The Public Website on Museum Collections in Korea "eMuseum" and the Website of the National Museum of Korea

Introduction

The National Museum of Korea introduces information on its collection and research activities through various channels. This article introduces eMuseum, which lets the public view the collections of over 340 museums in Korea including the National Museum of Korea and its institutions, and the website of the National Museum of Korea, which provides online contents including information of its collection and investigation achievements.

eMuseum (www.emuseum.go.kr) is a public website of museum collections run by the National Museum of Korea. The website is an online space that allows users to search cultural heritage information owned by museums and art museums across the country. After a one-month test run starting from October 31, 2016, the website went public on December 1, 2016. As of August 31, 2023, the museum provides information of the 2,497,786 items of cultural heritage owned by a total of 347 institutions. This review will explain the Cultural Heritage Standard Management System, which formed the context and basis for the creation of eMuseum, look at the structure and function that allows user to efficiently use the website, and finally introduce the distinctive attributes of the site, notably its accessibility and expansion.

The website of the National Museum of Korea (www.museum.go.kr) provides various information in addition to guides to permanent and special exhibitions, education programs, and other events. This review will introduce the main contents of the Collection menu, which allows the user to view basic information, 2D images and 3D data of the collection as well as inquiries related to the collection, and the Academic Resources and Publications menu, which lets the user see various studies and research activities of the museum.

eMuseum: Making Museum Collections in Korea Public
The Beginning of eMuseum
Purpose

eMuseum started out as a web portal specialized for museums that was created by the Ministry of Culture, Sports, and Tourism. Although the original intention was to provide diverse information of museums in Korea including exhibition information, news of events, and museum collections, the website did not show much activity. The current eMuseum website stems from 2016, when the National Museum of Korea restructured the previous site and concentrated its function on providing information of collections of museums nationwide.

Foundation: linking information of museum collections through the Cultural Heritage Standard Management System
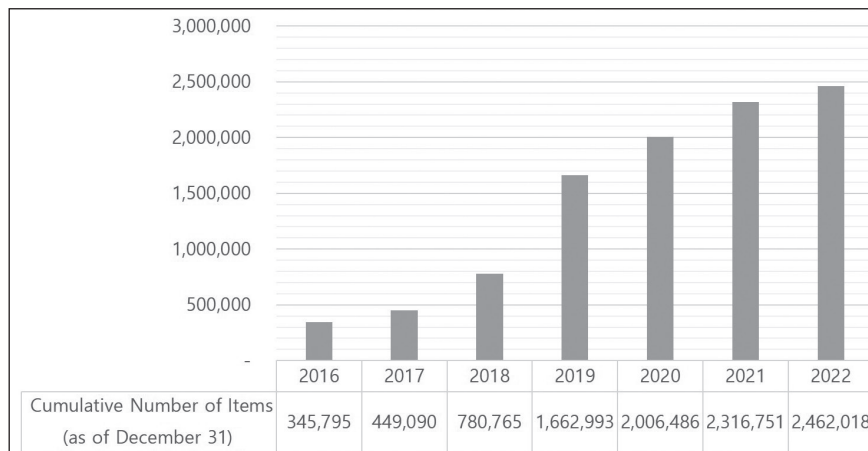
The National Museum of Korea linked the Cultural Heritage Standard Management System, which is a management system of museum collections, and eMuseum, the public website, so that information of the collection owned by each individual institution could be made public and managed. As a platform developed and distributed by the National Museum of Korea, the Cultural Heritage Standard Management System[1] provides various functions that simplifies the management of museum collections including the registration, correction, search, and use of their statistical information. Adding the one-stop function to open museum collections to the public lets users easily access this information by visiting the eMuseum website. By utilizing this function, each museum can choose whether to make information and images of their collection open to the public and even select the type of the Korea Open Government License.[2] The information stored in the Cultural Heritage

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1 The Cultural Heritage Standard Management System, conceived, developed, and continuously improved by the National Museum of Korea, operates as a comprehensive Collection Database Management System. It encompasses a wide range of features, including the registration of new objects, database searching, statistical analysis of the museum's collection, image uploading, and image file management. This multifaceted platform ensures the seamless management and accessibility of the museum's cultural heritage artifacts.

2 Korea Open Government License is open license marking criteria to promote the use of public works with clear and uniform marking criteria by allowing citizens' free use of works that are created, acquired, and managed by government institutions, local governments, and public institutions. There are four types of licenses depending on the scope. See user term guide for

Standard Management System can also be retrieved to be used or modified. At the end of 2016, information of over 340 thousand items in museum collections were available on this website—this has increased over seven-fold as of today, reaching over 2.48 million items of which information is available (see Table 1).

Table 1. Change in Cumulative Number of Items Open to the Public on eMuseum

	2016	2017	2018	2019	2020	2021	2022
Cumulative Number of Items (as of December 31)	345,795	449,090	780,765	1,662,993	2,006,486	2,316,751	2,462,018

Newly opened, added, or modified information is indexed every night, so that users can search this information immediately following this indexing process. This system enables the provision of the latest information to all users visiting the eMuseum website including Korean scholars residing overseas.

Structure and Functions
Structure of the eMuseum website
Since its launch in late 2016, continuous efforts have been made not only to improve the user interface (UI) and user experience (UX) designs to heighten the convenience and satisfaction of the users but also to add search functions to expand service related to the information of museum collections.
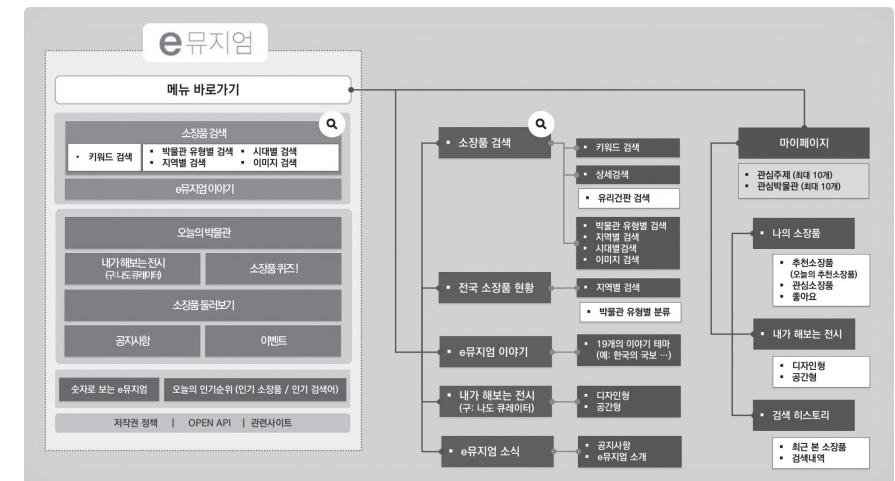
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Korea Open Government License (KOGL) at www.kogl.or.kr.

Figure 1. eMuseum Sitemap

eMuseum has an intuitive interface and menu that make it easy for users to find the information they are seeking (see Figure 1). The main page displays a wide search box where keywords can be typed in, reflecting the website's identity to search collections in any museum in Korea. Users can also directly access the advanced search option from this webpage, which allows search by museum type, location, period, and images. Towards the bottom of this home page are sections such as Museum of Today, Browse Collections, and Collections Quiz, which randomly display items from all collections featured in eMuseum, thereby allowing users to encounter various cultural heritage and museums located throughout Korea. On the top right of the home page, there is a menu that allows users to click and move to webpages offering various services. There are four main options in this menu: 1) Search Collections, which lets users look up the item they want from all publicly available museum collections by using keywords or choosing metadata information; 2) Nationwide Collection Overview, which categorizes museum information by region and compiles collection overview that each museum has displayed on eMuseum, along with basic information about each museum, allowing users to grasp the current status of museum collections in Korea at a glance; 3) eMuseum Story, which introduces items in the collections by certain themes; and 4) Curating My Own Exhibition, which is a user participation service, where users can plan a virtual exhibition by themselves using the items of museums accessible on the eMuseum website.

Main functions of eMuseum

(1) Search

The search function is the most useful and strongest feature for users living outside of Korea, including scholars of Korean studies. The collections can be searched by using the search box shown at the center of the home page, clicking on the four buttons lined above the search box, or clicking on the Search Collections menu on the top menu toolbar (see Figure 2).

The search box at the center of the home page and the search box located at the center of the webpage that appears after clicking on Search Collections menu can be used by typing in a keyword. This is identical to the way users can look up keywords on search engines: the function operates in the same manner as general portal websites, indexing and displaying results based on the keywords entered by the user. The indexing scope for keywords includes the title of the artifact registered by each museum, its alternative titles, the artist names, and the keywords and indexed terms.

Figure 2. Accessing Search on Home Page
① Search Box ② Type-specific Search Buttons (By Museum Type, Location, or Image)
③ Search Collections Menu

On the left side of the screen showing the results of the search by keyword, there is a faceted search panel allowing the user to narrow down the search results by applying filters (see Figure 3). There are largely nine filters available for the faceted search, including collection location, institution, collection type, designated cultural heritage, country/period, material, size, and excavation location. If gelatin dry plate items are included among the results, the metadata
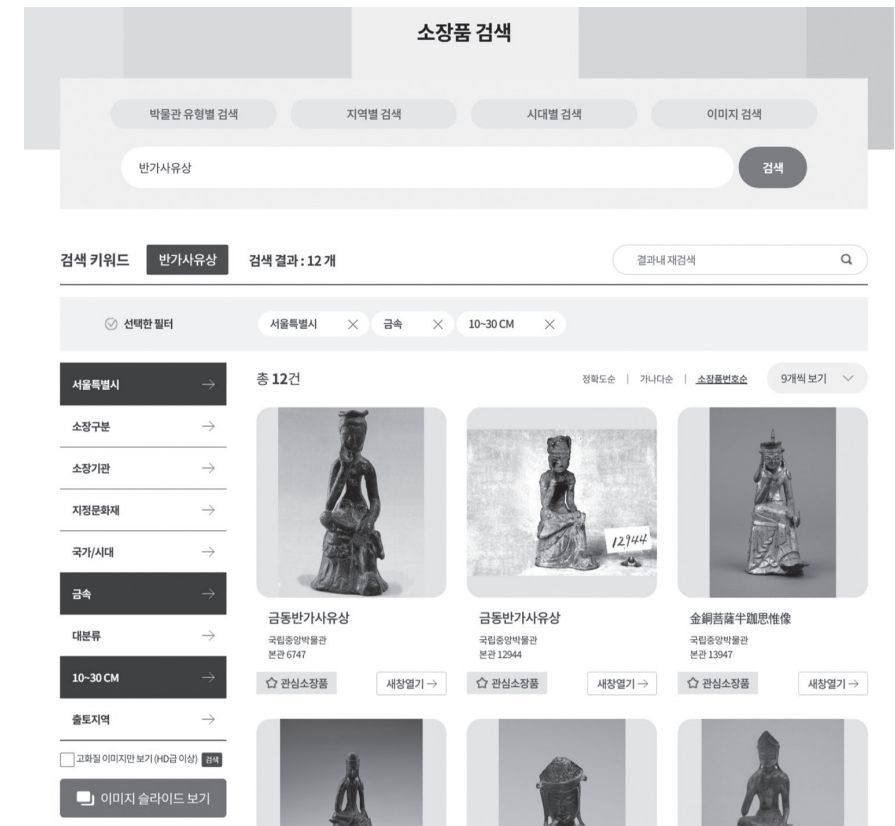

Figure 3. Example of Faceted Search after Search by Keyword
(Keyword "Pensive Bodhisattva" used; faceted search filters applied:
collection location–Seoul, material–metal, size–10 to 30 cm)

options for gelatin dry plate—field, excavation site, size—are activated. Users can choose to apply multiple filters, and each filter shows the number of resulting items before the filter is applied. Once selected, the filters are displayed next to Filters Applied, and each filter can be removed easily by clicking on the X next to the filter.

In addition to the faceted search option, which is based on metadata, the Search Within Results option located on the top of the screen allows users to narrow their search results. In short, users can type in keywords to look up the title of an item, use keywords to see the current status by material type, and see whether each item has its gelatin dry plates. In addition, by using the faceted search panel on the left, users can narrow down the search results to approach the exact item they are looking for more accurately.

The Advanced Search option available on the webpage appearing after clicking on Search Collections is a search function based on the metadata of the items (① in Figure 4). Users can specify their search by designating information of the item such as the location of the item, country/period, material, classification, and excavation site. Although the user can designate multiple conditions, they cannot choose multiple options within the same category. For instance, the user cannot choose both wood and metal at the same time in the material category. Since the advanced search function by artist name offers another search box, users can click on and specify the options of other categories first before typing in the artist name, which will show works of that artist which specifically fit the set options.

Figure 4. Search Collections Webpage
① Advanced Search ② Gelatin Dry Plate Search ③ Search by Accession Number
④ Search by Image ⑤ Keyword Search Box

The metadata of the gelatin dry plate collection provided by the National Museum of Korea is managed separately by a different classification system. Users who wish to look up items in the gelatin dry plate collection only can click on the Gelatin Dry Plate Search icon on the right-hand side of the Advanced Search screen, where they can navigate metadata specialized for the gelatin dry plate including options such as the year the photograph was taken or the size of the plate (② in Figure 4). Other options such as the investigator, photographer, or number of plate can be searched by typing in a keyword. When using Advanced Search, including Gelatin Dry Plate Search, the specific options the user checked are displayed on the left-hand side panel, allowing the user to see which option they chose during the search. The search results can be further narrowed by using additional faceted search or typing in keywords in the Search Within Results field.

Users who know the exact accession number of an item can look it up in the Institution/Accession Number tab under Advanced Search. The same search function can be accessed by clicking on the button that says museum type, which is located above the search box on the home page or the Search Collections webpage (③ in Figure 4). Finally, users can also search items by image by clicking on a button above the search box on the main page or the Search Collections webpage (④ in Figure 4). When registering an image from the Cultural Heritage Standard Management System to publicize on eMuseum, specific tags containing information of the image can be entered. This function allows users to look up images based on what they feature such as animals, plants, or auspicious characters.

Another function, albeit not a search function, that allows users to view the cultural heritage owned by museums across the country by theme is the eMuseum Story menu. This menu narrows down the metadata information based on topics curated by the National Museum of Korea and consequently presents all items aligned with these thematic selections. For instance, themes such as "National Treasures" and "Treasures" assemble and provide access to items of significant importance designated by the government. Furthermore, the menu includes academic themes such as "Genre Painting" or "Portraits." Additionally, it includes themes that everyone can easily explore, such as "Imaginary Animals," "Tigers," and "Play Culture of the World," offering an inclusive gateway to a wide range of diverse cultural artifacts.

Additionally, items that carry important textual information such as

epitaph tablets or collected writings are collected under corresponding themes such as "See Electronic Book of Epitaph Tablets in Goryeo Dynasty" or "Related Materials in Comprehensive Database of Korean Classics" and linked to related sites or electronic book viewer program, where users can see both the original texts and the interpretation. Although this is provided only for some items, it is nevertheless a useful function that allows scholars of Korean studies, particularly Korean history, to view information of the historical artifact together with the original text and interpretation on one screen.

(2) Item information and image viewing function

Clicking on the titles or thumbnail images of the items displayed as a result of searching takes the user to the webpage showing information of the individual item (see Figure 5). This information can also be opened in a separate window by clicking on the Open in New Window tab below the thumbnail image if the user wishes to maintain the previous search results.

The detailed information of individual items largely consists of seven categories: titles, quantity, nationality/period, material, size, institution, and accession number. Depending on the institution providing the information, users may also be able to read a brief explanation of the item and view related terms (① to ③ in Figure 5). There can be a wide range of related terms, including pattern, figure, or exhibition. If the item has related terms entered, clicking on these hashtags takes users to a webpage showing all items categorized under the same related term. Users can also utilize faceted search on this webpage to further narrow down the search results for academic or exhibition reasons.

For example, Wang Hyo's Epitaph, which was created during the Goryeo dynasty, shows the related term King Sukjong. Clicking on the hashtag #King_Sukjong takes the user to a webpage showing all items with the related term King Sukjong. Narrowing down the search results by checking the Korea-Goryeo filter for period shows only the items related exactly to King Sukjong of the Goryeo dynasty and excludes all other items such as those related to King Sukjong of Joseon or King Sukjong of Tang China.
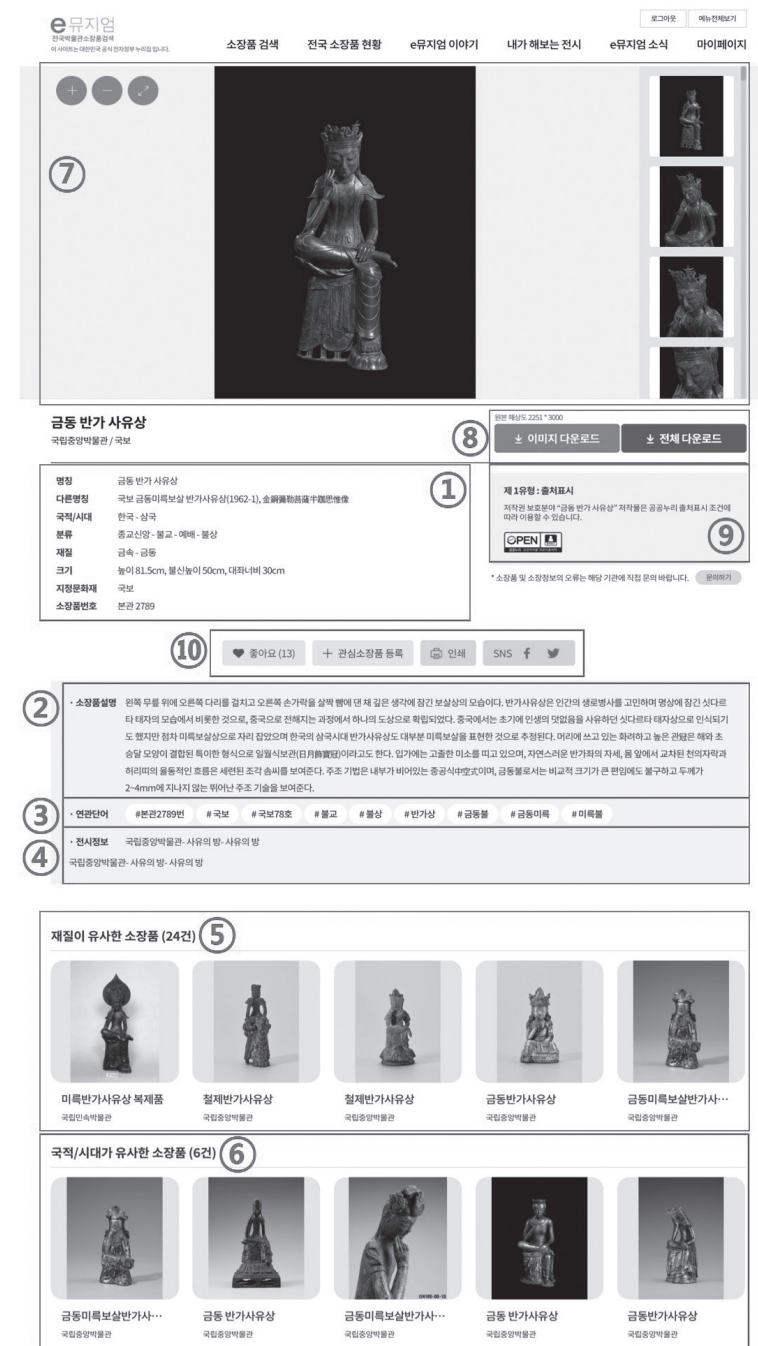

Figure 5. Webpage Showing Infromation of an Individual Item
① Basic Information ② Item Description ③ Related Terms ④ Exhibition Information
⑤ Items with Similar Material ⑥ Items with Similar Nationality/Period ⑦ Image Viewer
⑧ Image Download ⑨ Korea Open Government License Type ⑩ Share and Personalization

Figure 6. Example of Electronic Book Viewer (Item No. Sinsu 5873, Yi Gyu-bo's Epitaph
of the National Museum of Korea Collection)

The webpage showing detailed information of individual items also displays items that have the same material or nationality/period based on metadata, provided that the items include the same keywords and have the same usage, on the bottom of the page (⑤, ⑥ in Figure 5). If the item is owned by the National Museum of Korea and is currently on display in an exhibition, the webpage also provides information of the location of the item within the exhibition hall (④ in Figure 5). For some of the epitaph tablets and collected writings, users can view the original text in classical Chinese together with the Korean translation by clicking on View Electronic Book, View Original Text, or View Translation (Figure 6).

In addition to the provision of information of museum collections in Korea, the largest strength of eMuseum is that it provides images of various items. As of August 31, 2023, eMuseum provides 2,735,730 images. The webpages showing search results provide the thumbnails of the images, which is the representative image set by the institution owning the item, and this image can be seen by an image viewer on the page showing detailed information of individual items (⑦ in Figure 5). Thumbnails provided in addition to the representative image are lined up on the right of the image viewer. Users can use the zoom in and out function of the image viewer to see details of the images. Opening the Image in a New Window allows users to zoom in or

Figure 7. My Page
① My Page Menu ② Designation and Display of Themes and Museums of Interest
③ Submenu Tab within My Collection Menu ④ Manage Group for Items of Interest
⑤ Download Excel File

25,000 pixels. The National Museum of Korea continues to take high-quality photographs of their collections from various angles and details for as many items in their collection as possible to provide the public with high-resolution images.[3]

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3   As of August 31, 2023, around a million, or 64% of the 1.56 million images provided by the National Museum of Korea and its thirteen affiliated museums are high-resolution images (over 2,000 x 3,000 pixels).

In addition to viewing various images of items through the image viewer, users can freely download the images without any separate process to obtain permission or paying an additional fee, as long as they enter the purpose of the use (⑧ in Figure 5). Users who wish to use the image for commercial purposes or modify the copyrighted material can do so following the type of Korea Open Government License indicated below the image (⑨ in Figure 5). Items in the collection of the National Museum of Korea are Type 1, meaning that the user can freely use the public work as long as they specify the source.

The webpage showing the detailed information for individual items also provides various functions allowing the user to share or personalize the information (⑩ in Figure 7). Users can print the image and basic information of the individual item into the form of a card, share via social media (SNS), or add it to their Items of Interest collection. The function to add to the Items of Interest collection will be covered again in the following chapter.

(3) Personalization and sharing function

One of the main functions of eMuseum is the personalization service. While the eMuseum website can be used by anyone without having to create an account, users who choose to login with their social media accounts such as Twitter can use the personalization function.

Given how the eMuseum website is gathering information of museum collections at one site and allowing users to search the information, it makes sense that the personalization function is also mainly about the collections and searching them (see Figure 7). Users can designate the themes and museums of their personal interest on the webpage called My Page. eMuseum will then select items matching the theme and museum among their collections and randomly display them under the Recommended Items tab everyday (② in Figure 7). The Search History function allows the user to view the keywords they searched in the past during the period set by the user and takes the user to past search result pages. This function may come handy for those who repeat similar tasks or those preparing for a project on a certain theme.

For users preparing for an exhibition or project, a particularly useful function is the Items of Interest management function (middle tap of ③ in Figure 7). Users can create up to ten groups, which work as a kind of folder, under the Manage Group for Items of Interest panel, and the same item can be placed under multiple groups. The items of interest can be sorted by the

Korean alphabetical order or by the accession number. The Download Excel File function lets the user download basic information, such as image, title of an item, accession number, institution, material, and nationality/period, of the sorted results as an Excel File (⑤ in Figure 7). This is an extremely useful function since the user can filter or sort the results using Excel as well as enter additional information to further modify the list.

The Curating My Own Exhibition function allows users to create a virtual exhibition using the items of collections in the museums across Korea. Users can choose the Design option, where they use poster or magazine templates to introduce the items together with a brief explanation of the intention behind the virtual exhibition, or the Space option, where they can create the exhibition space and plan the movements of the visitors by themselves. The Design option can be useful when actually creating simple exhibition leaflets or

Figure 8. Example of Using the Space Option of Curating My Own Exhibition
(Exhibition Title: The Beauty of Traditional Korean Dining Tables)

project proposals. The Space option allows users to plan an exhibition up to five sections with ten items in each section (see Figure 8). Users can drag and drop items to arrange them in the sections as they wish.

This function also lets users visualize the items they saved in their Items of Interest, since they can use these items when planning their exhibition. The website also allows users to share the exhibition they created and view exhibitions put together by other users or, alternatively, save their exhibitions in My Page without sharing. Users who are curating exhibitions can use this function to prepare research materials with items that are part of museum collections throughout Korea, and even users without such specific purposes can use this function to visualize their interests.

Accessibility and Scalability
Mobile environment

As a website aiming to make it easy to search and retrieve information, eMuseum uses adaptive web design that allows it to provide optimal view for mobile devices (see left image of Figure 9). For the convenience of those navigating the website with one hand using a mobile device, the three-line menu icon on the upper left-hand side of the webpage can be opened to access optional services including menus such as eMuseum Story and Curating My Own Exhibition. The more main services including the search function can be accessed separately by tapping on the magnifying glass icon on the upper right-hand side of the screen. The mobile website has been reorganized to center functions more frequently used in a mobile environment. For instance, the function to Search by Accession Number is placed separately next to the keyword-based search function to make it possible to directly access the information of the item anytime, anywhere if the user knows the accession number.

In order to provide a user experience identical to that of the PC version, the mobile website is made up of buttons that make it easy to search by keyword, use the advanced search option based on metadata, and apply filters for faceted search within the results (see middle and right images of Figure 9). Images can be downloaded simply by touching the screen so that users can save images on their mobile device as they wish. Such mobile environment accessibility has the advantage of allowing users to easily access information of museum collections in Korea regardless of when or where they are and also share or use the information they obtain without difficulty.
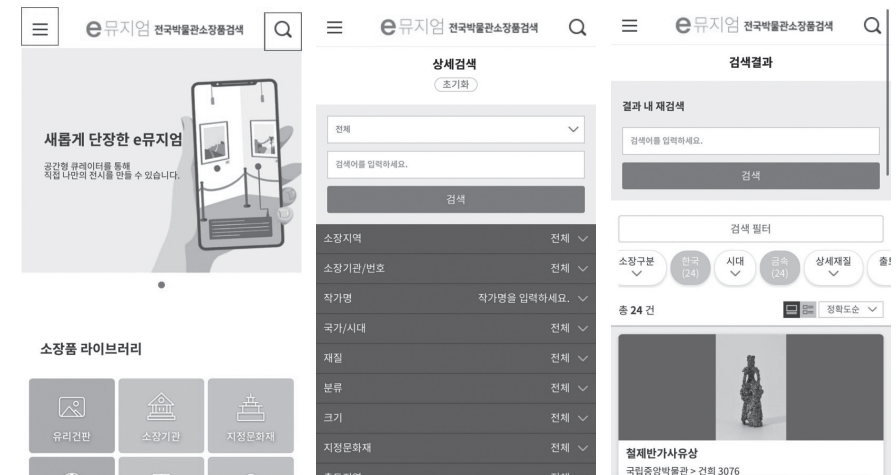

Figure 9. Images of eMuseum Mobile Website with Adaptive Web Design
(From Left to Right: Home Page, Advanced Search Option, Search Results)

Open API

eMuseum provides open Application Programming Interface (API) through the Public Data Portal (https://www.data.go.kr/) for anyone to use. Information reaching a maximum of 71 articles (codes included) including information of the items displayed on eMuseum such as the title and quantity is provided for each individual item. The eMuseum API is used to provide service based on this information at websites and kiosks of several museums. For museums abroad as well, it is anticipated that they can effectively use the eMuseum open API resources to provide information on Korean collections related to the items each museum holds.

National Museum of Korea Website
Diverse Information on Collections
Curator's picks

The Collection menu contains information of over 200 thousand items owned by the National Museum of Korea[4] as well as other related information. Clicking

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4 A detailed explanation is omitted in this paragraph, as the same information is available through eMuseum and has been discussed earlier in this article.

Figure 10. Curator's Picks under the Collection Menu

on the submenu Curator's Picks takes users to a webpage showing 303 entries written by curators of the museum that explain the highlights of the collection.[5] These entries range from explanations of famous items representing each period or area, the curators' fresh take on some of the items, to interpretations of the historical significance of small and seemingly trivial items. The entries can be searched by keyword or by selecting a certain area of interest. Around twenty new entries continue to be added every year, and the website is continuously updated with English translations of the entries.

National treasures, treasures, 3D data, and web content accessibility

The submenu National Treasure and Treasure Search under the Collection menu displays items owned by the museum that have been designated as a National Treasure or Treasure. There are 406 items as of date. Each item can be searched by title of each item, alternative titles, nationality/period, excavation

site, material, author, accession number, and the Directory Search option allows the user to further pinpoint their search by providing three levels—nationality/period, material, and excavation site—to specify. The submenu 3D Data Search, which has been made public recently, provides digital content files, scan files, and print files for over 100 items, which can be used without having to obtain permission or pay a fee. The submenu Sign Language Videos, which provides 644 videos, and the submenu Audio Guidance, which has 23 entries, reflect the museum's efforts to make the contents available to the socially disadvantaged including those with visual or auditory impairments.

Collection access and reproduction

The submenu Collection Access and Reproduction provides guidance on how to view, reproduce, and obtain images of the items of the museum's collection. All three activities commonly provide the contact information of the person in charge including the office number, fax, and email address, along with a link to download the necessary form. The Collection Access tab explains the items that can be viewed, who can view them, how to submit a request, how long it takes for the request to get processed, and other regulations to follow. The Reproduction tab defines the term reproduction as photographing, rubbing, measuring, copying, or restoring the item and provides guidelines for how to submit a request, how long it takes for the request to get processed, tips on writing the request form, necessary conditions, and regulations to follow. Finally, the Photographic Material tab defines the activity as using digital images of the items or obtaining high-quality images of the items and provides explanations on how to use the material, how to submit a request, tips for writing the request form, necessary conditions, and regulations to follow.[6]

Academic Resources and Publications

The Academic Resources and Publications menu provides more in-depth contents of achievements of research or investigations conducted by the museum.

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5   60 articles are translated and provided in English, Chinese, and Japanese languages.

6   As for images of items in the National Museum of Korea that are around 6 megapixels (2,000 x 3,000 pixels) can be downloaded from the website and eMuseum without having to obtain separate permission or pay an additional fee. For larger images with higher resolution, however, users need to go through the process of obtaining permission for photographic material.

Figure 11. Periodicals under the Academic Resources and Publications Menu
(Clicking on the Tab of Each Periodical Displays Detailed Information)

The material can be largely divided into periodicals and special publications. With the exception of some journals that need to be purchased, the rest of the material can be downloaded as PDF files or accessed by viewers, which is a service the museum provides in order to introduce the research and investigation of the museum and to promote further advancement of related areas.

Periodicals

The *Journal of Archaeology* (*Gogohakji*), which was first published in 1989, introduces unrevealed archaeological materials among the many possessed by the museum as well as new discoveries from studies and research. This would allow the accumulation of baseline data and actively promote the material or research achievements not only of the museum but of external researchers. The journal was published unto the 28th issue, for over 20 years, and amounts to 29 volumes including the special edition that was published in commemoration of the 20th anniversary of the excavation of the Daho-ri historical remains in Changwon.

The *National Museum of Korea Art Journal* (*Misul jaryo*), which was first published in August 1960, is the oldest journal on art and archaeology in Korea. Similar to the *Journal of Archaeology* above, the *National Museum of Korea Art Journal* excavates new material and introduces them to academic circles in order to help researchers studying the cultural heritage of Korea. The contents covered both archaeology and art initially, but after the publication of the *Journal of Archaeology*, it focused more on covering specialized art contents. The journal continues to be published biannually, amounting to over 100 published volumes to date. Currently, the journal features academic articles and material

on art history in general.

The *Conservation Science in Museum* (*Bangmulgwan bojon gwahak*) is a journal specializing in conservation science and was first published in September 1999. The journal mostly interprets data produced during the process of analyzing, processing, or restoring items in the museum collection or cultural heritage as well as introduces new methods and techniques. It is also published biannually, like the *National Museum of Korea Art Journal*, and a total of 29 volumes are currently available on the website.

The *Dongwon Academic Essays* (*Dongwon haksul nonmunjip*) was first published in 1998 by the Korean Archaeology and Art Research Institute, which was established following the will of Yi Hongguem (1900–1980), who donated 4,941 items of cultural heritage to the museum. The institute actively held academic symposiums and has published a total of 189 journals and articles from 1998 to date.

The *Journal of Korean Art and Archaeology*, an English-language journal, was founded to overcome the challenges of research achievements circulating only within Korean academic circles. Its publication is part of the efforts to share the academic achievements of Korean art, architecture, archaeology, and history with the entire world and heighten interest in researching Korean studies. A total of 17 volumes have been published until January 2023.

Publications by field

The website provides research and investigation findings by research subject, field, period, and purpose. The Excavation Reports, which are the representative academic material of the field of archaeology, consist of a total of 42 excavation reports of Korea starting from the excavations of Houchong Tomb and Eullyeongchong Tomb, which were the first excavations done after Korea was liberated, and reports of joint excavations conducted in Vietnam and Mongolia. Currently, the museum no longer actively conducts excavations given how the work is mostly done by institutions specialized in excavation investigation. Right after liberation, however, the museum was virtually the only excavation institution at that time and excavated many historical remains important in Korean archaeological circles including Houchong Tomb, Eullyeongchong Tomb, Songguk-ri, Jungdo, Amsa-dong, and Daho-ri, Changwon.

One of the most representative research reports in the field of history is the "Historical Resources Series." This series, which summarizes various historical

documents owned by the museum, covers documents by the royal houses, official government documents, official household register, maps, letters, metal type, novels, inscriptions, tombstone inscriptions, and material during the Korean Empire period. "Study of the Oegyujanggak Uigwe" is research material on the Illustrated Records of Rituals of the Outer Royal Library, which had previously been stored at the Bibliothèque nationale de France and returned to the National Museum of Korea in May 2011 in the form of a permanent loan. The "Study of the Oegyujanggak Uigwe" was published to introduce the importance of the returned material and accumulate baseline data to vitalize research. Recently, a series on the current state, prospects of the Illustrated Records of Rituals of the Joseon Dynasty, bookbinding, funerary rites, investiture rituals, posthumous title dedication rituals, and recording contributions of meritorious subjects was published.

In terms of art history, the National Museum of Korea provides various catalogues and publications of research and studies. "Korean Paintings and Calligraphy of the National Museum of Korea" is a series that aims to list all of the paintings and calligraphic works of Korea owned by the museum regardless of period or quality. Each catalogue includes every part of the works in albums and scrolls, and users can view the writings on paintings, seals, and detailed work as if seeing the original. Recently, catalogues of subgenres of the paintings have been published, including portraits, paintings of court ceremonies, historical maps, narrative figure paintings, real scenery landscape paintings, and ornamental paintings. "The Research Report on Buddhist Art Series" are the outcome of the comprehensive studies of Buddhist temples and the research of Buddhist artworks conducted by the museum. The reports were published as a series including reports on Cheoneunsa Temple, Hwaeomsa Temple, Yongjusa Temple, Cheongnyongsa Temple, and Buddhist statutes and Buddhist paintings owned by the museum. In addition, "The Korean Ceramics of the National Museum of Korea," which recently began to be published, dealt with sculptural celadon of the Goryeo dynasty in the first volume, and the Research Reports provide ceramics excavation reports, "Glossary of Terms for Art History," and "Sinan Shipwreck Collection in the National Museum of Korea."

Research material from the Japanese colonial period
The Research Material from the Japanese Colonial Period lets users view the original texts of the documents and material produced by the Japanese

Government-General of Joseon Museum and related research reports. There are not many reliable material dating from the period under colonial rule by the Japanese since they were not recorded by Koreans. Although the records made by the Japanese Government-General of Joseon Museum are strictly based on a colonial view of Korea, they do provide important information in reading the modern period of Korea. The National Museum of Korea has continued the project to organize and disclose this material in order to manage the documents in a systematic manner and use them efficiently. Currently, a total of 714 volumes of documents, divided into the themes of "donated," "display," "purchased," "discovered," "designated," "investigation of historical remains," "preservation," "national forests," "maps," "drawings," and other, are open to the public.

At that time, there were many historical remains and cultural heritage artifacts that had been excavated or collected through various routes but were not properly written up in a report, photographed, or drawn. To organize and publicize the material excavated during the Japanese colonial period with expediency, the museum has begun a project to focus on publishing reports on main historical sites starting from 2013. At present, the Archaeology and History Division of the National Museum of Korea, the Gyeongju National Museum, the Buyeo National Museum, the Daegu National Museum, the Gimhae National Museum, and the Gongju National Museum are focusing on researching the findings and excavated material of the research conducted during the Japanese colonial period. The results of this project up to 2023 has been published into a total of 43 books of investigation reports and can be viewed as PDF files.

Gelatin dry plates are a method of coating glass plates with light sensitizing emulsion before drying them and form the prototype of the black-and-white films we use today. The Japanese Government-General of Joseon Museum left behind many gelatin dry plate photographs taken during their research on the archaeology, art, people, history, and folk culture of Korea. The National Museum of Korea currently owns over 37,170 photographs. These photographs, which were taken approximately a hundred years ago, are important visual material that provide images of what can no longer be seen in the present as well as images of North Korea. There are currently a dozen catalogues featuring these photographs, categorized by theme, historical remain, and location, and five books listing the gelatin dry plate photograph inventories, all of which can be accessed as PDF files.

Donations by Lee Kun-hee

In April 2021, the bereaved family members of the late Lee Kun-hee donated 21,693 items of cultural heritage to the National Museum of Korea. The museum has held various exhibitions of these items, called the Lee Kun-hee Collection, publicized the items on eMuseum and the museum website, and provides lists of the items per field to spread the value of sharing and introduce the Lee Kun-hee collection to the general public. The donated items include pottery, ceramics, metal works, books, paintings, calligraphy, wooden furniture, stone cultural heritage, and Chinese ceramics dating from the prehistoric period to the Joseon dynasty. They have never been fully opened to the public except for designated cultural heritage due to their vast amount and wide-ranging variety. The museum set out to classify and publish lists of items per category to provide basic information of the donated items starting from early 2022. This ambitious project called for considerable efforts. Notably, due to their sheer amount, the list for "books" category could be completed with the help of external researchers.

In December 2022, a total of nine volumes of Lee Kun-hee Collection lists were published. The Lee Kun-hee Collection at the National Museum of Korea in Volume 1, *Archaeological Artifacts*, features 1,568 individual items of archaeological artifacts. Both Volumes 2 and 3 cover books dating from the ancient period to after liberation and amount to 12,558 books. Volume 4, *Selected Books*, is a selection of particularly valuable books among those listed in Volumes 2 and 3. Volume 5, *Metalware*, lists 926 items of metalware from both Korea and abroad that are classified by use and function. Volume 6, *Buddhist Paintings*, features 794 items of artworks from Goryeo to the modern period. Volume 7, *Buncheong Ware*, shows 725 items of *buncheong* ware from the Joseon dynasty. Volume 8, *Chinese Ceramics*, lists 224 items of variously decorated Chinese ceramics made from diverse material. Volume 9, *Celadon*, features 847 items of celadon. Anyone can download each volume as PDF files regardless of when or where. The museum plans to publish in 2023 onward including additional volumes on historical material, statutes, folk and craft, and stonework.

Conclusion

The National Museum of Korea offers two main online websites: eMuseum and the official website of the Museum. Scholars of Korean studies will particularly find them useful as these websites provide various online information including the collections of museums, exhibitions, and academic research and studies, and a lot of the material can be downloaded free of charge without having to obtain additional permission. As a concluding note, this section will outline the key aspects of both websites. Information on eMuseum is updated every day. Anyone can easily search various items owned by museums in Korea and retrieve the information anytime, from anywhere. The website also offers diverse opportunities for users to approach and recreate the cultural heritage of Korea including eMuseum Story and Curating My Own Exhibition. eMuseum can thus serve as a good starting point for international users to approach information on Korean cultural heritage. In addition, the advanced search options based on metadata lets the user grasp the outline of the wide-ranging cultural heritage in Korea, and the Items of Interest function allows users to personalize the knowledge they acquired from eMuseum, individually structuralize it, and make use of the information. Such functions contribute largely to drawing and expanding the interest of users overseas in the cultural heritage of Korea.

Overseas users who engage in Korean studies are often limited in having information about which institution owns what kinds of items. In this sense, the eMuseum website, which provides information on the collections for each individual museum, images, and sometimes even translations, helps broaden the horizon of Korean studies. Users can access information of the collections of not only art or history museums but of museums for natural history or everyday life. This will facilitate the connections among different academic fields within Korean studies and largely contribute to broadening the perspective and expanding the span of research.

The website of the National Museum of Korea provides various content related to the museum collection through menus such as Curator's Picks and searching among National Treasure and Treasure Search or 3D Data Search. Services such as Sign Language Videos and Audio Guidance are also available to ensure the convenience of socially disadvantaged users. For users who wish to view the items in person or obtain high-resolution images of the items,

Collection Access and Reproduction menu states guidelines as to how to submit requests and the necessary procedures.

The Academic Resources and Publications menu of the website introduces more in-depth study and research activities conducted by the museum. In Periodicals, there are journals on the fields of archaeology, art history, conservation science, education, and even the English-language journal. The Special Publications include arrays of research reports and catalogues for fields such as archaeology, art history, Asian studies, and conservation science. Research Material from the Japanese Colonial Period significantly provides multiple documents, maps, and drawings that date back to approximately a century ago, during a time when such material was rare. Finally, the over 20 thousand items that were donated to the museum by Lee Kun-hee in 2021 garnered attention not only in Korea but overseas as well. To make the most of this donation, the museum set out to study and research the donations. Nine books of the lists of donated items forming the Lee Kun-hee Collection were published in 2022, and additional lists will be published in the future to spread the value of sharing.

With the abundant information and material they provide, both the eMuseum and the National Museum of Korea websites are aiming to provide multilingual services. eMuseum is available in Korean language only. The National Museum of Korea website provides translation in three languages (English, Chinese, and Japanese) with brief menus compared to the Korean original. It is crucial for both websites to expand the range of languages in which they offer their services to enhance accessibility of international users. With more continuous effort, these sites will also become essential archival websites for any scholar of Korean studies as well as internationally influential Korean studies websites.

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