

FACILITATING CONSTRUCTIVISM STUDY IN ONLINE MUSEUM VIA SOCIAL MEDIA

Cui Binyue and Yokoi Shigeki

*Dept. System and Social Informatics, Graduate School of Information Science
Nagoya University, Nagoya, Aichi, Japan*

Keywords: Constructivism Study, Online Museum, Social Media.

Abstract: With the development of Web 2.0 technologies, online museums generally attract online visitors to constructivism study which is related but not limited to the physical experience in a real museum. Constructivism study theory indicates that the study will be happened most effectively when learners create physical artifacts or discuss with fellow learners around certain topics or knowledge. In this paper, we address integrating social media with online museum, forming the circle of attracting users, supporting communication, accumulating knowledge, disseminating knowledge via social media and then attracting more users. During this circle, facilitate users' constructivism study by providing contextual knowledge relevant to a certain collection and make learning be a social activity via social media.

1 INTRODUCTION

Online museum has been acknowledged by most people as a unique method to spread knowledge of different fields and evoke their interests to learn more online. It popularizes professional or historical knowledge among people especially young persons who master skills to communicate one another interactively on internet via countless and new emerging social media.

As a conspicuous function of modern museum, public education of museum plays a very important role in school education and social education. The appearance of online museums obviously brings a broad platform for physical museums to fulfil their public education obligation. Therefore, besides basic information of collection, many famous online museums try to provide online users with related references about artworks online, such as what the metropolitan museum of Art (America) has done. Online museum is a good approach to push knowledge to users.

On this occasion, online museum plays a role of teacher in traditional education model. It defines the construction or framework of history knowledge in advance, based on which, adding related information such as images, videos or other instructions. Users learn the history knowledge prepared beforehand,



Figure 1: Citation info of a collection in online museum of the metropolitan museum of Art, New York From: <http://www.metmuseum.org/toah/works-of-art/1989.314.15a,b>.

just like read a vivid textbook-the “knowledge source” from Internet. This is a typical Teacher-centric model, the visitors of online museum have to receive knowledge passively, Mark B. Yearly pointed out, the traditional instructor should serve as “facilitator of knowledge”, rather than “source of all knowledge” (Mark B. Yearly, 1998). In practice, the result of received knowledge passively by learners can not as good as accepted knowledge actively. Consequently, during the process of education via online museums, some improvements for user experience are really necessary. Firstly, different persons have different preferences, knowledge backgrounds and learning habits. So, different knowledge and different educational methods are necessary to cater to diverse demands. Educational model ought to be transferred from teacher-centric to user or learner-centric. Besides brief introduction and related images or 3D models, excavate a proper model to present knowledge behind collection are

able to inspire users' learning interests to historical knowledge and cultures. Context knowledge around collections will broaden the breadth of knowledge so that there will be some overlaps between knowledge of users' background and knowledge of collection presented online. Secondly, selections of knowledge from different sources will enrich collection database. Finally, inspire enthusiasm in users to empower them to deeply mine related knowledge consciously.

Constructivism learning theory indicates the learning will be happened most effectively when learners in the active role to create physical artifacts or to discuss with fellow learners around certain topics and knowledge. The development and widespread usage of social media, such as facebook, yahoo, mysapce and etc, have been integrated into people's social life, which gives us powerful tools to facilitate users' constructivism study effectively via online museum.

2 APPLICATION OF SOCIAL MEDIA IN MUSEUM

With the surge of Web 2.0 technologies, almost all of the social life of people can be recurred online. Social media, obviously, plays an essential role in this process due to its popularity, agility and convenience. The rise in the number of Web 2.0 technologies' applications make many researches focus on social media in museums. Museums explore new spaces and attract more audiences via social media's application, whilst broadening and deepening knowledge around collections.

Andreas Kaplan and Michael Haenlein defined social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content."(Kaplan, A., & Haenlein, M., 2010).

In retrospect, after internet's popularization two decades ago, never before, we have so much information over internet, never before, we have so many online tools and opportunities to share and get individual comments, ideas, knowledge and even experiences via images, text messages, videos, sound files, 3D models or panorama photos with one another by networks freely and easily.

Jeff Gates(2010) pointed out, "instead of a one-way presentation, our on-line visitors are often interested in having a conversation with our curators and content providers", whilst, social media, such as

Blogs, Twitter, Wikipedia and Facebook, is challenging the traditional flow of information throughout a institution and out in the world. The America Art Museum has three Twitters and Facebook Feeds respectively, one Flickr account and museum blog which are managed by different departments. This museum tweets about upcoming events or related links to its web-based contents, including blogs, Facebook posts, Flickr streams.

Chan and Spadaccini(2007) suggested, blog can be used as the first step for curatorial team's use of social media, and it is cheap, simple and easy to set up. Nina Simon (2009) suggested that museums should bring social media type platforms to physical museum. Erika Dicker (2010) surveyed 96 curators from Australia, UK, USA and New Zealand in November, 2009, and found the "biggest impact of social media was its ability to connect information and collections with a new and wide audience". However, in Erika Dicker's survey, he found some curator thought that using social media will take lots of time, whilst, they worried about that disseminating knowledge around collections via social media will lose their control of contents, or authoritative voice.

These researches focused on the relationships between museum and public audiences. They did not pay more attention to how to gather related knowledge for online collections so that facilitate museum audiences' online learning via social media. Based on constructivism study theory, learner should have necessary background knowledge, based on which, they organize their knowledge construct and absorb new knowledge. In addition, knowledge exchange among learners or learners and curators will help learners get better study effect.

Obviously, social media is a good choice to carry out constructivism study among audiences and curators or other museum professionals. On one hand, it can disseminate and amassing contextual knowledge, on the other hand, social knowledge generated by users in social media format can be used as supplementary to present online collections, no matter the knowledge is professional or unprofessional.

3 LITERATURE REVIEW OF CONSTRUCTIVISM STUDY

Jean Piaget has done important works on Constructivism learning theories. This theory is inspired by the constructivist theory, based on which

individual learners construct mental models to understand the real world around them. But, constructionism holds that learning can happen most effectively while learners are active in making tangible object correspondingly in the practice. It is somewhat related with experiential learning and some ideas of Jean Piaget. On this basis, Seymour Papert succeeded work of Jean Piaget in Constructivism learning theory and developed an original and highly influential theory on learning that called constructionism or constructivism learning theory.

Constructivism learning theory said that “humans generate knowledge and meaning from an interaction between their experiences and their ideas (During infancy, it is an interaction between their experiences and their reflexes or behavior-patterns)” (Wikipedia, 2010).

Constructionism as a learning theory places students or learners in the role of designers and focuses on creating physical artifacts in a social environment, meanwhile, learners discuss with fellow learners and others in their social community online (Papert, S., 1991; Kafai, Y. B., 2006); Papert (1991) addressed that learning “happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe”. Young and Maxwell stated that constructionism emphasizes the construction of new knowledge by learners, meanwhile, focus on active learner-centered experience (Young, L. E., Maxwell, B., 2007). Ayşe Okvuran stated that according to constructivism approach, “education is given in student-centric, experience based, multiple communication and learning environments and assessed in cognitive, affective and motor dimensions (Ayşe Okvuran, 2010).” Bruner (1973) emphasized that learning is a social process, whereby the learner construct new concept based on current prior knowledge. The learner select information to construct hypotheses and make decision, till put new knowledge into existing knowledge framework, turn the new knowledge into a part of existing prior knowledge. This principle is the same as that of constructivism study.

In recent years, the emergence of internet brought a variety of Web 2.0 tools for online teaching and learning. With the changing of educational environments, constructivism study has more opportunities to be fulfilled online due to its benefit of convenience. Museum as the important public education institute, should explore social

platform around collections so that facilitate audiences’ constructivism study online.

4 CONSTRUCTIVISM STUDY IN ONLINE MUSEUM

If users are interested in certain collection or history originally, it of course will attract them to learn more. However, the majority of existing online museums as “knowledge source” pushed knowledge around collections to users. Knowledge about collections is defined in advance, users have to read or receive it passively. The data flow is unidirectional. It is teacher-centric educational model. As mentioned above in section three of this paper, constructivism study is a more effective study method when it occurred while learners are consciously engaged in constructing an entity or a theory. It is doubtless, if there are channels for online users to get more vivid materials relevant to certain topic or collection according to the knowledge frame build by the knowledge display in online museum, they will be interested in the knowledge. When users or learners are in active position, they will mine more useful information as possible as they can. Thus constructivism study in online museum is carried out.

Consequently, there are several points are very important during the course of building constructivism study in online museum. Firstly, attract audiences to the online museum, and evoke their interests to historical cultures and heritages. Secondly retain them and let them learn more. Thirdly, provide them with communication platform for their constructivism study. We can build some channels between online museums and social media, via which to attract more new audiences for museum. Finally, disseminate the knowledge via social media again so as to attract more participation in the active study process.

4.1 Attract Users

Online museum as the supplementary and development of physical museum, is carrying out education obligation in most cases. Constructivism study is known as an effective study method, in which massive participation of users is necessary. How to attract audiences to visit to one online museum? How to grad audiences’ interests to collections? The first step is to build a multi-accessible way for audiences to know there is an

online museum. The most convenient and simply way is to let users share certain collection page via social media. Take Twitter for example, if one user sent collection tweets via Twitter, the users who are following him or he is following will get the tweets, obviously, the tweets will be spread just seems rolling a small snow ball down a mountain. It's self-evident.

4.2 Evoke Users' Interests to Historical Knowledge and Retain the Users

In an online museum, the more knowledge there is, the higher probability that there are the overlaps between it and prior knowledge of users. The overlaps of knowledge will lead users to know more consciously.

When users enjoy a collection online, besides basic introduction, they will be curious at the related information and the stories behind it. They may desire to know why it is famous. If we could provide the knowledge and stories behind a collection in a proper or convenient way, we can do attract and interest massive users, and then retain them in the online museum for further study.

4.3 Support Active Collaboration and Communication in Constructivism Study

Collaboration and discussion around certain topics are essential parts during the course of constructivism study. Besides attracting users to visit online museum, communication space around one collection should be built for users to study and discuss at real time. Exploring a communication space, in which, users are able to discuss or share knowledge from their Blog, websites, or other web resources. In active situation, users can contribute a lot. If there are something interesting about one collection, user trends to find further details that cannot find in online museum. This further details or knowledge are once shared, it will be turned into useful study materials. When there are enough users in the communication space, the quantity of knowledge can be dramatically increased. The cluster effect can also work when it comes to attracting online users.

4.4 Accumulate and Disseminate Knowledge at the Same Time

Web technologies have the potential to expand the depth and scope of the knowledge (Vulpe, M., 2005).

Via communication space of online museum, knowledge around different collections is gathered. From attracting users, to building communication space for facilitating users' active collaboration and communication, and then gathering professional and unprofessional knowledge is not the end of one circle. The last step is disseminating the gathered knowledge via social media to attract more users, thereby to begin the next circle. The evolution of this circle will be promoted. In the course of evolution, knowledge relevant to certain topics will be accumulated gradually from users distributed in different social media. The circle process can be illustrated by Figure 2.

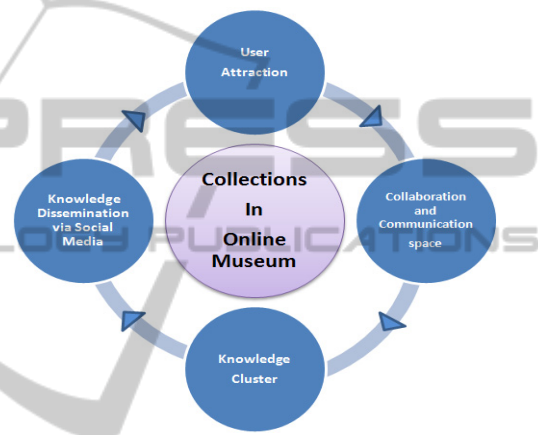


Figure 2: Circle of Facilitating Constructivism Study in online museum via Social Media.

5 FACILITATE CONSTRUCTIVISM STUDY IN ONLINE MUSEUM VIA SOCIAL MEDIA

According to constructivism study, the essential part of this study process is to build a communication channel among the people who have same learning interests potentially. so as to the discussion and cooperative learning among learners carried out in real world, the most popular method is cooperative learning through all kinds of social medium.

Social media can empower people with Just-in-Time learning of knowledge in any field. To some extent, it is universal wisdom, through which, one can benefit a lot in learning something that he is interested in and lead him learn more actively in the course of connection with like-minded people with whom they can communicate and share comments to

certain topic, ideas, resources, experiences and so forth.

In an online museum, social media can facilitate users' constructivism study. To a better study, George E. Hein (1991) pointed out nine principles of constructivism study in museum, we take two typical principles, "Learning is contextual" and "Learning is a social activity", for example to illustrate that social media can facilitate constructivism study in online museum. Then, we will analyze that social media will facilitate users' constructivism study in online museum from these aspects.

5.1 Provide Contextual Knowledge Relevant to a Certain Online Collection via Social Media

Constructivism study emphasizes that "Learning is contextual". Learners learn can hardly learn isolated some knowledge and theories in some "abstract ethereal land of the mind separated from the rest of our lives". People learn new from what they have known, and what they believe. In online museum, there should be enough knowledge about collections to make sure that the users or learners can get clear guidance and enough background contextual knowledge to have confidence to achieve more knowledge they are interested in. For this purpose, we not only provide users with the basic information of collections from museum documents, but also give users visualized geographic information on Google Maps, and retrieve social knowledge relevant to a certain online collection from typical social media –Wikipedia dynamically at real time. Meanwhile, top 10 latest messages retrieved from Twitter in term of the title of collections can also be accessible in web page of each collection in online museum. Both professional knowledge and social knowledge formed users' basic background knowledge to one collection online obviously. With this background knowledge, users trend to learn more relevant to what they have learnt from online museum. This part of system functions are available in our previous research cooperated with TOKIGAWA Art Museum (Nagoya, Japan).

5.2 Make Learning in Online Museum a Social Activity via Social Media

In constructivism study, "Learning is a social activity" (George, W. et al., 2006), which means learning is naturally associated with individuals' connection with other people. For online visitors,

they learn with like-minded persons or other people who have similar interests to collaborate, and co-create content around certain topic or collection, thus learning will be more effective and active. Exploring a communication space in online museum, allows users to interact with other users who visit online museum or users come from social media, such as Twitter. Interactions between user of online museum and social media, obviously take full use of social wisdom to facilitate ordinary users' or history beginners' active study online. The historical local cultures or heritages are able to preserve and success with aid of powerful influence of social media.

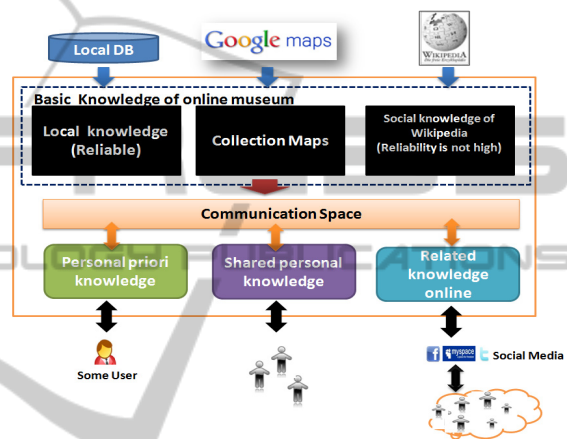


Figure 3: Knowledge distribution of this online museum.

The knowledge distribution of this online museum can be illustrated by Figure 3. During users' constructivism study in online museum, users will learn with his or her personal knowledge and knowledge from other users via social media.

5.3 Knowledge Flow in Integrating Social Media with Online Museum

The knowledge flow of integrating social media with online museum can be shown as Figure 4 below. When users visit an online museum by chance, they will be attracted by the rich contents of online collections from both local database and social media or other web sites. Then, they will stay in online museum and assimilate the knowledge, of course, recommend what they are fond of to their friends via Twitter or other social media in many cases. Thus more users will be gathered together to discuss or exchange attitudes to a topic, furthermore, share different kinds of knowledge that come from individual blogs, special web pages, subscribed RSS, Twitter etc. Knowledge clustered around one topic

will broaden the scope and depth of constructivism study in online museum.

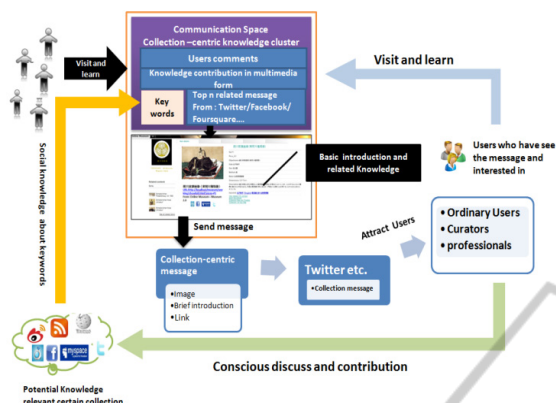


Figure 4: The process of constructivism study in online museum with social media.

6 CONCLUSIONS

Based on the analysis aforementioned, constructivism study in online museum is a circle from (1) to (4), and then go round and begin again.

- (1) Attract users;
- (2) Evoke users' interests to historical knowledge and retain the users via interactive platform for collaboration learning;
- (3) Accumulate knowledge;
- (4) Disseminate knowledge.

During the process of constructivism study in online museum, users have opportunities to access plenty of social knowledge and countless resources relevant to a topic or an object, such as videos, messages, podcasts and blogs. Integration the cluster of knowledge from social media with online museum, on one side, will deepen the depth of constructivism study due to providing users with much related contextual knowledge by which they are promoted to further explore in certain field. On the other side, social media, as social wisdom, will expand the scope of constructivism study thanks to covering extensive fields and regions.

ACKNOWLEDGEMENTS

The authors thank the Tokugawa Art Museum who provided materials of rare antiques and valuable suggestions.

REFERENCES

Ayşe Okvuran. (2010). The relationship between arts education, museum education and drama education in elementary education, *Original Research Article Procedia - Social and Behavioral Sciences*, 2-2, 5389-5392.

Bruner, J. (1973). *Going beyond the information given*. New York: Norton.

Chan, S. & J. Spadaccini (2007). Radical trust: The state of the museum blogosphere". In J. Trant and D. Bearman (Eds.). *Museums and the Web 2007: Proceedings*. Toronto: Archives & Museum Informatics, published March 1, 2007. <http://www.archimuse.com/mw2007/papers/spadaccini/spadaccini.htm>

Dicker, E. (2010). The impact of blogs and other social media on the life of a curator. In J. Trant and D. Bearman (Eds.). *Museums and the Web 2010: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2010. <http://www.archimuse.com/mw2010/papers/dicker/dicker.html>

Fensham, P. J. (1992). Science and technology. In Jackson, P. W. (Ed.), *Handbook of Research on Curriculum*, Macmillan, New York, 789-829. <http://www.archimuse.com/mw2005/papers/vulpe/vulpe.htm#ixzz10i2iZsAf>

Gates, J. (2010). Clearing the path for sisyphus: How social media is changing our jobs and our working relationships. In J. Trant and D. Bearman (Eds.). *Museums and the Web 2010: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2010. <http://www.archimuse.com/mw2010/papers/gates/gates.html>

George, E. Hein (1991). Constructivist learning theory. In the Museum and the needs of people, (CECA) *International Committee of Museum Educators*, paper presented at Jerusalem Israel, (pp.15-22).

George, W. Gagnon, Jr. & Collay, M. (2006). *The book, Constructivist Learning Design: Key questions for teaching to standards*. Corwin Press.

Kafai, Y. B. (2006). Constructionism. In K. Sawyer (Ed.), *Cambridge Handbook of the Learning Sciences*. Cambridge: Cambridge University Press.

Kaplan, A., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59-68. Kelley School of Business, Indiana University. <http://linkinghub.elsevier.com/retrieve/pii/S0007681309001232>

Vulpe, M. & J. Sledge (2005). Expanding the knowledge base managing extended knowledge at the national museum of the american Indian, in J. Trant and D. Bearman (Eds.). *Museums and the Web 2005: Proceedings*, Toronto: Archives & Museum Informatics, published March 31, 2005 at <http://www.archimuse.com/mw2005/papers/vulpe/vulpe.html>

Papert, S. (1991). Situating constructionism. In I. Harel & S. Papert (Eds.), *Constructionism, 1-11*. Norwood, NJ: Ablex.

- Simon, N. (2010). How much time does Web 2 take?, updated 10 April, 2008. Sourced January 17, 2010. <http://museumtwo.blogspot.com/2008/04/how-much-time-does-web-20-take.html>
- Yeary, M. B. (1998). Teacher-centered to learner-centered educational model, Proceedings Frontiers in Education 1998 Conference, Tempe, Arizona. Nov. 4-7, 1998.
- Young, L. E., Maxwell, B. (2007). Teaching nursing: theories and concepts. In Young, L.E., Paterson, B.L. (Eds.), Teaching Nursing: Developing a Student-Centered Learning Environment. Lippincott Williams and Wilkins, Philadelphia, 8-19. [http://en.wikipedia.org/wiki/Constructivism_\(learning_theory\)#cite_note-0](http://en.wikipedia.org/wiki/Constructivism_(learning_theory)#cite_note-0), 2010, Wikipedia.

