became a useful alternative. Nursing students were guided through exercises using these materials combined with thought-provoking questions.

Results: The Touch Deeply method stimulated students to explore their use of their hands and become aware of their sensation of touch. Touching ordinary objects became an entry point for students to discover their impulses, urges and tendencies, and for them to examine the dimensions and subtlety of their touch. Through distance learning, students discovered their fine acuity in touching paper, and they discussed their thoughts about touch in relation to human life and nursing care. Many students related their touch experiences to ideas about humanity and society.

Discussion: Through Touch Deeply exercises, students noticed their sensations, expressed their feelings, and reflected upon their experiences in nursing. When instruction is limited to distance learning, the sense of the hand in nursing practice can atrophy. The embodiment of recognition through touching helped students link their personal experiences to educational content about basic humanity in nursing.

Conclusion: Through the new Touch Deeply method, it is possible to stimulate students to reflect on the nature and importance of touch in nursing practice.

Key words: touch, experiential learning, distance learning, embodied cognition, bubble wrap

I Introduction

Having a thoughtful caring touch and fine tactile acuity are important skills for nurses. In Japanese nursing education, during the first year, lecture-based instruction provides limited opportunities for students to begin to understand their sense of touch. As the number of nursing colleges continues to increasing in Japan, lecture-based instruction remains widespread. Knowledge about scientific facts is often presented as the most important type of nursing expertise, although for learners such facts can seem unrelated to nursing practice. First-year students are expected to absorb large amounts of information through didactic lectures, and they typically have few opportunities to learn through their own questioning and thinking. However, it is important for first-year nursing students to begin learning not only by listening and observing, but also by experiencing through actively doing something. Touching objects is one type of experience that can stimulate first-year students to begin questioning and thinking, even in a lecture hall or classroom. Thus, we began developing the use of touch in first-year nursing instruction to promote experiential learning and reflexive thinking.

II Background

The first author (M.M.) had an interest in touch and hands-on learning experiences dating back to the 1990s. In those days, he was trying to create opportunities for medical students to experience the health conditions of various people in practical trainings that complemented public health lectures[1)]. One of his simulation activities that was particularly popular among students was an exercise of wearing eye masks to experience visual impairments[2)]. Blindfolded students were typically afraid of losing their sense of vision, hesitated to move, and avoided touching objects. But as M.M. guided them to sit calmly in their chairs, they gradually overcame their fears and began to show a

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keen interest in touching their surroundings. Blindfolded students found it very interesting to try a variety of hands-on experiences, especially thinking about touching various ordinary objects with their hands[3]. In this activity, M.M. identified ordinary objects that stimulated different forms of touch. Initially, he experimented with many common objects including those used for studying (e.g., stationery, note pads, pencils, erasers, sharpeners, clips), natural objects (e.g., seashells, pebbles, tree branches, leaves, nuts), tableware (e.g., chopsticks, spoons, forks, tea strainers, cups), tools and gadgets (e.g., shoehorns, sockets, light bulbs, switches, plugs), toys (e.g., marbles, origami paper, spinning tops), and other materials (e.g., clothes, shoelaces, tissues, cutters)[4].

Among the various objects M.M. experimented with, plain paper and bubble wrap emerged as particularly challenging materials for students to work with. Since plain paper is so utterly commonplace and has no irregularities, during the touching exercises most students quickly stopped exploring paper with their hands. However, during breaks, some students would begin folding paper, which is particularly common for Japanese students given their familiarity with origami. M.M. discovered that bubble wrap packaging material was a particularly challenging yet interesting material to work with because most students loved to play with it. Compared with other objects, bubble wrap stimulated students so that they lost their attentive mentality and became high engaged with their sense of touch.

In 2016, the M.M. started teaching at a Japanese nursing college. There, M.M. realized that during the first year of nursing education the pervasive pattern of instruction was teaching students through lectures, and this often resulted in a lack of hands-on learning experiences. Recognizing this, M.M. began working to create educational exercises that would stimulate first-year nursing students' awareness about touch. In 2015-16, J.M. was teaching at a Japanese nursing college where he had been developing interactive cross-cultural patient simulation activities to prepare nursing students for providing care for foreign residents and tourists. The activities he developed guided students in recognizing how people from different cultures experience physical contact with ordinary nursing instruments (e.g., thermometers, blood pressure cuffs) differently, and how Japanese and non-Japanese can have different expectations about what types of human touch in the context of nursing practice are considered desirable, expected, appropriate, and inappropriate. M.M. and J.M. recognized their shared interest in the topic of touch in Japanese nursing education, and so they worked together on the analysis of the new Touch Deeply project.

III Methods

1 The Touch Deeply method using bubble wrap

1) Motive for development

M.M. began asking himself what type of object is most appropriate for students to touch to stimulate their reflectivity, thinking, and learning? He began working to select an appropriate tactile material that would transform touch as part of everyday reality into touch as a deep experience of self-discovery.

2) Tactile experience of touching bubble wrap

M.M. selected bubble wrap (in Japanese puchi-puchi 気泡シート "プチプチ"[5]) for its value in creating enriching hands-on educational experiences. Bubble wrap is a plastic material invented by chance in 1957 [6]. Since then, it has been used as packaging material for wrapping fragile objects. As this material started to be distributed, a new propensity began to emerge as people discovered that they could compress the bubbles until they popped [5, 6]. This simple activity became a source of entertainment. Selecting bubble wrap as an educational material became a major turning point in this adventure [7, 8].

3) Development of an educational method exploiting the characteristics of bubble wrap

Initially, the bubble wrap used was a polyethylene material with bubbles of 10 mm in diameter and 3.5 mm in height made by the company KAWAKAMI SANGYO[5]. When used in class, popping this material was too easy, and students quickly felt a strong "pop-rush" impulse. M.M. feared that the instructional session would spiral into chaos. Therefore, M.M. selected "d40 for heavy packaging" bubble wrap because it requires a relatively high fingertip compression force to crush and pop the bubbles. Students were provided with palm-sized sheets cut into squares of 80 mm x 80 mm.

In June, 2019, M.M. began leading Touch Deeply session in the class-room based course Nursing Fundamentals Training with about 100 first-year nursing students. The topic of the session was "Training to think from your fingertips." At the beginning of the session, students received bubble wrap sheets and handouts. In Touch Deeply sessions, students were given the opportunity to touch and experience the square sheets of bubble wrap. Throughout the Touch Deeply activities, as an integral part of the method, M.M. asked first-year students a series of questions designed to stimulate their self-awareness and reflexive introspection. First, he encouraged the students to reflect on their

impulses just before they starting their popping. Once he asked students to stop popping the bubbles, he began asked students "why" questions such as "Why do you pop?" to stimulate their reflections and deeper thinking about why they popped the bubbles. These "why" questions had an interesting effect on students. The students started to reflect and think about the unconscious nature of their hidden impulses and urges. In some cases, they began popping again to think about their urges. After students stopped popping, M.M. asked other types of evocative "how" questions such as "How much force did you apply?" to stimulate students' self-awareness about processes. Then he asked students several hypothetical "what if" questions such as "What if a bubble is a creature, a small life?" and "What if 100 bubbles were 100 people in a village?"

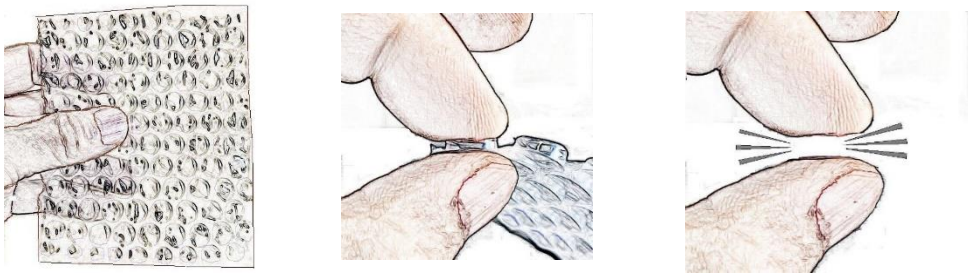

Figure 1; Touch bubble-wrap and ask, such as " why do you pop?", "what if...?", etc.

2. The Touch Deeply method using a sheet of paper

1) Motive for development

In April 2020, due to COVID-19 pandemic, the nursing college suspended instruction in lecture halls and classrooms. This caused a sudden shift in first-year nursing education from classroom-based instruction to distance learning. First year students were expected to take courses at their homes by watching pre-recorded on-demand instructional sessions. Because of stay-at-home policies, it became difficult to provide students with bubble wrap, and many students could not obtain this material. So, M.M. searched for an alternative material for teaching students about touch.

2) Tactile experience of a sheet of paper

M.M. selected plain paper because it was available to every student at home and because it was useful for deeply experiencing, reflecting upon, and thinking about touch. Plain paper was also useful for helping students reflect on their tightly constrained situations. Paper used in exercises was any type of paper in the student's home, including printer paper, a page in a notebook, or wrapping paper. Under the new stay-at-home conditions, M.M. surmised that through recorded on-demand sessions, he could stimulate students to explore their experience of touch with a piece of paper, and thus begin to examine their feelings about touching utterly ordinary objects.

3) Development of an educational method considering the possibilities of a sheet of paper

A sheet of paper does not stimulate students' impulses in the way bubble wrap does. So it was unlikely that students who participated remotely and touched flat sheets of paper would impulsively try to manipulate this material. However, students could explore plain paper by changing the surface characteristics through folding or bending. So, M.M. decided to suggest to students that they take a small step by folding the sheet of paper. Additionally, students can bend sheets of paper three-dimensionally and make a polyhedron. The polyhedron can also be touched. Students can also crush the polyhedron and reflect at the sensation of crushing, which is a similar experience to crushing bubble wrap. By continuously transforming a piece of paper in this way, the paper could produce a variety of tactile experiences and stimulate thoughts about the nature of touch.

During the COVID-19 pandemic, the Nursing Fundamentals Training course was offered through the internet as on-demand sessions. M.M. made a 15-minute instructional video of the session "training to think from your fingertips" using a piece of paper. Microsoft Forms was used to conduct a parallel online collection of students' responses to questions. M.M. embedded his video in Forms.

In pre-recorded on-demand video sessions, M.M. guided students through a series of activities for using touch to transform sheets of paper as follows: (1) fold the paper and think by touching during each step, (2) make a hollow three-dimensional object, then touch it and reflect, (3) crush and crumple the paper, then touch it and reflect, (4) spread the crumpled paper object out and reflect. An example of the first narrative is shown below.

> "Prepare a piece of paper, around A4 size. Then, fold the paper to make a step, a gap (a slight difference in level). I mean, bend the paper so

that one part covers another part, pressing the edge so that it stays in place. Doing this twice creates a step and accompanying gap on the surface of the paper. When a step/gap appears, close your eyes and touch the step/gap. The gap is very small, a fraction of 1mm. Still, our fingers are sensitive to feel the gap. Now, with your eyes closed, move your fingers and feel the gap. There are different feelings for climbing the step (from the lower sheet surface up to the upper sheet surface) and descending the step (from upper surface down to the lower surface).

You might be able to feel not only the gap and levels with your fingertips, but you also might be able to imagine various things about your life from the sense of your fingertips. Is there a gap in your home? Even a gap that you do not notice may cause you to stumble. Expand your imagination from physical steps to psychological steps. Even though recently you have been living a calm and continuously monotonous life, there are times when things occur and a gap/step is created. I wonder if there appears any step/gap due to the pandemic of the new coronavirus COVID-19 in your life. Please think about this."

Figure 2; Fold/touch/crumple sheet-of-paper and ask, such as "how do you feel ?", "what do you find?", etc.

IV Ethics

The Touch Deeply instructional method was developed in accordance with ethical guidelines in Japanese nursing education[9]. These guidelines include devising a teaching method that gives due consideration to learners' readiness while developing innovating methods to increase learners' competencies. In the Nursing Fundamentals Training course, students' responses to questions and their additional remarks were collected in secure Microsoft Forms. Quotations from 12 students were selected for reporting. After the course was completed and grades were posted, a draft of this manuscript was sent to all 12 students with de-identified quotations. These 12 students were asked to give their written permission to include their de-identified quotations. All 12 students voluntarily agreed to allow their de-identified quotations to be included.

V Results

1. Touch Deeply in classrooms using bubble wrap, in 2019, before COVID-19

1) Teaching situation and students' participation

In June 2019, in the Nursing Fundamentals Training course 100 first-year students attended in a lecture hall. In this face-to-face instructional situation, M.M. distributed bubble wrap to each of the students, and he guided students through his process of narrative inquiries using bubble-wrap.

2) Students touch experiences

For many first-year nursing students, bubble wrap was incredibly stimulating. In classes, once first-year nursing students were given bubble wrap at the beginning of class, their impulses to pop the bubbles were strong. Among some students, as soon as they had the opportunity to touch the bubble wrap they would immediately impulsively start trying to crush and pop the bubbles. Other students would restrain themselves, but they would still touch and felt the texture of the bubble wrap without popping it. Once given permission, nearly all students responded by popping the bubbles. With their fingertips, they felt the sensation of contact with bubble wrap. For a period of time, most students became swept up by the urge to pop as many bubbles as possible. This quickly became a fun and entertaining social experience. Eventually, students stopped popping as they no longer felt an urge to do so. It became apparent that bubble wrap stimulated first-year students' impulses to start touching the material, tapped into their urges to continue touching, revealed their tendencies to touch in certain ways based on their past experiences with bubble wrap, and demonstrated that learning to touch can be a social experience. This instructional experience provided rich opportunities for students to explore their sense of touch, and it created opportunities for M.M. to guide them through some reflexive exercises about the nature of touch.

3) Students' narrative responses to questions about touching bubble wrap

Below are a series of eight questions M.M. asked students, followed by examples of responses. The questions were developed by selecting a range of topics discussed in the methods section.

Question 1: What did you immediately feel when you closed your eyes and touched the object?

☺ “I want to crush the bubbles. I want it crumpled up in a ball.”

☺ “A feeling, such as bubble wrap, came to me. I want to crush bubble wrap. It's vinyl.”

☺ “I want to crush such things of deko-boko (bumpy) and contain air. When I see bubble wrap, I want to crush it.”

Question 2: Why did you feel the urge and desire to crush and pop the bubble wrap? What is the origin of your impulse and urge?

☺ “I remembered the feeling when I had crushed it before. I want to crush it out of curiosity.”

☺ “I like the feeling of crushing bubble wrap. I want to hear the sound of crushing bubble wrap.”

☺ “Why? Because I got bubble wrap.”

Question 3: How much force did you use with your fingertips to pop the bubble wrap?

☺ “I become more gentle when touching other people or skin than bubble wrap.”

☺ “When I pinch other person's finger or my finger, I just pinch it, but when I crush bubble wrap, I put a lot of force on my fingertips. Bubble wrap does not feel pain, so I can put a lot of effort into it.”

☺ “I used only my fingertips, so it took a surprising amount of force to crush bubble wrap.”

Question 4: What do you discover about yourself when you observe and reflect on the process of crushing bubble wrap?

☺ “Before crushing, I tried applying a little force. After crushing, I wanted to crush another one. I lost interest in the shell.”

☺ “Before crushing, I want to crush it quickly. When I squeezed it, it didn't pop easily and I felt a little frustrated. After crushing it, I felt it was crushed. My fingertips hurt a little, but it was pleasurable. When I touched the crushed bubble wrap, I felt it was gone. I wanted to crush another one.”

☺ “I wanted to inflate it again. I wanted to crush more.”

Question 5: What are the changes in your feelings if you think of bubble wrap as life?

☺ “I should not be crushed.”

☺ “When I think of it as life, I feel like it has significance or I can't crush it. I can't crush it because it leads to death. If I crush it, it won't come back anymore.”

☺ “It hurts when it’s crushed. I want you to handle it carefully.”

Question 6: Imagine talking to the bubble wrap. How would the bubble wrap respond?

☺ “I don't want you to crush me.”

☺ “If I were a bubble wrap, I would say “do not touch or crush.” However, if I live in bubble wrap, I want to get out of bubble wrap and get in touch with the outside air quickly, so I want you to crush it. "

☺ “Some are easy to crush, while others are difficult to crush.”

Question 7: What would you feel if you imagined a sheet of bubble wrap to be a ward of patients?

☺ “If I consider this bubble wrap sheet to be fifty patients, I thought it should be touched according to individual needs.”

☺ “I think that about five people will be in charge. I think that the ratio of healthy people to sick people is about 60% for healthy people and about 40% for sick people.”

☺ “If it is crushed, its utility value will be lost.”

Question 8: What have you learned about yourself touching bubble wrap?

☺ “I had never been so conscious of my fingertips, so it was fresh. I also realized that the individual needs of patients should be valued.”

☺ “I used to do it without thinking about crushing one bubble, but when I took this class and crushed bubble wrap, I felt that there was something of significant value. I wanted to crush it and get pleasure, but when I thought about bubble wrap, it was hard to crush. When I imagined it having life, I became a little disgusted just by touching bubble wrap. This exercise reminded me that I can feel various things with my fingertips, and that I can give healing touch to patients.”

☺ “I realized that I could be useful for many people with just my fingertips, and I felt the greatness of the human body. I often see scenes of [nurses] holding patients’ hands and talking to sick people. I felt the significance of that.”

2. Touch Deeply during the COVID-19 pandemic using sheets of paper

1) Teaching situation and students’ participation

A pre-recorded instructional video was delivered to 100 first-year students who were staying

at home. All students watched the video and undertook the touch exercises at their own convenience.

2) Students touch experiences

In the on-demand video, M.M. guided students to pick up a piece of paper near them, fold it, and touch it in small steps, creating wrinkles in the paper with their fingertips. Because this instructional session was not face-to-face, it was not possible for M.M. to observe students' actions as they followed the video.

3) Students responses to a sheet of paper

Students wrote down on Microsoft Forms what they noticed during the process of touching paper. Some examples of students' responses to the main question are shown below.

Question: Find a sheet of paper. Fold the paper as shown in the first video and create a small step between one edge of a sheet and the surface of the sheet. Then touch the step and reflect on your sense of touch. How do you feel? What do you find? Please report anything you notice.

☺ "By folding a piece of paper and touching the fold, I was able to imagine various things. I felt the feeling of a step, and I first thought of stairs. It felt like going up and down. However, when I moved my fingertip from the flat paper surface to the step, I felt something suddenly cut off. The sensation was similar to what one would imagine a life resulting from an accident, injury or illness. The sensation of my fingertips spread all over my body, and I suddenly felt that my daily life did not proceed as before, and I was struck by something that could not be overcome."

☺ "I folded the paper, touched it, and realized again that my hands were sensitive. If this paper were on the ground and I stepped on it with my bare feet instead of my hands, I would have sensed it was there, but I would not have known whether there was a small step."

☺ "I thought the coronavirus was like a difficult wall, like climbing a steep staircase. It's easy to stop, but I think there are some things I can't move forward. However, there is also a feature that I can get a sense by climbing one step, so it would be nice to be able to overcome various obstacles, at least a little. I also thought that sometimes it would be nice to have an easy downhill break."

☺ "I felt uncomfortable because my fingers did not move smoothly at the climbing step. I felt comfortable because my fingers moved smoothly on the downhill steps. I have noticed that my hands and fingers are very sensitive to touch. Therefore, I thought that the hand also plays an important role in nursing technology."

☺ "Although it was a small step, I found it interesting because I knew which direction I was touching, whether my finger was going up or down. I felt that I could feel the same whether I touched it with the side of my finger or with the pad of my finger."

☺ "Since I had never touched an object with the feeling of my hand (fingertip) in this way, I was surprised that my sensitivity was so sharp. As a comparison, I also tried using my foot (toe), but it was not as sensitive as my fingertip. I felt the power of my hands (fingertips)."

☺ "By touching it with my hands, I felt that I could sense small changes and feelings that I could not observe or notice with my wide field of view. I also thought that I could detect small changes in the patient's hands as a nurse."

☺ "I have found that the 'hand' or 'tactile' are very important to us. Especially for nurses who need to detect abnormalities from minute changes in patients, the 'hands' felt like a lifeline. Often, I was doing this kind of touching unconsciously, so I felt familiar. By concentrating on my fingers, I was able to have a different image of paper."

☺ "My fingertips perceived even the small steps created on the paper. Due to the self-restraint of the coronavirus, my lifestyle has changed considerably. This change may have a big impact on my health. I thought I'd tune my perception and my life."

VI Discussion

The use of ordinary objects that students encounter in everyday life for tactile education through the Touch Deep method can be effective for stimulating students to experience their sense of touch, reflect on the nature of touch, and learn about the importance of touch in nursing practice. It is possible and preferable to conduct Touch Deep tactile educational sessions face-to-face in classroom settings. However, it is also feasible to conduct effective tactile sessions through distance learning.

1. Material and theoretical framework

1) Bubble wrap

Bubble wrap is widely used for entertainment and enjoyment because of its unique tactile sensation, characteristic sound when popping, that gives a feeling of liberation [5, 6, 10]. In Japan, Bandai Co., Ltd. has commercialized "∞ Mugen (Infinite) Bubble

Wrap" as a toy that allows you to enjoy the feeling of crushing bubble wrap infinitely[11]. In addition, Dillon acknowledged the effect of reducing stress as the effect of bubble wrap crushing by 30 students [12]. Al-Ghani describes a boy with Asperger's syndrome calming down as he crushes bubble wrap for a few minutes when he can't control his anxiety and compulsive emotions [13].

Given the students' responses to bubble wrap, it is necessary to consider the relationship between bubble wrap and the human (i.e., learners, students, users). The idea of affordance is useful to understand this relationship. In 1966, Gibson initiated the term 'affordance' as what the environment offers the individual human [14]. In 1988, Norman applied the term 'affordance' to the design of industrial products, in the context of human-machine interaction, referring mainly to the possibility of actions that humans could easily recognize [15].

Since bubble wrap is an industrial product, M.M. first tried to apply Norman's affordance as the conceptual framework. However, the recognition of bubble wrap as an industrial product in the Norman's conceptualization is valid so long as the product is forming, but not after the product is destroyed (popped/deflated). The educational value of bubble wrap continues even after its deflation. In order to scrutinize further the educational possibility of popping, rather than staying at the point where popping is understood as a property of bubble wrap, we need to consider the interaction between bubble wrap and humans more deeply. So M.M. decided to turn his focus from design-specific Norman's view to a more fundamental Gibson's view and pursued the authors' quest.

> The affordance of the environment is what it offers the human, what it provides or furnishes, either for good or ill. The verb to afford is found in the dictionary, but the noun affordance is not. I have made it up. I mean by it something that refers to both the environment and the human in a way that no existing term does (Gibson, p119) [14].
>
> The medium, substances, surfaces, objects, places, and other animals have affordances for a given animal. They offer benefit or injury, life or death. This is why they need to be perceived. The possibilities of the environment and the way of life of the animal go together inseparably. The environment constrains what the animal can do, and the concept of a niche in ecology reflects this fact. Within limits, the human animal can alter the affordances of the environment but is still the creature of his or her situation (Gibson, p134) [14].

Gibson's view does not clarify the specific educational benefits of using bubble wrap. Instead, Gibson's view indicates that the possibilities of bubble wrap and the way of life in our human experience go together inseparably. Therefore, it does not make sense for students to terminate their inquiry after popping/crushing bubble wrap. It is desirable for students to continue their interaction with bubble wrap and think more deeply. For this purpose, M.M. developed the sequence of questions, starting with bubble wrap popping.

2) A sheet of paper

A piece of paper, in a face-to-face lecture hall, did not provoke any particular action under a constrained tight schedule. However, in a situation where students could manage their own time in an on-demand class, using paper produced various reactions. When comparing bubble wrap and paper, the biggest difference is that bubble wrap is an plastic industrial product that was invented recently, whereas paper is a type of more natural industrial product with a very long history. Especially in the case of Japanese people, paper has been a part of their culture for hundreds of years, and various things such as buildings, clothes, furniture and even weapons were made from Japanese paper. Also, origami (ori means "folding" and kami means "paper") has been an important part of traditional art and play for generations of adults and children. Therefore, the concept of affordance, which is often used in the finished environment, is not optimal when considering the interaction between Japanese people and paper, which has important cultural characteristics as a material. In the case of paper, a more general framework of cognition and embodiment (embodied cognition) is required. Furthermore, a theoretical framework, such as multiple intelligence, is required to explain the emotional framework that brings out the multifaceted nature of paper [16].

2. What did first-year nursing students learn by touching?

In the Touch Deep sessions, students did not acquire the formal knowledge of medical terminology that would help them in passing the national nursing exam. Instead, students improved the quality of their touch sense rather than increasing their knowledge of facts. In the case of touching bubble wrap, for example, students developed a greater reverence for life and their sense of humanity. When the students put bubble wrap in the palms of their hands and they realized that they shouldn't destroy bubble wrap if they imagined that it was life, they felt that their existence and reverence for life was directly linked.

Such grounding of understanding occurred by simply touching bubble wrap with this concept in mind.

When students watched a Touch Deep distance learning video, they touched a piece of paper, but they did not respond as they would have touching ordinary paper during everyday life. As the students changed the shape of the paper by folding or bending it, their comments suggest that they were conscious of the changes in the shape of the paper, and this allowed them to relate the shape of the paper to their situation of being students studying individually at home.

3. COVID-19 and multiple intelligence

Touch Deep sessions were conducted at a Japanese nursing college where lecturing is the dominant mode of instruction for first-year nursing students. The goal of these sessions was to promote learning about the sense of touch. Almost all universities in Japan are moving their classes online due to COVID-19. In many cases, instructors are adding audio narration to slide decks in face-to-face lessons to create a video, and that video is often used as teaching material for online classes. In the situation of classes being conducted through distance learning due to the COVID-19 pandemic, the trend of cramming educational content into lectures is more pronounced than ever before.

Under these circumstances, the results of this project show that it is possible and meaningful to use the sense of touch to reach students even in online classes. As a result of presenting tactile tasks to students through a piece of paper, various things became clear. The first thing most students pointed out is that they realized that their fingertip sense of touch is incredibly fine. This kind of fingertip sensitivity is very important for nurses to be able to give high quality care and attention to patients. However, it was unusual in the context of a class in a lecture hall to ask all first-year students to concentrate on the sensation of touch in their fingertips at such a delicate level. The results of the on-demand sessions show that what was not possible to achieve using ordinary paper in face-to-face lectures became possible in on-demand distance learning video sessions.

In the on-demand distance learning sessions, many students also had the experience of looking back and reflecting on their current situation during the COVID-19 pandemic, with the help of their fingertips. It is interesting is that the act of thinking seems to have become steadier when students were thinking by touching paper with their fingertips, rather than just thinking with their brains. It was expected that the students would be in a difficult mental state due to the long-lasting isolation during the COVID-19 closure of the college, but it would have been difficult to get one step closer to their state of mind in regular online classes. The results of this project show that students can continue to think through their sense of touch in their fingertips, rather than simply stop thinking because of anxiety. Maintaining feeling and thinking without stopping even because of anxiety is very important both in our own personal lives and for helping others. The theoretical meaning of thinking by touching ordinary objects may be found in one's "multiple intelligence" rather than the "affordance" in the case of bubble wrap a year ago.

Multiple intelligence is a very important concept developed by Gardner [16], but in it has rarely ever been emphasized in Japanese university education. For university education during the years prior to COVID-19, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) focused on promoting "active learning." Data science was also emphasized for several years. Now during the COVID-19 pandemic, MEXT is trying to promote educational policies that place more emphasis on data science and artificial intelligence (AI) [17]. In August 2020, a survey was conducted to promote education in data science and AI at universities throughout Japan[18]. However, it is dangerous to focus nursing education on data science and AI without sufficiently developing students' human multiple intelligence, including the essential sense of human touch for caring and attending to patients' needs. The possibilities from exploring touch should be considered as one of the most important priorities for the education of first-year nursing students.

VII. Conclusion

We developed and analyzed a new educational method for nursing students to explore their own tactile sense of touch. Through the Touch Deep method, nursing students were able to start by noticing, examining, thinking about and reflecting on their tactile experiences and impulses, urges and tendencies. By thinking through their fingertips, students were also able to gain access to the concepts of shared humanity, caring and gentle human touch. This method shows that focusing on touch can stimulate nursing students to think deeply about their roles as they undertake the journey to become nurses. The Touch Deep method can also help nursing students think about the importance of nursing in our changing society, particularly during such a chaotic and stressful period caused by a pandemic.

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実践報告

深く触れて学ぶ試み：COVID-19 禍のもとでも可能な、看護学生を対象とした新しい人間性教育方法

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目的；　21 世紀の現在、日本の大学では視覚情報が主流の教育が行われている。学生は視覚以外の感覚を使用することが少ない。しかし私たち人間は、かなり高度な手とタッチの認識力を持っている。ここ数年、著者らは学生が周囲の物体に触れ、自分の感情に気づき、表現し、経験を反省し、そこから考え学ぶ教育方法を開発してきた。

方法；　身の回りの物体の中でも特に Bubble-Wrap（プチプチ）は人がそれに触れると、人に内在する「潰したいという衝動」を誘発する。2019 年、著者らはプチプチに触れたときの学生の衝動を出発点とする新たな触覚教育法を開発した。しかし 2020 年には新型コロナウイルス COVID-19 の流行により、プチプチの準備や対面での語りかけが困難になった。そこで COVID-19 禍のもとでの遠隔教育という新たな状況下でも、学生が問題なく入手できる代替物体として、一枚の紙に焦点を当て、紙に触れて感じ考える教育方法を開発した。

結果；2019 年に、プチプチに触れた学生は、その形状と触感に強く反応し、自己の衝動を意識化できた。さらにその気づきを出発点として、様々な質問を投げかけることで、人や社会への関心を拡げた。他方、2020 年、一枚の紙に触れた学生は、当初は平らな紙に反応するように見えなかった。紙はプチプチよりも指先への刺激が少ないからである。しかし紙を折り、曲げ、微細な段差を作るなどする中で、学生は自己の指先の鋭敏さに気づき、微細な段差と自己の経験を重ね合わせ、COVID-19 のもとでの自分の生活環境変化も考察し始めた。

結論；　COVID-19 禍の下で大学教育の主流はオンラインに移行し、視覚的な情報がますます重視される一方で、触覚など手の感覚に注意が向けられることは少ない。しかし、本試行で開発した指先のタッチ、触覚を活用する方法は、オンラインでも有効なことが示された。

キーワード:　指先の触覚、経験学習、遠隔教育、認知の身体化、プチプチ

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