Considering the utilization of digital archives
Researching educational contents for understanding cultural assets better

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Abstract: In this paper, we suggest educational contents as an example of utilization of digital archives of cultural assets. The number of digital archives exhibited in Japanese museum increases steadily every year and the contents of archives progress now. Therefore utilization on the website is important, however, there are few examples of utilizing archives as contents effectively. In the present state of affairs, utilization of digital archives has just begun. Therefore, we tried to produce educational contents of cultural assets as a suggestion of effective and practical use of digital archives.

**Keywords:** digital archive, education content, whaling

1. Introduction

Japanese culture has been focused overseas in recent years. However, only subculture such as anime, manga, and game is a centre of that. Many of them don't relate to history and tradition, overflow with diverse genres and have an irrelevant feature of a cultural character. I consider that it is necessary to explain Japanese national character inside and outside the country now that the Japanese culture attracts the world. I suggest utilizing digital archives of cultural assets as the means. The digital contents industry accomplishes remarkable development now as a staple industry that our country devotes to and the field of digital archives is also progressing. In the state of affairs, however, it remains to be at the stage which preserves contents and there is still few example of utilization. In consideration for the background, I noticed a scroll which has been already digitally archived and was depicted Japanese culture that was difficult to be understood by foreign countries. I process the digitally archived scroll and suggest the educational contents related to the scroll as the utilization of the digital archive.

2. Research field background The present condition of digital archives exhibited by museums in Japan

The present condition of digital archives is viewed on the basis of "Digital archives white paper 2005", a survey conducted by JDAA, (Japan Digital Archives Association) 2005.

There are 1,347 museums which establish their website and they account for 82.3% of survey objects (1,637 museums). Of the 1,347 museums setting up website, 33.0% of them (444 museums) exhibit the digital archive on the website. (Fig 1)
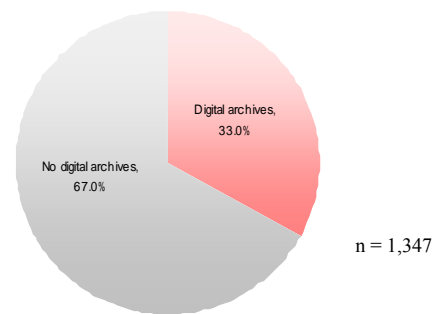

(Fig 1) Present situation of exhibiting digital archives on website of museums. From JDAA, "Digital archives white paper 2005".

Moreover according to the report from the white paper, it says that the number of museums which exhibit the digital archive on the website are 108 (25.5%) in the survey in 2003, are 133 (29.4%) in the survey 2004 and are 444(33%) in the survey 2005. It shows that digital archives have spread steadily year after year. (Fig 2)
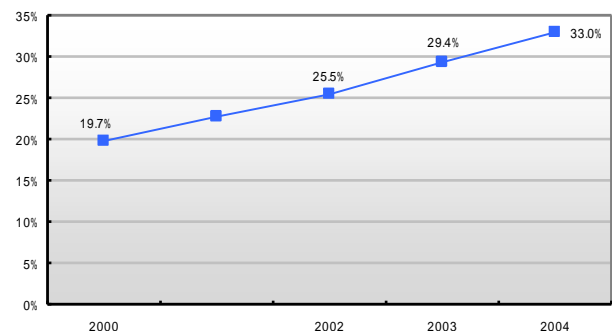

(Fig 2) Transition of the rate that museums introduce digital archives. *Note the rate in 2000, 2002, and 2003 led by questionnaires and the rate in 2004 led by a survey on website. From JDAA "Digital archives white paper 2005"

I am going to state their contents next. There are few museums which exhibit animated digital archives and many of the digital archives are shown still picture. Of the museums exhibiting digital archives, 95% of them (422 museums) have still picture whereas only 6.3% (28 museums) have animated data. Animations are often open to the public as "image material" such as record image. (Fig 3)
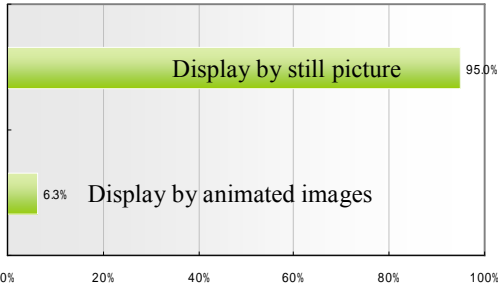
(Fig 3) Display method of digital archives of museums *the animation cited here doesn't include animated contents which explain materials. From JDAA "Digital archives white paper 2005"

Concerning additional function related to display, many museums introduce the expansion display of materials and offering of multi angle images. 13.1% (58 museums) of museums exhibiting the digital archives show materials with function of the expansion display, 6.8% (30 museums) of them offer rotation function of images and multi angle images, 3.8% (17 museums) of them offer images to explain materials. There are a lot of expansion functions in paintings and the function distinguish the one that the entire painting is expanded and displayed and the other that offer partly expanded images. Rotation function and multi angle display function are often used to exhibit handworks such as ceramics. (Fig 4)
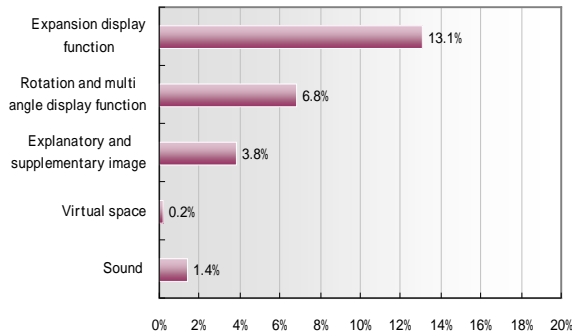
(Fig 4) Addition function in displaying of digital archives of museums
From JDAA "Digital archives white paper 2005"

In this way, as things are that it tends to imply that digital archives in museums are for browse after all. The examples of having used digital archives such as DVDs and museum merchandises printed masterpieces begin to appear though.

3. Research purpose and method

In the present state of affairs, the utilization of digital archives of cultural assets is steadily progressing, however, browse is main contents and there are few examples of utilization other contents. Also, there are few contents made considering culture as theme in Japanese contents. In consideration of these research backgrounds, the research purpose is set as follow.

●Suggestion of utilization of digital archives of cultural assets that have not been seen yet.
●Incorporation of traditional culture into contents leads people to have interests in works themselves and traditional culture.

Research method is as follow.
Find cultural assets which has been digitally archived already and is depicted Japanese culture that was difficult to be understood by foreign countries.
Confirm whether the use of the cultural asset is possible.
When the use of the cultural asset is possible, decide to make the cultural assets the research object and then make a survey concerning them targeting museums and so on.
Design and produce contents
Carry out a questionnaire and evaluate it.
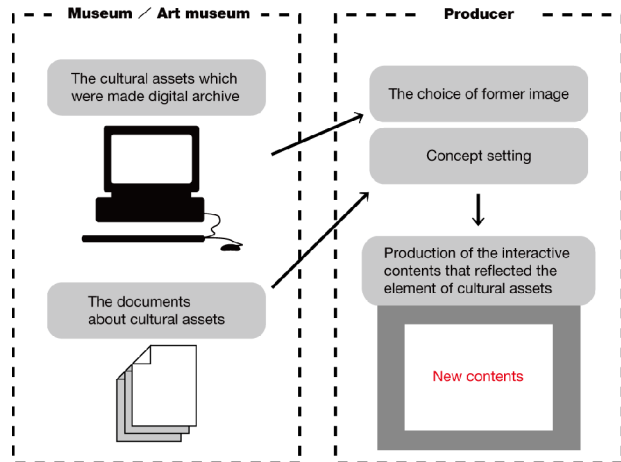
(Fig 5) Utilization flow of cultural assets that are digitally archived

When having researched focusing website, I found "National Archives of Japan Digital Gallery".

This website converts large sized materials, such as important cultural properties that National Archives have, into high-resolution and large capacity digital images then offer the images as ultra-high-density images so that people can browse the materials clearly from the whole to the detail enlarging or reducing images.
Therefore I focused on "scrolls" because most of digital archives exhibited on website are "paintings and sculptures" and people's customs and so on at that time are drawn in many scrolls.

The work that caught my eye among them is the scroll, "Hinozenshu sanbutsu zuko, Whaling in Hizen-no-kuni". It is the scroll that was drawn whaling that was done in Edo period as shown in the title and whaling is well known as a typical Japanese culture that is difficult to be understood by foreign countries. I inquired National Archives of Japan whether it was possible to use the work and the answer was that it was possible to use after following a prescribed procedure. I submitted the form, received the use permission and then decided the work as the research object.

4. Research object cultural asset

I made mainly visit research and document research as the research to design this work as contents. "Hinozenshu sanbutsu zuko, Whaling in Hizen-no-kuni" is the one of the illustrated inventory of main industries in the domain of Karatu in Hizen-no-kuni (presently Saga prefecture) attaching colour pictures and describes the situation of the whaling that had been done offshore Ogawajima island in Genkai Sea about 25 km away from Karatu, Saga Prefecture.

(Fig 6) Excerpt from "Hinozenshu sanbutsu zuko, Whaling in Hizen-no-kuni"

I visited the Nagoya castle museum and Ogawajima island as the visit research. When I made the research in 2006, a project exhibition, "Live with whales" was hold in the Nagoya castle museum. I heard the story from the person in charge of the exhibition and got information and materials concerning the object, the scroll.

Ogawajima island is the scene depicted in the scroll and I could visit the memorial service monument for whales and the lookout hut that was used to hunt for whales that still remain.

5. Designing contents

5.1. Concept

Whaling is a political issue now that is remote from the life of most Japanese people. In the state of affairs, it is often replaced with a sentimental theory or nationalism and it is often called in question superficially. I consider that the

factor could be that there is little information concerning how people were involved in whales.

Then I kept in my mind to tell the fact as it was as a concept and I worked on the design of the contents that could lead better understanding.

5.2. Production technique
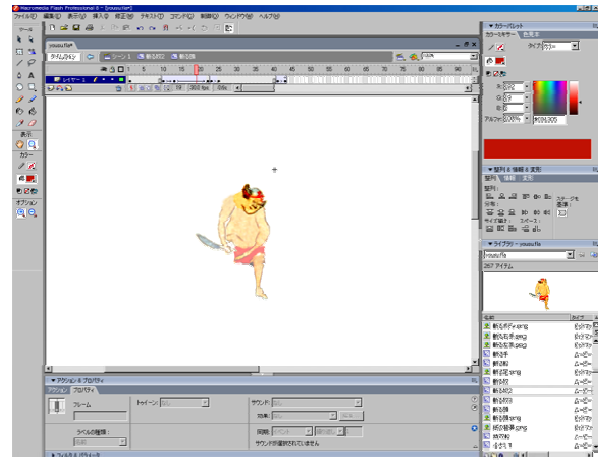
(Fig 7)Editing display in Flash8

As a production tool, I used PhotoshopCS2 to process digitally archived scrolls and drew other illustrations to use in the animation with IllustratorCS2. I used Flash8 to make interactive contents. Flash is a authoring tool of the original movie form swf of Adobe Systems Incorporated and swf file can lead movie with interactive media from web browser software by putting plug-in in PC. I used the word, Action Script to control animation and move to other page also.

5.3. Organizing contents

I took into account both web contents and exhibiting on desktop by data when the user comes in contact with the information. In addition I tried to make a touch panel that people would enjoy and is formed button large enough for adult finger. I used a character to lead users to the contents. I made a setting that a girl who was interested in whaling studied it. Moreover I tried to design the character to be related to the contents so that the users would be interested. Concerning a device of interface, all the buttons that can be pressed are designed to enlarge when users move the cursor to provide affordance that the users can press intuitively. I also tried to improve usability setting up the button to go back to the top menu on all the screens in the contents.
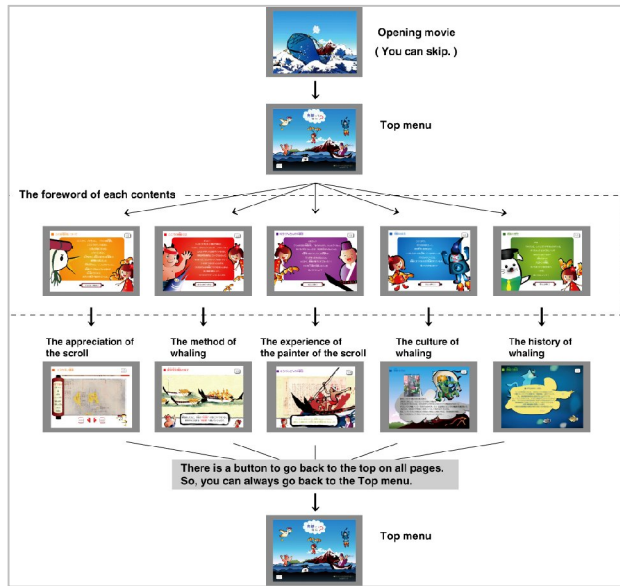
(Fig 8) Structure of the contents

5.3.1. Specification of top menu

(Fig 9) Screen of top menu

After opening movie finish it moves directly to top page and it is possible to move to top page skipping opening movie.

Navigation character (the girl) is synchronized the cursor and she follows the cursor.

When the user moves cursor over the character in the content, the content is showed as pop-up.

It is set that it moves to each contents to click the character.

5.3.2. Appreciation of the scroll

(Fig 10)Screen of appreciation of the scroll

Menu

It shows the separated picture scroll. The title of the image that is displayed is shown in red and the letter is expanded when users move the cursor.

Navigation

The displayed image is shown in red. (It synchronizes menu.)

Proceeding and returning button

When the users press the button, the picture scroll that is displayed moves forward and backward. It is possible to move the picture scroll with it is also possible to drag with the cursor and to move the picture.

Expansion button and expansion end button

It expands images. It expands image just one stage. It finishes expanding the image using expansion end button. It remains the expanded image until the button is pressed.

Question cursor

If the cursor is moved on a particular spot in the displayed image, the cursor changes into the question cursor. When the spot is clicked, the explanation of what is drawn on the screen is shown with pop-up utility. There was nothing like the question cursor in the existing contents that I had researched beforehand.

5.3.3. The method of whaling

Animated contents, its frame rate is 30fps, it lasts for 72 seconds. I clipped JPEG image from "National Archives of Japan Digital Galley" using Photoshop CS2 and processed the image to use.

A series of scene of whaling method using net and stabbing whales depicted in the scroll is reproduced and the character of the contents gives a running commentary. I devised method to gain the depth on a plane paper piling up layers and made atmosphere which analogy images unite with digital images.

(Fig 11)Screen of method of whaling

### 5.3.4 The experiences of the painter of the scroll (Prologue)

Animated contents, its frame rate is 30fps, it lasts for 236 seconds. I drew pictures for each scene using IllustratorCS2 and operating them using Flash. I composed a situation that the contents character, the painter of the scroll (the grandfather) talked to the navigation character (the girl) according to the prologue of the scroll that I researched. The summary of the prologue is that I tried to represent the situation of whaling in a scroll because it was very awful, however, I couldn't carry on the research successfully. I hope for successful research in future generation. I surmised character of the painter, Kizaki Moritaka and composed the story according to the prologue. I requested Mr.Shuya Onishi, an emeritus professor in Kyushu University to translate to spoken language.

(Fig 12)Screen of the experiences of the painter
  *The prologue is displayed on background.

5.3.5 The Culture of whaling

It is interactive contents that explanation of culture appears when the character on the screen is clicked. It is set that the contents character (robot) tries to research the culture of whaling. The explanations concerning the culture of whaling are "Gastronomic culture", "Memorial service for whales" and "Processed goods".
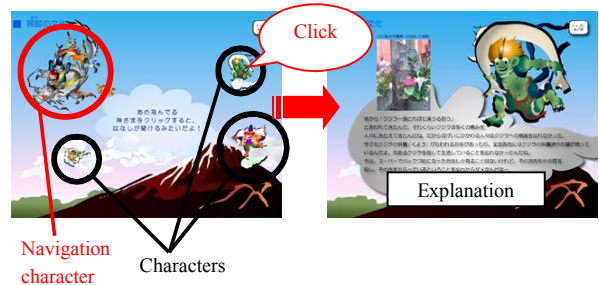
(Fig 13)Screen of the culture of whaling

5.3.6 The history of whaling

It is interactive contents like the contents of the culture of whaling that explanation of the history of whaling appears when the character on the screen is clicked. The explanation of each time appears when fish that is swimming in the screen is clicked. The explanations are "the Jomon and the Yayoi Period", "the Nara and Heian Period", "the Warring State Period", "the Edo Period", "the Meiji Period", "the Showa Period", "the situation of 2006" and "the problem occurred by whaling".
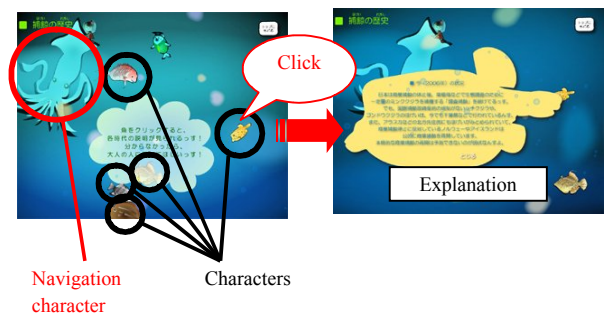
(Fig 14)Screen of the history of whaling

6. Research for obtaining evaluation

I exhibited the contents that I produced on website and I surveyed for evaluation using questionnaire. The purpose of the questionnaire is to evaluate the following.
    To research whether it can make users interested in Japanese culture and so on by the contents.
    To research convenience of an educational tool and find out the point which should be improved.

6.1 Implementation guidance

The implementation guidance of questionnaire is as follows.
    Title: Questionnaire after watching the educational tool "What is whaling?"
    Practice period: From February 9th to February 11th
    Form: Internet form
    The number of replies: 27persons (From 10's to 50's male and female)
    The number of questions: 15 questions

*Supplement: All questions were set up arbitrarily. (It is acceptable that it doesn't have answer.) I used "Shitsumon kun", which is a rental questionnaire system that can conduct on internet for free (http://www.supreme.co.jp/cfm/ask3) and set up the link to the questionnaire in the contents.

6.2 Contents of Questions

I put various items of questions concerning from educational effectiveness of the contents, user's understanding level, accessibility to the opinion on depiction. The excerpt of the question and the answer is as follows.

■Question. Please let me know that in which you got interested with this educational tool. (Multiple answers are possible.)

Choice	The number of answers	Answer rate
No answer	0	0. 00%
The scroll	13	48. 15%
General scrolls of Japan	11	40. 74%
Whaling	22	81. 48%
Others	1	3. 70%

(Fig15)Questionnaire answer

■Question. Was it easy for you to understand the contents as a whole?

Choice	The number of answers	Answer rate
No answer	0	0. 00%
Easy to understand	23	85. 19%
General	4	14. 81%
Difficult to understand	0	0. 00%

(Fig16)Questionnaire answer

■Question. This educational tool is made based on the concept of telling the fact as it is and therefore the scene which blood spouts is drawn as it is like the scroll. Do you think that the scene is appropriate as educational tools?

Choice	The number of answers	Answer rate
No answer	0	0. 00%
Appropriate	16	59. 26%
Both are acceptable	10	37. 04%
Inappropriate	1	3. 70%

(Fig17)Questionnaire answer

7. Conclusion

As the result of the questionnaire shows, I am sure that the user of the educational contents would be interested in whaling that wasn't familiar to them by utilizing the contents. I demonstrated the importance of utilization of educational contents in addition just browsing that is prevailing now in the field of digital archives. In future, it is indispensable for further development of the field to research the method of explanation how people have been involved in whaling, innovate the display technology and device technology and introduce the technology of infrared camera and X ray photograph. That leads the improvement of the research in the field and effective utilization of digital archives.

*Bibliography   Reference URL
"Digital archives white paper 2005" Digital Archives Promotion Committee
"What is the right in digital archives?" Digital Archives Promotion Committee
"The guide line of the problem of the rights concerning digital archives"
http://jiten.com./dicmi/docs/k19/19211s.htm
"JAPAN'S GROSS NATIONAL COOL"
Douglas McGray   2002
"Imitated Japan"   Yasuki Hamano Shodensha shinsho 2005
"National Archives of Japan Digital Gallery"
http://jpimg.digital.archives.go.jp/kouseisai/index.html
"Genealogy of whaling"   Shigeo Nakazono   Nagasaki shinbun shinsho 2001
"Wikipedia Whaling"
http://ja.wikipedia.org/wiki/%E6%8D%95%E9%AF%A8%E5%95%8F%E9%A1%8C
"Web Designing   page 64-65   the February, 2005 issue"
Maini chi Communications 2005
"Japanese smartness that stride the world" Chuokouron the May, 2003 issue
"Live with whale -The history and the culture of whaling in Saikai- exhibition illustrated book"   Saga Prefectural Nagoya castle museum 2006
"Collection of the history of life of Japanese people the 10th volume"   Sanichi shobou 1970
"Research document of Saga Prefectural Museum, the 29th collection" 2005
"The folk customs of whales and dolphins" complied by Kenichi Tanigawa   Sanichi shobou   1997
"Whales and Japanese"   Seiji Osumi   Iwanami shinsho 2003
"Japanese gastronomic culture, the 4th volume" Yuzankaku publishing 1997
"Japan whaling Association Website"
http://www.whaling.jp/