The Cognitive Orientation of Museum (COM) Model for Museum Novices *

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Learning in museums is considered that visitors construct their original knowledge or experiences through museum objects as learning resources. However, it is said that they need museum literacy to interpret them, and such literacy is not an innate but acquired ability from their previous knowledge and experiences. Unfamiliar visitors tend to fail museum learning because of their lacks of the literacy. Therefore, museums should compensate their shortages to develop their learning, but the way has yet to be revealed. This study aims to propose a way to support museum visitors to construct an interpretive framework for studying objects. We analyzed what kind of information constitutes museum literacy by reference to the previous researches. According to this analysis, we outlined a pedagogical process model named as the Cognitive Orientation of Museum and developed a learning material based on the COM to investigate this effect on an actual museum experience. We investigated the effects through a comparative experiment between the COM material and the other interpretative material. As a result, the COM model showed the positive effects on the users' museum learning.

Key words : Museum Education, Cognitive Orientation of Museum, Advance Organizer, Museum Literacy

1. INTRODUCTION

Museums have played a significant role of providing the environment for learning. The major missions of museums is providing in various learning settings due to the demands from the people in the society (Ogawa 2007). Art museums also are to be followed the theme of the learning missionaries (The Japanese Council of Art Museums 2004).

Hooper-Greenhill showed that the museum learning was frequently focused on objects in the museum that have driven the curiosities and accumulated as the abstract experiences and knowledge (Hooper–Greenhill 1999). Such an object–based leaning in the museum is highly depended on learners’ attitudes, previous knowledge, and experiences (Falk and Dierking 2000). Museum objects are considered to be hard to understand unless proper supports (Duesting 2002). In addition to that, due to the fact that most audiences of art museums belong to a novice level (Housen 1983), those would tend to fail to learn from the art objects.

Museum pedagogy is structured through narratives produced through by displays, and also through the style which these narratives presents. Art museums tend not to focus on educational activities comparing with other museums. However, compared to other types of museums, art museums would not be enthusiastic about educational activities (Dai–ich Life Reserch Institute 2006, Okumoto and Kato 2007–a), because of educational challenges art museums have. For example, in art museums and history museums, those would capture the meaning of the objects or exhibits through own perception and interpretation (Kojima 2006).

To develop meaning–making abilities in museum learning, contemporary theories of aesthetics are supporting the idea about that it would be essential to acquire knowledge and experiences rather than to perceptions (Paris and Hapgood 2002). Museum Literacy, the ability to interpret meaning for the objects in the museums, is also considered as a significant factor to learn from the objects and exhibitions in the museums (Stapp 1984, Silverman 1995). Hence, museum learning is a way not to provide straight forward instructions

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for the meaning of museum objects, but to enhance the visitors’ competence to be able to interpret them.

In this study, we propose an effectual model for pedagogical process of museum learning to promote the comprehensions of interpretations for museum objects even for those who are not familiar with them. To understand museum objects, many novices for the museums required to have Museum Literacy (Stapp 1984).

Our research is focusing on the abilities for deductive comprehension of museum objects, one of the themes for Museum Literacy, and is trying to overcome the difficulties of Museum Literacy for novices through providing tools for deductive inferences of museum objects. We planned pedagogical process model in museum learning helping deductive inferences of museum objects called as the Cognitive Orientation of Museum (COM) model. In this study, we are showing effectiveness of the COM model for museum learning done by the various experiments using the COM material and other interpretative material.

2. THE COM MODEL FOR MUSEUM LEARNING

2.1. Cognitive Process of Interpretation of Museum Objects

It is considered that visitors for museum understand characteristics of each object first, then find a relationship between objects and a comprehensive meaning, and finally gain new knowledge from museum objects (Hooper–Greenhill 2000) (Fig. 1). However, other studies showed that the experienced visitors would not follow such cognitive processes. Rather, presences of previous knowledge are contributed to their understanding of sentences or images (Ausubel 1963, Son and others 2008). Those are also true for the museum visitors, who had

![Diagram of the Hooper-Greenhill's interpreting process of museum exhibition.](image)

Fig. 1. The Hooper–Greenhill’s interpreting process of museum exhibition

For novice levels of the visitors for museums, conceptual orientation would help to interpret museum objects (Hooper–Greenhill 1999). Hooper–Greenhill (1999) said, “in order to relate to the content of a given exhibition, we need a pre–existing schema and people construct meaning and sense about the world, the patterns they create. Individual fragments of information or reality mean little. Meaning emerges through links and connections.” In addition to that, Falk and Dierking (1992) also pointed out that the visitors with “Museum-savvy” would realize the themes for exhibitions by connecting each objects from their comprehensive views, and investigate the meaning of objects in the exhibitions even lacking particular knowledge for some objects.

As summarized describe above, those who are considered to be expert levels of museum learners do not employ inductive manners for interpretation for each object, but comprehend a whole theme of exhibiton first, then realize cues of each object and finally manage to build the relationships from the meaning of each object. Such deductive processes for the interpretations of the objects in the museums can be outlined in Figure. 2. These deductive processes are considered as one of the major roles in the Museum Literacy.

2.2. COM Model

Museum experts are expected to capture a whole theme of the exhibition in the museum through their previous knowledge and speculate cues of exhibitions by connecting the meaning of each object (Hooper–Greenhill 1999, Falk and Dierking 1992). Meanwhile, museum novices may be lacking the abilities to interpret museum
objects from comprehensive point of view and may have difficulties with developing their interpretations of museum objects toward more abstract themes (Saito 1953,Persons 1989, Housen 1983, Falk and Dierking 1992). Accordingly, the novices for the museums may face the difficulties to understand the exhibition themes, and consequently may not interpret the meaning of the objects in the exhibitions with deductive manners. In order for them not to do so, providing instructions of the abstract images in comprehensive views such as the concepts of the exhibitions or the relationships among each object first would be appropriate. Then, supporting for those who are missing the concepts would be required. Most art museums are still challenging for making such learning environments (Sekine 1999).

Besides, museum novices tend to fail to recognize the points of the objects (Falk and Dierking 1992, Solso 1994), and consequently it could be inferred that no matter what the guides for the points of the objects is providing for the museum novices, they have difficulties with building the relationship between the points given by the concepts of the exhibitions themselves. That is, the museum learning providing for the novices would be following such manners that it connects between the prerequisite knowledge or information for the concepts and the points for the appreciations of these objects in the exhibitions. Gallery Talk, one of the major roles of prepared instructions for the exhibitions, may still cover less comprehensive manners towards the connections of the whole themes for the exhibitions and as a result, the novices may fail to draw the implicit meaning of museum objects (Okumoto 2006).

Under such considerations in the museum learning, we proposed the Cognitive Orientation of Museum (COM) model. The purpose of the COM model is to compensate for little museum literacy of the novices and to develop their original interpretation abilities by teaching resources in a deductive inference manner, like an exhibition theme, its construction and cues of each object.

In the COM model (Fig. 3), first novices learn a theme of a museum exhibition and next they learn the relative objects and the relationships. Afterwards, novices may understand a wide view of the framework in the museum exhibition. Showing the similarity or difference of these relative objects would be also helpful to understand the cues of objects for novices. Finally, novices would make some examples of interpretations generated by above explanations. These examples are very simple exemplification, so that most objects do not have such an inclusive example. The purpose of the COM model is not to teach novices what a meaning of an object is, but to help them how to make interpretations from it. So, it depends on learners how they understand the museum object and what they think from it even though its interpretation would be based on resources for deductive inference manners by the COM model. Moreover the COM model is following pedagogical process to provide information of objects effectively. In addition to that, the explanations for the objects are depended on a museum exhibition in the case of that it makes a learning material based on the COM model.

3. THE EXPERIMENTATION OF THE COM MATERIAL

3.1. The outline of the experiment
3.1.1. A comparative experiment between the COM material and the other interpretative material

In order to evaluate the effects of the COM model, we conducted a verification experiment based on the website in an actual exhibition. The experiment was held at a permanent exhibition of the work of Chu Asai and the Painters of the Barbizon School at the Chiba Prefecture Museum of Art in Japan. The Barbizon school refers to a group of painters who gathered at the village of Barbizon near Fontainebleau Forest, France, in the 19th century. Chu Asai is a local artist who was influenced by them. This exhibition consisted of 18 oil paintings and the materials based on the COM model dealt with 10 works of them. In order to examine of the effect for the COM model, we compared with other interpretive material, database-type interpretative material (the DB material).

![Fig. 3. The COM model](image-url)
3.1.2. The COM material

The COM material first showed themes included in the exhibition and an outline of the exhibition (Figure 4). The purpose of the top page is to let viewers know theme and a construction of the exhibition. There are three themes; “view of artists” (to know changes of works), “artists in the forest” (to know concepts of works), “how to depict nature” (to know styles of works). Viewers can choose each theme depending on his/her interest. The chosen theme is explained and three related topics are shown in the next page of the website (Fig. 5). At that point, viewers can understand the theme of the exhibition (Figure. 3).

When viewers choose single topic, three works are shown in the site and they are explaining similarity and differences in the next page (Fig. 6). The COM material also shows cues of objects by similarity or difference between these relative objects there (Fig. 3).

After clicking one of three works, it jumps into the next page where an example of interpretation of the work is explained (Fig. 7). There are three example pages and the third page has a click button to link a conclusion page. A conclusion page explains a common point of three works and gives advice for a viewer to focus on the points of the works (Fig. 8).

3.1.3. The Data Base(DB) material

Compared to the COM model developed by this study, the DB material only gives a single meaning of each picture (Fig. 9). Recently, many museums including the Chiba Prefecture museum developed and used these types of materials. The DB material is considered to be an orthodox learning material prior to appreciation of the objects, so that it would be suitable for us to use the DB material as a control. The DB material explains a background and a point to see a work when viewer clicks its thumbnail. The DB material also deals with the 10 works same of the COM material, and
including all information, which the COM material has (not included in nonobjective explanation. e.g., Works of art are influenced by various backgrounds, and focus on how Chu Asai created his works and changed his styles). The differences of both the DB material and the COM material are based on the structures of information. The COM material is generated based on the information for the exhibition from the abstract idea to concrete points and focuses on the relationship among the works; on the other hand, the DB material does not have such a structure and explains solely a single work. Furthermore, the COM material contains the conclusion page to notice cues of works, while the DB material does not have one. The COM material was developed to understand museum objects deductively, which the DB model was not done.

3.2. Subjects
The subjects in this study were 42 young people (aged: 18 to 31 years old). Subjects were restricted to novice museum visitors because of under the specific research condition. In this study, we followed following definition of 'Novice':[1] they had not visited any art museums more than three times a year (Hooper-Greenhill 1994); they had visited the Chiba Prefecture Museum less than three times in their life; they had not studied art history or related subjects at a higher education level; and they can not answer every question about the exhibition. The subjects were randomly divided into 2 groups. The COM group (21 subjects; 6 men) were used the COM material before entering the exhibition room, while the subjects for DB group (21 subjects; 7 men) used their associated materials for the same of the COM group did. The pre-visit questionnaire showed no significant differences between subjects in the two different groups. Also there is no significant difference between average ages of these groups.

3.3. Data Collections
The purpose of this experiment is to evaluate how much museum experiencers are influenced by materials and how much both materials can evoke original interpretations of subjects. We collected dates at following three steps; before and after subjects used materials, the time for they saw museum objects, after they finished their appreciations of the exhibition.

In order to examine the effectiveness of the materials, pre-post questionnaires were used. The questions of pre-post questionnaires are almost same. There are six questions related to an attitude toward art appreciation, and the other six questions were for strategies to look at art. The one question was changed the words and the orders of whole questions were changed in the pre-post questionnaires. Then, we recorded the time for each subject spending in the exhibition room. The objects were asked to record the mind map typed worksheet, which is used as a diagram used to assess their knowledge, ideas, impressions, or other notes related to the exhibition in general. In order to evaluate their museum experiences, we conducted the post-questionnaire and the semistructured interview.

3.4. The Procedure of Experiment
The experiment was held in the exhibition room and an adjacent foyer which is occupied for this experiment. First, we distributed to the face sheet to affirm the subjects’ levels and the pre-questionnaire. And the both groups prepared their respective materials with no time restrictions. We directed them to see only specified pages to control the both groups, but we could not to avoid them to go back previous pages. After using the materials, they filled out the post questionnaire. They then visited the exhibition room and viewed the paintings with no time restrictions and completed the worksheet there. When finished in the exhibition room, they returned to the experimental room and filled out the final questionnaire with their impressions of the museum experience. Finally, they were interviewed about their experiments and worksheets.
4. THE RESULT AND ANALYSIS

4.1. The Use Effect of the COM Material

The use effect of each material was evaluated by the pre–post questionnaires (table 1). There are 12 questions and the questionnaire used a 6-point scale (1: not at all – 6: very much). There are significant changes in 8 questions. These changes are considered to be effects of pre-visit learning through materials. This research focused on the significant difference between both materials. The pre–post questionnaires showed the effect on the extent to which subjects would notice the point of the pictures. Mann–Whitney’s U–test shows that the COM group significantly more agreed with the question 1–7 (I know cues of pictures.) than the DB group and disagreed against the question 1–8 too. The COM material can be expected to be more useful to learn points of objects than the DB material.

While, the DB group significantly more agreed with the question 1–5 (We can know works of art well without visiting to museums) than the COM group. After using materials, the DB material users took no count of museum experiences while the COM users valued museum experiences. This result indicates that the DB material helps to teach information of exhibitits but does not enhance users’ motivations for museum experiences. However the COM material is expected to motivate users to look at objects in museums.

4.2. The Effect in the Museum

4.2.1. Difference of Time Spent in the Exhibition Room

According to Krops and Worlins (1989), those who have museum learning schema stay longer in exhibition rooms. And Melton (1988) said that the time spent in the exhibition room is related to a degree of interesting. Therefore a learning effect is expected to be associated with time spent in the exhibition room. This research timed the length of time both groups spent in the exhibition room. The COM group spent 38 minutes on average, while the average of the DB group was 26 minutes (Table 2). Therefore, the COM material is thought to be effective on users’ learning in the exhibition room. According to Dean (1984), the time spent in exhibition rooms increases in proportion to the learning level of museum visitors.

<table>
<thead>
<tr>
<th>(COM group N=21 DB group N=21)</th>
<th>Average Value</th>
<th>Median</th>
<th>Average Value</th>
<th>Median</th>
<th>Wilcoxon rank test</th>
<th>Mann Whitney’s U test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–1 I have pictures which I want to see in the exhibition.</td>
<td>DB: 1.33</td>
<td>1</td>
<td>3.71</td>
<td>4</td>
<td>-317 **</td>
<td>-0.33</td>
</tr>
<tr>
<td></td>
<td>COM: 1.57</td>
<td>1</td>
<td>3.62</td>
<td>4</td>
<td>-343 **</td>
<td>-0.58</td>
</tr>
<tr>
<td>1–2 I will decide what I see in the exhibition room.</td>
<td>DB: 3.38</td>
<td>4</td>
<td>3.86</td>
<td>4</td>
<td>-1.62</td>
<td>-0.27</td>
</tr>
<tr>
<td></td>
<td>COM: 3.57</td>
<td>4</td>
<td>3.81</td>
<td>4</td>
<td>-0.93</td>
<td>-0.27</td>
</tr>
<tr>
<td>1–3 Pre: I’m more anxious to look at pictures than to read captions. (Post: I want to look at pictures without reading captions because I read them in the materials.)</td>
<td>DB: 3.81</td>
<td>4</td>
<td>3.19</td>
<td>3</td>
<td>-1.96</td>
<td>-0.27</td>
</tr>
<tr>
<td></td>
<td>COM: 4.43</td>
<td>4</td>
<td>3.14</td>
<td>3</td>
<td>-2.45 **</td>
<td>-0.27</td>
</tr>
<tr>
<td>1–4 I want to read captions when I look at pictures.</td>
<td>DB: 3.9</td>
<td>4</td>
<td>4.48</td>
<td>4</td>
<td>-1.7</td>
<td>-0.34</td>
</tr>
<tr>
<td></td>
<td>COM: 3.9</td>
<td>4</td>
<td>4.67</td>
<td>5</td>
<td>-2.33 *</td>
<td>-0.34</td>
</tr>
<tr>
<td>1–5 We can know works of art well without visiting to museums.</td>
<td>DB: 2.85</td>
<td>3</td>
<td>3.24</td>
<td>3</td>
<td>-1.29</td>
<td>-2.48</td>
</tr>
<tr>
<td></td>
<td>COM: 3.05</td>
<td>3</td>
<td>2.48</td>
<td>2</td>
<td>-1.87</td>
<td>-2.48</td>
</tr>
<tr>
<td>1–6 I think my interpretation of works can be developed when I look at a real work even I knew its information already.</td>
<td>DB: 5.05</td>
<td>5</td>
<td>4.95</td>
<td>5</td>
<td>-0.46</td>
<td>-0.36</td>
</tr>
<tr>
<td></td>
<td>COM: 4.86</td>
<td>5</td>
<td>5.14</td>
<td>5</td>
<td>-1.15</td>
<td>-0.36</td>
</tr>
<tr>
<td>1–7 I know cues of pictures.</td>
<td>DB: 1.76</td>
<td>2</td>
<td>2.52</td>
<td>2</td>
<td>-2.44 *</td>
<td>-2.3</td>
</tr>
<tr>
<td></td>
<td>COM: 1.48</td>
<td>1</td>
<td>3.62</td>
<td>4</td>
<td>-312 **</td>
<td>-2.3</td>
</tr>
<tr>
<td>1–8 I don’t know where I should focus on.</td>
<td>DB: 3.95</td>
<td>4</td>
<td>3.52</td>
<td>3</td>
<td>-1.71</td>
<td>-2.38</td>
</tr>
<tr>
<td></td>
<td>COM: 4.43</td>
<td>4</td>
<td>2.9</td>
<td>3</td>
<td>-329 **</td>
<td>-2.38</td>
</tr>
<tr>
<td>1–9 We should know pictures before to see them.</td>
<td>DB: 3.1</td>
<td>4</td>
<td>4.33</td>
<td>4</td>
<td>-301 **</td>
<td>-1.75</td>
</tr>
<tr>
<td></td>
<td>COM: 3.67</td>
<td>4</td>
<td>4.76</td>
<td>5</td>
<td>-363 **</td>
<td>-1.75</td>
</tr>
<tr>
<td>1–10 I think previsit learning is useless to see pictures.</td>
<td>DB: 2.33</td>
<td>2</td>
<td>1.86</td>
<td>2</td>
<td>-2.49</td>
<td>-0.23</td>
</tr>
<tr>
<td></td>
<td>COM: 2.29</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>-1.6</td>
<td>-0.23</td>
</tr>
<tr>
<td>1–11 In order to understand an exhibition, we should understand only each meaning of painting.</td>
<td>DB: 2.86</td>
<td>3</td>
<td>2.29</td>
<td>2</td>
<td>-1.95</td>
<td>-0.23</td>
</tr>
<tr>
<td></td>
<td>COM: 3.19</td>
<td>3</td>
<td>2.29</td>
<td>2</td>
<td>-2.48 **</td>
<td>-0.65</td>
</tr>
<tr>
<td>1–12 In order to understand an exhibition, we should understand a relationship among paintings.</td>
<td>DB: 3.33</td>
<td>4</td>
<td>4.19</td>
<td>4</td>
<td>-2.72</td>
<td>-0.19</td>
</tr>
<tr>
<td></td>
<td>COM: 2.9</td>
<td>3</td>
<td>4.19</td>
<td>4</td>
<td>-3.76 **</td>
<td>-0.19</td>
</tr>
</tbody>
</table>

\( P<.05, P^{*}<.01, P^{**}<.001 \)
Museum experts tend to look at exhibitions with time and care in order to understand them. On the other hand, museum novices would tend to overlook important cues of museum objects. The subjects of our research are focusing on the novice level, so that the DB group was possible to overlook information of the exhibition more than the COM group. In the case of the COM material users, the length of time is related to their fulfilling experientials. For example, T (female: the COM user) who stayed in the exhibition room for 58 minutes said as below.

Q: You stayed in the exhibition room for nearly 1 hour...;
T: I did not feel so long, 1 hour... , umm.
(snip)
Q: Do you think the COM material leaded to a change in your behavior?
T: I think so. I could consider about objects by using the COM material. It was the first time for me to stop in front of the one picture for a long time.

T spent for a long time because she considered objects, thus it is thought as the longer time spending in the exhibition room because subjects tried to interpret and understand museum objects more.

4.2.2. Analysis of Mind Map Typed Worksheet
The COM group wrote words and links in the worksheet significantly more than the DB group did (table 3). It would appear that the users of the COM material were evoked from the museum objects. And it can be expected that the COM people stayed in the exhibition room longer because they were considering for museum objects.

<table>
<thead>
<tr>
<th>Table 3. The average links and words in the worksheets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COM</strong></td>
</tr>
<tr>
<td>Links</td>
</tr>
<tr>
<td>Words</td>
</tr>
</tbody>
</table>

Moreover the descriptions and links were categorized by two professionals. Firstly they defined categories of words written in the worksheet (table 4). All information written in both materials and captions in the exhibiton rooms describes as the category of “copy”. The other descriptions are original words of subjects, and these descriptions were put into some categories with definition of table 4 by the professions. When the one disagreed with the other person, they discussed and decided the category. The links written in the worksheet were categorized into two groups: the inside link is a link which connects descriptions of only one work; the outside link is a link which connects description of some works. The coefficients of reliability (cronbach’s $\alpha$) of two peoples’ categories were $\alpha = 0.958$ in the case of descriptions and $\alpha = 0.964$ in the case of links. As a result of the chi-square test there is a significant difference between the worksheets of the two groups ($\chi^2(7)=39.57 \ p,<.001$). A residual analysis showed the categories of “Subject (abstract noun)” and “Analysis” were significantly more included in the worksheets of the COM group than the worksheets of the DB group, and the category of “Impression” was significantly more included in the worksheets of the DB group (table 5). Moreover there is a significant different between the percentages of links of the two groups ($\chi^2(1)=10.1 \ p,<.001$). The inside links were more included in the COM group’s

<table>
<thead>
<tr>
<th>Table 4. The categories of the words in the worksheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>category</strong></td>
</tr>
<tr>
<td>Copy (simple noun)</td>
</tr>
<tr>
<td>Subject (abstract noun)</td>
</tr>
<tr>
<td>Subject (abstract noun)</td>
</tr>
<tr>
<td>Technique</td>
</tr>
<tr>
<td>Historical term</td>
</tr>
<tr>
<td>Impression</td>
</tr>
<tr>
<td>Analysis</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>
worksheets, and the outside links were more included in the DB group’s ones (Table 6).

The descriptions which are abstract themes of works subjects thought and such themes were not painted directly in works (eg. “Autumn” “Singleness” or “Useful”) were put in the category of “Subject (abstract noun)”. Therefore the COM group tended to understand works of art from abstract perspectives considering. The category of “Analysis” covered descriptions to analyze works of art reasonably. For instance, M (female: the COM group) wrote her worksheet as Fig. 10. Fig. 10 shows the process of analysis of Asai’s works. There were 4 works of Asai in the exhibition room, and all links of Fig. 10 are outside links because all descriptions refered to general characteristics of Asai’s works. She copied Asai’s information of the COM material, and wrote her viewpoint to analyze his works (How his works were changed?). She discovered that “he graded a skyline to depict the expanse of the sky” (Technique) from exhibits, as a result she concluded that “the change of his works can not categorically describe as a shift from dark tone to light tone, but he changed the use of light even he used dark colors” (Analysis).

The analyses of the COM users did not only use the information of the COM material, but also were generated by the observation based on the information of the COM material. Therefore their original interpretations were consisted of the information of the COM material, of discoveries from their observations of real works, and of their original analyses, so that the COM material triggered their observations and analyses. The previous studies reported that generally only museum experts analyze factors of a picture and interpret without an impression of picture by their personal tasetes (Housen 1983, Persons 1989). However the COM users who were novices were favored to analyze works, thus it can be said that the COM material helped them to interpret the exhibits like a museum expert. In addition to that, many outside links in the COM users’ worksheets tell that they focused on the relationship among works and connected each work from more abstract perspectives. As previously explained, museum experts usually have such an abstract viewpoint, but the result of the experiment showed that the COM users also had it. The analysis for the worksheet shows that the COM users could interprept works from abstract viewpoints, connect each work, and construct the network of the objects logically. These appreciation actions are similar to the deductive interpreting process shown in Fig. 1. To interpret museum objects deductively, the COM material could compensate for lacking of novices’ Museum Literacy to interprept museum objects with their original viewpoints. Consequently, the COM material is useful to help museum novices to make their original interpretations.

On the other hand, the DB group wrote descriptions categoalized into “Impression” (eg.
“The title of picture”-“the sky is beautiful.”). The “Impression” descriptions are considered as a personal impression not to be based on the material’s information or discoveries from real objects. People with such perspectives can understand limited works and try to understand works with only their existing knowledge (Macedrrom-Lewis 1990).

Eventually the COM users can interpret museum objects well and their interpretations are similar to the ones that those experts have.

4.3. The Analysis of The Final Questionnaire

The final questionnaire consisted of 18 questions and used a 6-point scale (1: not at all - 6: very much). According to the result of the final questionnaire, the material type was found to have a significant effect on subjects’ museum experiences. Table 7 shows the result in detail. The COM group had higher scores of the question 2-1 (I think the previous learning enhanced my museum experience.) than the DB group. It can be said that the COM user realized their museum experiences became rich by the COM material. And there were marginal significant differences in the question 2-10 (I looked pictures in my chosen order.) and the question 2-14 (I decided what I wanted to look in advance.), so that the COM users were apt to be proactive in the exhibition. The COM group also had a higher score of the question 2-4(I was impressed when I looked real pictures.). Moreover the COM group marked higher scores in the question 2-3 (I want to visit museums again to look pictures.) and 2-5 (I would like to learn pictures more.) which are related to the motivation to the next museum visit.

On the other hand the DB group got a higher score of the question 2-18 (one object was not moved by this exhibition because one object saw pictures beforehand.). The DB group was also apt to think that they can know works of art well without visiting to museums (the question 1-5 of the pre-post questionnaire). Their museum experiences with real exhibits were thought to be inferior to the COM group’s ones.

5. CONCLUSION

In this study, we are focusing on a pedagogical process model to develop original interpretations of museum objects for museum novices who have less Museum Literacy. So, this study suggested the COM model is providing novel model for a deductive inference. Also we developed the COM material based on the COM model. The effect of the COM material was evaluated comparing with the typical interpretation material, the DB material. The result of the experiment shows that
the COM material promoted the users’ original interpretations. And such original interpretations increased with the satisfaction of the museum experience and the motivation to the next museum visits. Consequently, the COM model can be useful to make an effective leaning material for museum novices. As future work, the COM’s mechanism to support learner’s interpretation must be declared.

This research was held in the art museum, but the other research was conducted in the other type of museum and this research showed similar effects, so that the COM model could be applied to history museums and cultural museums too. However we should collect more data from practical experience in other types of museums too. Finally, we think the COM model is the learning model to support compensation for less Museum Literacy visitors, so that the COM users enhanced to interpret museum objects based on the information of the material. Hence, they could not understand museum objects without the COM material because the COM material did not solely support to enhance their Museum Literacy themselves. In the future, we should seek for a possibility to develop their Museum Literacy with a long-term vision.

REFERENCES


