

Health Education that Breaks Through Language Barriers

- Prototyping and Evaluation of Childcare-related ICT Self-learning Resource –

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Agenda

0. Sapporo City University
1. Background
2. Study Aims/Method
3. Preliminary Survey
4. Survey in Mongolia
5. Video Shoot in Mongolia
6. Prototype
7. Evaluation/Findings

0. Sapporo City University



Sapporo City University

Basic Philosophies

Educational Goal

Design×Nursing

The design cooperates with nursing, and new learning starts from Sapporo.



Sapporo City University

Educational Philosophies

Respect for Human Life

Contributing to the Community

Educational Characteristics

Collaboration of Design and Nursing

Broad Network

Educational Aims

Development of Human Resources to Cope with Technical Innovation

Construction of a Base for “Knowledge and Creativity”

1. Background

Background

1.1. Current Situation in Mongolia and Japan

Mongolia

The traditional method of swaddling infants is still common in Mongolia(especially in rural areas).

Swaddling a newborn may lead to the abnormal formation of the hip joint and is a contributing factor to the onset of developmental dysplasia of the hip (hereinafter, DDH).



Japan

Also tightly swaddling newborns was popular in old age. (嬰兒籠:いじこ)

Measures to detect DDH at an early stage were incorporated into regular infant health checkups in the late 1960s.

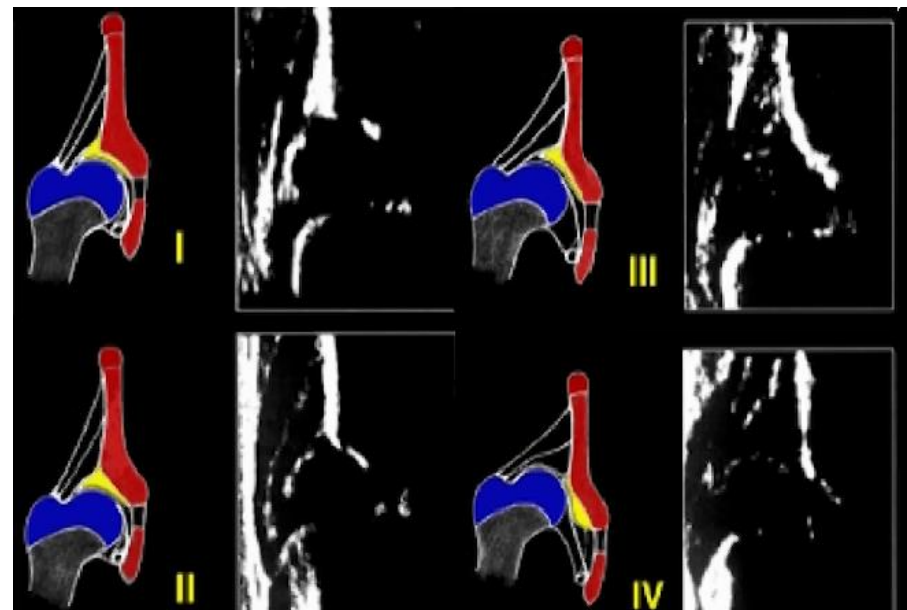
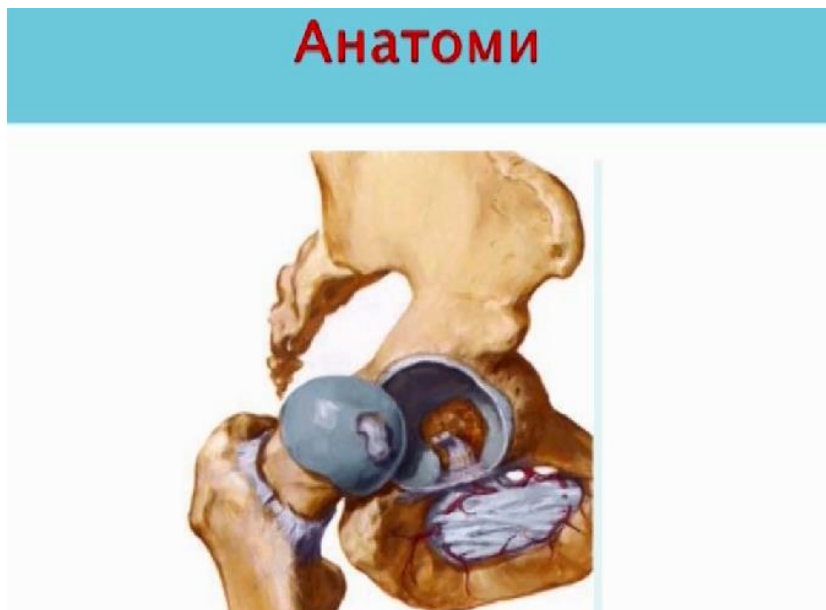
As a result of this and a public awareness campaign to prevent DDH, the number of cases in Japan was dramatically reduced.



Background

1.1. Current Situation in Mongolia and Japan

What is DDH?



Background

1.2. Conceptualization of Resource Distribution

Between 2013-2015, the Sapporo City University School of Nursing supported training and created the childcare guidance material for the prevention of DDH at the National Center for Maternal and Child Health Mongolia (Ulaanbataar).

While moderate success was achieved through these efforts, there will be necessity to expand training throughout the country to those living nomadic lifestyles.

It was expected that information and communication technologies (ICT) could provide a promising means of delivering training in preventive care to parents (primarily mothers).

2. Study Aims/Method

Study Aims/Method

2.1. Study Aims

This study was aimed at developing and dissecting DDH preventive care measures targeted at parents of newborns in Mongolia utilizing ICT.

objectives are as follows.

1. Basic survey on the current state of communications in Mongolia
2. Trial of 'DDH Preventive Care' self-study material aimed at parents
3. Creation of prototype utilizing ICT
4. Conduct of hearings in the field and evaluation of prototype

School of Design will collaborate with the results of School of Nursing, then disseminate the effect throughout Mongolia.

Study Aims/Method

2.2. Study Method

In order to disseminate the outcomes of the School of Nursing using ICT, we aim at the followings.

- Study on current state of ICT in Mongolia.
- Examination of delivery format.
- Target Devices.
- Characteristics of Learning Resource
- Evaluation of Learning Resource Prototype.

Schedule (FY2016)

Activity	Apr-Jun2016	Jul-Sep	Oct-Dec	Jan-Mar2017
Basic survey				
Target device review				
Application review				
Resource proposal and prototype creation				
Evaluation				
Localization				
Field verification				

3. Preliminary Survey

Preliminary Survey

3.1. Mobile Phone/Broadband Penetration Rates

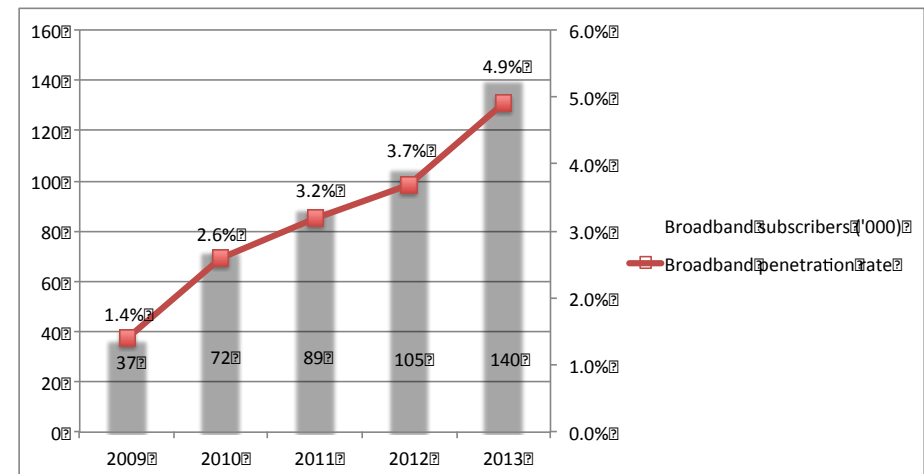
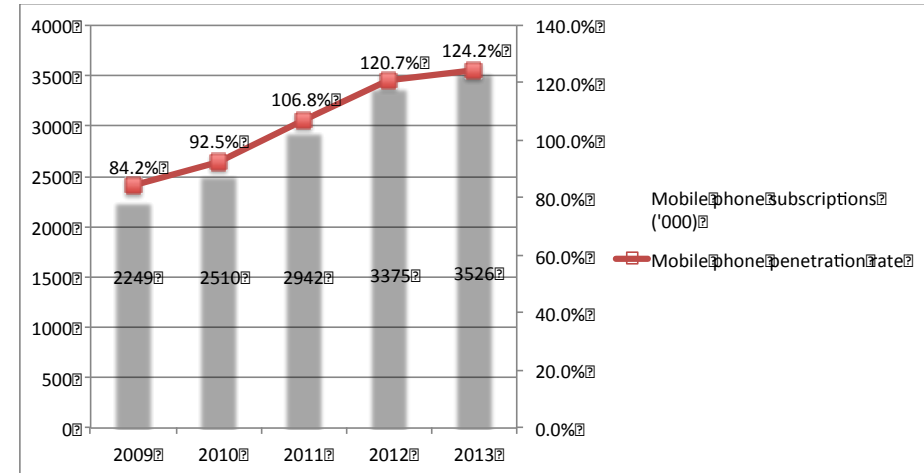
Mobile phone penetration rates in 2013 was over 124%.

The number of mobile phones would be greater than that for fixed phones.

Broadband adoption remains relatively low.

Given this fact, sending huge amounts of data or downloading large files could be considered as problematic.

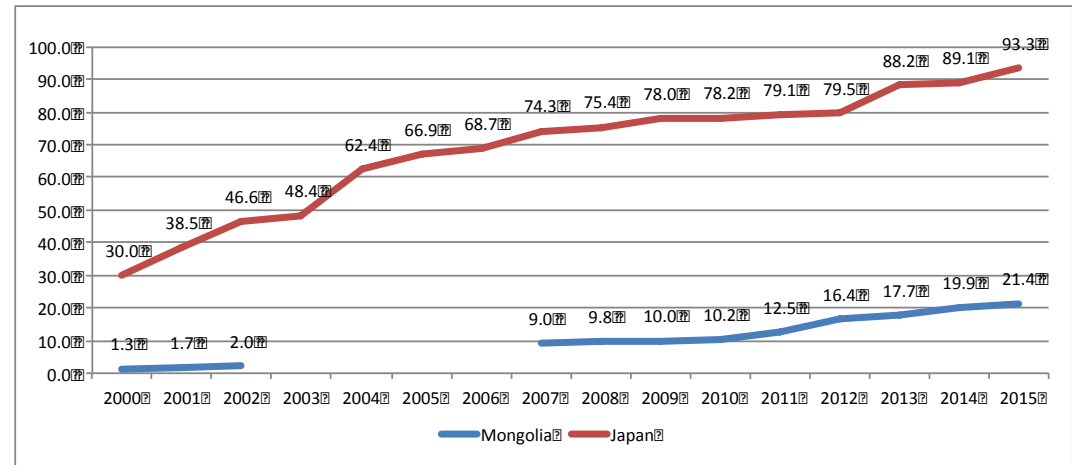
Current rate comes less than 100%.



Preliminary Survey

3.2. Internet Penetration Rate: Mongolia and Japan

The number of Internet users in Mongolia remains relatively low



ITU – ICT statistics (Sekai Keizai no Neta-cho, 2016)

3.3. Comprehensive Telecommunications Carriers

Mongolia's four comprehensive telecommunications carriers.

Two carriers, 'A' and 'C', have almost 70% market share.

Company	A	B	C	D
Head Office	Ulaanbataar	Ulaanbataar	Ulaanbataar	Ulaanbataar
Established	1996	1999	2001	2006
Bands	W-CDMA/GSM	W-CDMA/CDMA2000	W-CDMA	CDMA2000 W-CDMA
Subscriptions	385,000	155,000	255,000	148,000
Market share	41%	16%	27%	16%

ITU World Telecommunication/ICT Indicators Database (WTID), 2014 (Ministry of Internal Affairs and Communications, 2016)

Preliminary Survey

3.4. Preliminary Survey Results

- The mobile phone penetration rate is extremely high(124%), Internet usage and the broadband penetration rate remain low.
- Carriers 'A' and 'C' would be the focus of further study regarding basic information.
- Study on current state of ICT in Mongolia such as OS/platform penetration rate, popular applications, and delivery format.
- In addition, it would seek to obtain advice on methods of distribution.

4. Survey in Mongolia

Survey in Mongolia

4.1. Overview

To obtain a concrete idea of the telecommunications environment in Mongolia.

Meeting with the two carriers from four major telecommunications carriers chosen after examining.

4.2, 3. 'Company A' & 'Company C' Survey Overview

Findings.

The company has 1.3 million users and 19% of these are on post-paid plans that include data allowances of between 1-10GB/month.

Findings.

Around half of the company's 1.1 million subscribers use broadband. Recent prepaid data usage increased to 600MB-2GB, around 2GB used per month on average.

Advices.

+ numbers of advices.



Survey in Mongolia

4.4. Survey Results

- Penetration rate for mobile phones is a sizeable 124%
- Many phones are post-paid.
- Post-paid type users use only around 2GB/month on average; they do not perform a lot of downloads.
- It was suggested that SNS platforms such as Facebook or Twitter may be more effective
- As part of a healthcare-related mobile app.
- Urban and rural network difference: 4G in the capital, 3G in the center of other urban areas and 2G in outlying towns and villages.
- The idea of utilizing TV or pamphlets and so on in rural areas was also brought up.
- etc.

5. Video Shoot in Mongolia

Video Shoot in Mongolia

5.1. Pre-shoot Practice Run

In Japan, practice has been done beforehand.



5.2. Location Shoot

The National Center for Maternal and Child Health Mongolia (hereinafter, the Center) was the location for the shoot.

The Center gained the cooperation of parents of infants for recording using real babies.

Following this, using a doll to demonstrate how to change a diaper and so on.



6. Prototype

Prototype

6.1. Prototype Basic Plan

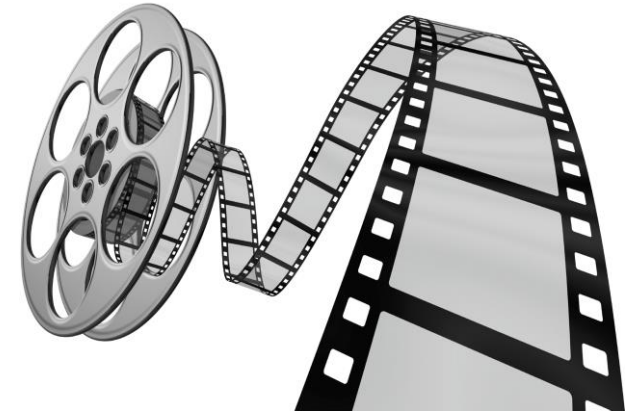
With the aim of developing a resource that would be able to cross language barriers, the following visual and auditory elements were considered:

Method of Presenting a Common Visual Message/Conveying a Strong Impression.

The study focused on making effective use of the interaction between audio and visual elements in order to produce a common sensory quality (impression).

For example, the impression of “brightness” is more strongly perceived when a “bright sound” is accompanied. This effect is called a synchronization of the senses. A congruency between auditory and visual elements can also produce other types of impressions (Iwamiya, 1996).

Video information



Audio information



Prototype

6.1. Prototype Basic Plan

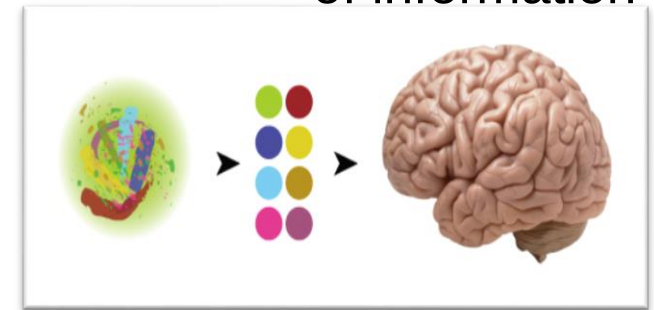
Importance of Consistent Environment and Noise Reduction.

For the congruence using visual and auditory stimuli that convey the desired message and present a strong impression to viewers (Inao, Akita, & Koga, 2008), following points were considered.

It was important to achieve a consistent environment and reduce noise, and frequent use of images for visual and auditory stimuli of a uniform nature was used to convey a strong impression.

In addition, the visual aspect was given particular attention for its role in self-study. In order to ensure immediate and enhanced understanding, the learning resource prototype to be developed would utilize images taken from a mother's (first person) perspective to show actual mothers what they would see when looking at the baby.

Noise Reduction
and Simplification
of information

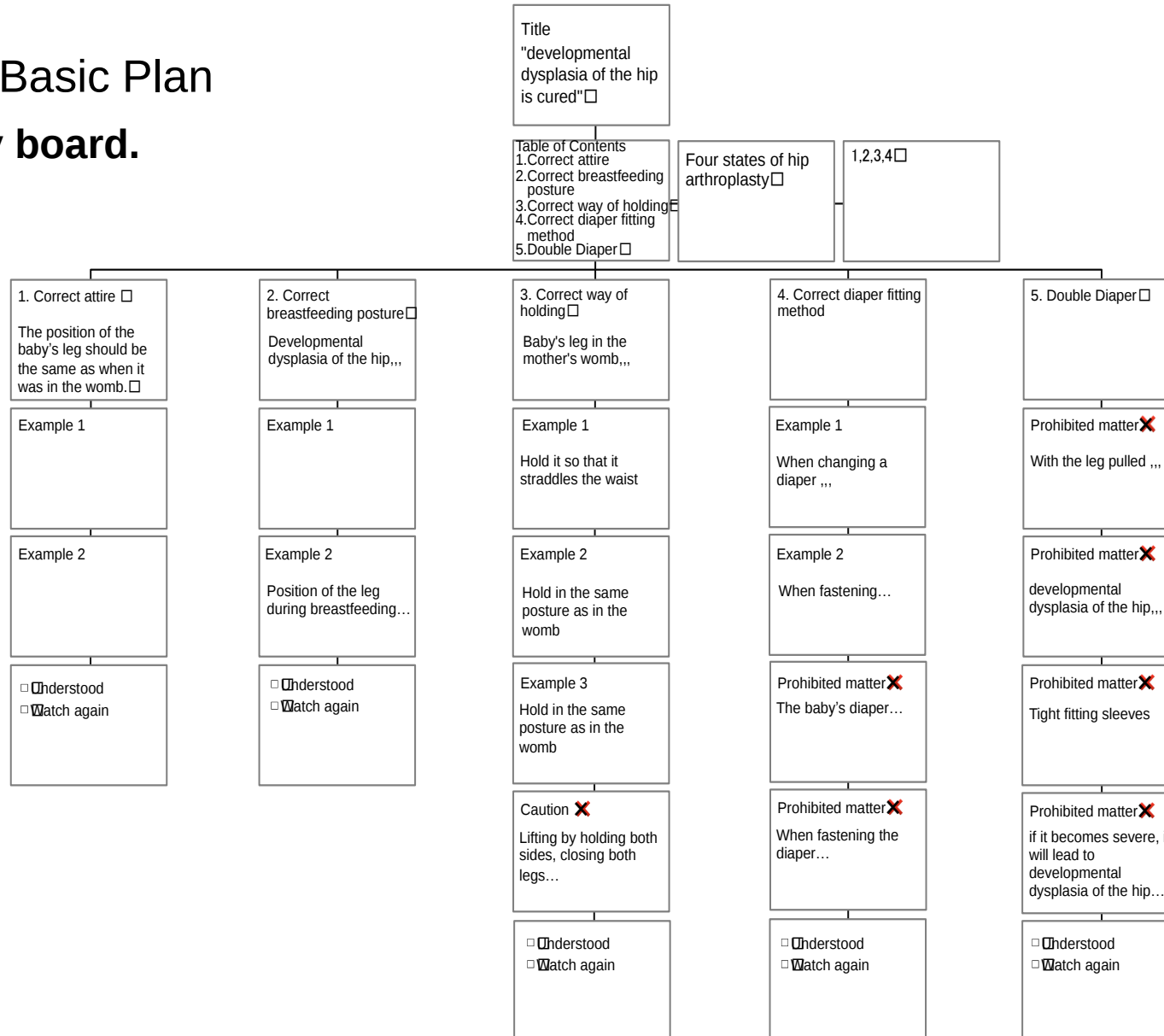


We want to use as much of these knowledge as possible

Prototype

6.2. Prototype Basic Plan

Story board.



Prototype

6.2. Examples of Images Used in Prototype

Figure shows a sample menu screen(while it uses text, it is quite simple in its design)

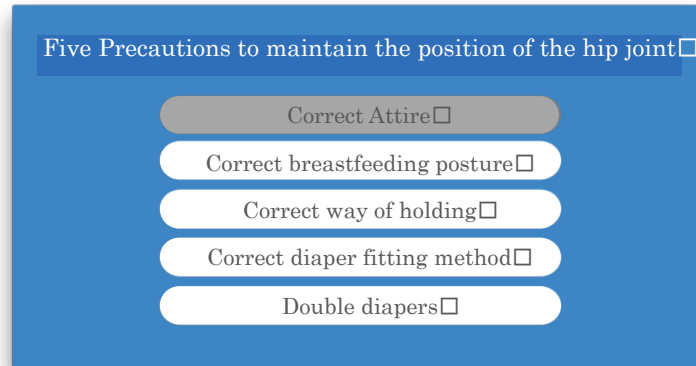
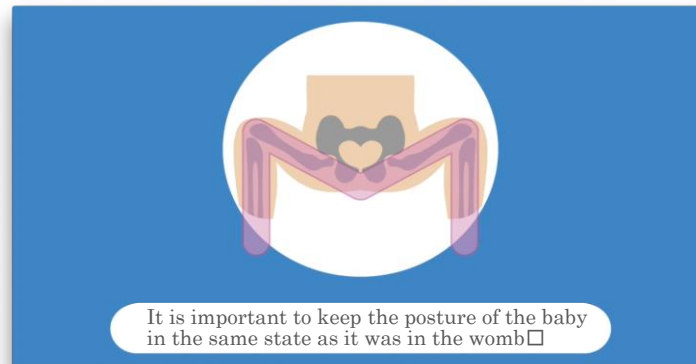


Figure shows a sample illustration. This example explains that when breastfeeding or changing diapers, the infant's hip joint should resemble an 'M' shape, as it does when in the womb.



Prototype

6.2. Examples of Images Used in Prototype

Figure shows a sample image of the position an infant takes when nursing.

The main visual (video) shows the overall scene from a third-person's perspective.

Superimposed at the top left is another visual (video) showing the mother's (first-person's) view.



7. Evaluation/Findings

Evaluation/Findings

7.1. Evaluation of Prototype for Demonstration Use

Date/time: November 7, 2016 (Mon), 16:30-17:30

December 14, 2016 (Wed), 17:00-18:00

Place: Sapporo City University School of Nursing (Soen Campus)

Method: Check of video by 4-5 people involved

Outcome: It was decided that the following be addressed/changed:

- Overall flow/length
- Size of superimposed video
- Positioning of incorrect position warning, etc.

For example, figure shows a still of an inappropriate action (prohibited action) using a doll.



Evaluation/Findings

7.2. 2nd Evaluation Phase of Prototype for Demonstration Use by National Center for Maternal and Child Health Mongolia Staff Member

Date/time: March 6, 2017 (Mon), 16:30-17:30

Place: Sapporo City University School of Nursing (Soen Campus)

Method: Visitors from the National Center for Maternal and Child Health Mongolia looked over prototype and offered their opinions.

Outcome

- Prototype was seen as being easy to understand.
- They felt uncomfortable about the action camera.
- Spreading infant's legs or mouth close to the nurse's uniform was felt unnatural.

Evaluation/Findings

7.3. Interim Conclusions

The interim conclusions regarding the four study aims are as follows:

1. Basic survey on the current state of communications in Mongolia.

The current state of communications, devices, usage and so on in Mongolia was ascertained.

2. Trial of ‘DDH Preventive Care’ self-study resource aimed at parents.

Prototype video content that included new footage taken from both a third-person and first-person (mother’s) perspective was created.

3. Creation of prototype utilizing ICT.

DVD video and a mobile application for demo use on iPhone/iPad platforms was prepared.

4. Conduct hearings and evaluation in the field regarding prototype.

Positive feedback from Center staff in February 2017.

March 2017, with Center staff, went through each scene and identified problem areas. This feedback will be used to make further improvements.

School of Design is collaborating with the results of School of Nursing, then disseminating the effect throughout Mongolia.

Evaluation/Findings

7.4. Future Development

The nurses from the Center offered feedback on the prototype content from the user side in March.

This feedback was reflected in the resource, after which a DVD video and mobile application was made.

Revised DVD was rolled out in the western provinces of Mongolia and got opinions.

Now, revised version is preparing.

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Thank you!

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