

# The Movable Type: How it Acted as an Agent of Information in History and Enabled Access to Knowledge

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Group Exhibit

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## Process Paper

When the theme of Breaking Barriers for this year's NHD was announced, we immediately chose our topic as The Movable Type, which originated more than 1,000 years ago. Its development had been widely considered as a significant breakthrough around the world, making it a relevant topic. Within a few weeks of exploring, we quickly realized that the movable type made by East Asians and the further advancement made by Gutenberg broke the barriers of inefficiency of printing and inaccessibility of knowledge. We also liked it because the topic ties to both of our origins, China and Korea.

In terms of how we came to the decision of doing an exhibit, first both of us had a strong interest in this presentation format and had experience from last year. Secondly, we felt that the creative and visual side of an exhibit would be more effective to present our research. Lastly and most importantly, the ancient moveable type is a craftsmanship that is better to present in a physical format.

Our topic is international. We not only leveraged sources in English but also in other languages, including Chinese and Korean. For efficiency, while we both researched the history in Europe, we were able to divide and conquer when it came to researching Chinese and Korean history.

We first started using Britannica or History.com to understand the general context. Then we developed specific questions to narrow our research. We also used foreign search engines with our unique language advantage and obtained multiple primary and secondary sources. In addition, we looked into several databases from Korea and China to find references of the developments of movable type. For example, we found an entire set of Veritable Records of

Joseon Dynasty from [sillok.history.go.kr](http://sillok.history.go.kr), an archive of the daily events during the ruling of each Korean king, making it a valuable primary source. We could use resources that most students do not have access to better understand the history through multiple lenses. This enabled us to tell the whole story and the impacts from multiple cultures. At the end of the process, we also conducted several email interviews to Nam-Kwon Hee, a famous Korean professor who specializes in the history of movable type printing in Korea.

One main challenge we encountered was the limited amount of time we had. Both of us had busy schedules, so it was hard for us to allocate enough time to work together. However, by maximizing the twice-a-week activity time at school and some weekends, we were able to make progress towards the project due date. We also made use of our winter break to make lots of progress in research.

Despite the challenge we faced, we still found the movable type to be an intriguing topic. This research project helped us understand how an ancient invention in East Asia spread to the West and resulted in profound and lasting impacts to the whole world.

## Annotated Bibliography

### **Interview:**

Kwon Hee, Nam. Personal Interview. 2/21/2020-3/1/2020

I interviewed with a prominent Korean professor who does several researches on movable type printing in Korea. Nam Kwon Hee is a professor and researcher who focuses on the history of movable type printing. I was able to interview her via email. I first approached her after I had read a document that she had made that shows the context of movable type printing. She had given us several important sources that shows different impacts of movable type printing in Korea. Her response and research had given us several quotes for the short-term and long-term impacts of movable type printing. She was the first one to state that Koreans used movable type to print and distribute different newspapers. She is also the one to point out that while the Europeans used movable types mainly for commercial reasons, the Koreans used movable types to help the lives of the common people by setting up printing shops.

### **Primary Sources:**

#### Books:

Unknown. “세계최고 목판 인쇄 발견.” *Dong-A-Ilbo*[Seoul, South Korea] 15,Oct,1966: Page(1)  
Accessed December 30, 2019.

The name of the xylography is *Mugujeonggwang Daedaranigyeong* and it was found in 1966. This primary source is used in order to reinforce our claim that the first ever xylography printed ever was in year 751 in South Korea. There are some controversies on its origins due to the type of characters it uses inside. However, for simplicity we assumed that it was created during Shilla Dynasty of Korea. This was the first proven printed book using woodblock print or xylography which is the predecessor of movable types. The problems that persist on xylography lead to the creation of metal movable types. For example, xylography is hard to store because it is prone to fire and water which can damage the developed types. Most of the printings demonstrated in the background of the exhibit.

조선왕조실록. [sillok.history.go.kr/intro/english.do](http://sillok.history.go.kr/intro/english.do). Accessed January 6, 2020.

This primary source is the data base of the Joseon Dynasty of Korea. It is a very valuable primary source for us because it contains the record of the actions on every single king of Joseon Dynasty. The source is a part of the veritable records of Joseon Dynasty. It contains the daily events during the rulings of the kings of Joseon Dynasty of Korea. We used a section of the book called *Sejong jangheon daewang sillok* because there is the part where the king orders the development of a new movable type font for

those who can't see properly or the elderly. It also states the with paper only, they can print hundreds of copies of a certain book.

### Artifacts:

沈括. 梦溪笔谈. 1088. Kuo Shen, “*Dream Pool Essay*”, 1088

This is a reprint of the Dream Pool Essays written by Shen Kuo. The book recorded Bi Sheng's work on the movable type. We used this as an artifact and evidence to better prove the invention of movable type.

### Images:

Bibliothèque nationale de France. “백운 화상 초록불조직지심체요절. 白雲和尚抄錄佛祖直指心體要節.” *Bibliothèque nationale de France*, 2010, [gallica.bnf.fr/ark:/12148/btv1b6300067k/f6.image#](http://gallica.bnf.fr/ark:/12148/btv1b6300067k/f6.image#). Accessed January 2, 2020.

This is a picture of the Korean book *Jikji* from the National Library of French, which is the world's oldest existing metal movable type book. The picture is used for the heart of the story because it shows when movable types first came into effects. In 2001 the book won UNESCO's memory of the world award. The reason *Jikji* is in France is because in 1865, French soldiers had attacked Korea and started raids that stole several important objects and *Jikji* was one of the objects that were taken into France. Korea is trying its best to regain its lost treasure but there are still some issues on getting it back.

British Library. “Bad Quarto of Hamlet.” Bad quarto of *Hamlet*, 1603, also known as the first quarto of *Hamlet*. [www.bl.uk/collection-items/bad-quarto-of-hamlet-1603](http://www.bl.uk/collection-items/bad-quarto-of-hamlet-1603).

This is an image of the first quarto of Hamlet. We used this image to illustrate one of Shakespeare's greatest writings.

British Library. “The Book of Durrow.” *Collection Items*, Trinity College Dublin, [www.bl.uk/collection-items/book-of-durrow](http://www.bl.uk/collection-items/book-of-durrow). Accessed January 6, 2020.

This picture is the manuscript of The Book of Durrow written in 700 C.E. The scribes of the book labored for a long time to handwrite every single character. We used this image because it shows pieces of gold on the top-left section of the paper, showing us the value of books during the early ages in Europe that only the rich can afford such objects. The book is used in the exhibit to show the European background of movable type printing. Europe has a slow history on its developments of movable types. However, its ability to make usage of the technology effectively enabled them to have more advanced technology in the future than Asia.

British Library. "First book printed in English." [www.bl.uk/learning/timeline/item126577.html](http://www.bl.uk/learning/timeline/item126577.html).

This is an image of the first book printed in English by William Caxton. We used this image to show a visual representation for the book.

British Library. "Geoffrey Chaucer" Geoffrey Chaucer. [www.bl.uk/people/geoffrey-chaucer](http://www.bl.uk/people/geoffrey-chaucer).

This is an image of Chaucer on his book, *The Canterbury Tales*. We used it to show the visual of the book.

British Library. "Gutenberg Bible", *Collection Items*, British Library, 2015, [www.bl.uk/collection-items/gutenberg-bible](http://www.bl.uk/collection-items/gutenberg-bible). Accessed January 3, 2020

This is an image of the Gutenberg Bible printed in 1455 C.E. This Bible was the first movable type printed book in Europe. Gutenberg was the first person in Europe to use metal movable types, but it is still a mystery on how Gutenberg got the idea of his movable types. Some people presume that Gutenberg received information about movable types from messengers that visited East-Asia. We used this picture because it is a visual of what the Bible and book printed at that time looked like.

British Library. "L'Encyclopédie." *L'Encyclopédie* by Denis Diderot. [www.bl.uk/collection-items/encyclopedia-by-denis-diderot](http://www.bl.uk/collection-items/encyclopedia-by-denis-diderot).

This is an image of the Encyclopedia written by Diderot. We used this image to show the impact of the movable type.

British Library. "Rousseau, The Social Contract." The British Library, [www.bl.uk/learning/timeline/item126710.html](http://www.bl.uk/learning/timeline/item126710.html).

This is an image of Rousseau's Social Contract from the Enlightenment time period. We used this image to show movable's effect in changing the course of history.

British Library. "William Shakespeare." The British Library, 13 Jan. 2016, [www.bl.uk/people/william-shakespeare](http://www.bl.uk/people/william-shakespeare).

This is an image of William Shakespeare. We used this image as a visual for William Shakespeare.

British Library, “金剛般若波羅蜜經” *Collection Items*, British Library, 2015,  
[www.bl.uk/collection-items/the-diamond-sutra](http://www.bl.uk/collection-items/the-diamond-sutra). Accessed December 30, 2019

This source provides some of the rare images of the first known book printed in China. *The Diamond Sutra* was printed in 868 C.E. and brought to the UK in 1907 and displayed in the British Library. We used this primary source as an evidence to show that East-Asia’s lead on the technology of xylography over Europe. In the exhibit, we used it as the background for East Asia as the follow up of *Mugujeonggwang Daedaranigyeong* on woodblock printing.

“Chong Xiu Zheng He Jing Shi Zheng Lei Bei Yong Ben Cao: San Shi Juan.” *The Library of Congress*, [www.loc.gov/resource/lcnclscd.2012402216.1A016/?st=gallery](http://www.loc.gov/resource/lcnclscd.2012402216.1A016/?st=gallery). Accessed January 6, 2020.

This primary source is series of images of the pages of the book *Chong Xiu Zheng He Jing Shi Zheng Lei Bei Yong Ben Cao*, printed in early Yuan in 1249. The Yuan dynasty is after the Song Dynasty. The highest-level craftsmanship of the time presented in a scene of sea salt processing from the book also introduces a longstanding tradition of featuring quality illustrations in woodblock-printed literature. We used this source to show the East-Asians not only printed words but pictures in their books. This source is used in the exhibit for the background section to show the usage of woodblock printing.

Metropolitan Museum of Art, “Shengguan zizai pusa Avalokiteshvara” *Exhibition Objects*,  
Metropolitan Museum of Art. Accessed December 30, 2019

This picture is some of the various prints that were found in China. We used this source to show that East-Asian countries did not used wood block printing for a while but printed it in a frequent pattern. We can also show that the print is religious based on its attributions to Buddhism. The text was printed in late Tang dynasty of China or the Early Five Dynasties of China which is about 900s. The image is used in the background section of the exhibit because it uses the woodblock printing.

National Treasure. “세계 최고의 인쇄물 무구정광대다라니경” *Cultural Heritage Administration of South Korea*, 2014-9-14,  
[www.cha.go.kr/unisearch/images/national\\_treasure/2648450.jpg](http://www.cha.go.kr/unisearch/images/national_treasure/2648450.jpg) Accessed December 30, 2019.

This primary source is a picture of *Mugujeonggwang Daedaranigyeong*. This is used to show the looks of texts printed on scrolls. It is another source of evidence that shows East Asia was more advanced in developing printing compared to Europe. There are some controversies on its origins due to the type of characters it uses inside. However, for simplicity we assumed that it was created during Shilla Dynasty of Korea. This was the first proven printed book using woodblock print or xylography which is the

predecessor of movable types. The exhibit shows how the problems of xylography lead to metal movable types.

Princeton University Library, "Donatus." *Gutenberg & After*, Mainz, 2011. Accessed January 3, 2020

The picture is an edition of the Donatus grammar which was frequently used in schools. They were printed with the first European printing type, known as the Donatus and Kalendar type. For We used this source to show Gutenberg's printings prior to his famous 42-line bible.

Princeton University Library, "Printed Cyprus Indulgence, 31 lines." *Gutenberg & after*. Accessed January 3, 2020

This is an image of an indulgence which is used by the church on normal citizens. Indulgences are paper the church sells to ordinary citizens. Its logic is that once the citizen buys the indulgence, they get a positive blessing from Jesus on their future. Gutenberg has received a deal from the king of Cyprus to print such documents. We used this source to show another of Gutenberg's printings prior to his 42-line bible to show that there were several small-scale projects before Gutenberg started his first major scale project using metal movable types.

UNESCO "Tripitaka Koreana Woodblocks" *Haeinsa Temple Janggyeong Panja, the Depositories for the Tripitaka Koreana Woodblocks*, 1995. Accessed December 30, 2019

This source contains one of the images of *Tripitaka Koreana*, now a UNESCO world heritage. Written in the Koryeo dynasty of Korea and has used 5,987 woodblocks in making the giant scale scroll. Already while Europe was busy coping with manuscripts, East Asians were able to copy massive amounts of texts in a few moments.

Xiangdong Liu. "佛说观无量寿佛经." 文化双博, 3 September 2009.

This image shows words arranged on stone to look like clothe. The orientation and font of the words suggest it to be printed by movable type. We used this image as an example of movable type.

[일반전적, 고문서] [초주갑인자] 자치통감 권193-195, 1436년, 궁실(교서관), wongaksa.or.kr/g4/bbs/board.php?bo\_table=junggak\_09&wr\_id=2569. Accessed January 6, 2020.

We used this source because it contains a picture of a certain font of metal movable types in Korea. We used this source because Korea has developed its movable

metal type fonts. In addition, the image shows that Korea was already active on using such metal movable types because it displays a part of a royal document that was distributed to the people by being copied through metal movable types.

沈括. 梦溪笔谈. 1088. Kuo Shen, “*Dream Pool Essay*”, 1088

This is the image scanned from the reprint of the book. It showed the recording of the actual text referring to the usage of movable type.

## Secondary Sources:

### Documentaries:

“5천만자의 하이테크, 팔만대장경 역사 스페셜”, KBS Video, KBS, 1999.  
[www.youtube.com/playlist?list=PLCUvMJmhd5WznEcJjU9omDfZCUZ0h-Mst](http://www.youtube.com/playlist?list=PLCUvMJmhd5WznEcJjU9omDfZCUZ0h-Mst).  
Accessed December 30, 2019

It can be used to describe the scales of building it gives awe to us when researching it. It can also become an evidence to show the numerous achievements East-Asians made on developing woodblock printing. One thing such research enables to do is to show that the western world wasn't the first on everything and that the Eastern World including China and Korea had started several fields including printing much earlier. We used this source to depict the numbers of developing *Tripitaka Koreana*.

### Books/Brochures:

Blanton, Virginia. *Intertexts: Studies in Anglo-Saxon Culture Presented to Paul E. Szarmach*. Mrts, 2008. Accessed December 31, 2019.

We used this book to research more specific details of the costs of the bible before the usage of types. It costed 53 shillings showing that this was an expensive object for the people on a bible. One comparison is that in England, they could buy a warhorse for 50 shillings emphasizing the cost even more.

Childress, Diana. *Johannes Gutenberg and the Printing Press*. Twenty-First Century Books, 2008. Accessed January 6, 2020.

We used this book to find some context of the Gutenberg printing press and his famed 42-line bible. It showed the history of Gutenberg on his development of the printing press. In addition, we were able to find a quote from the book that shows that Gutenberg's pages were much more legible than the European manuscripts written by scribes.

Christensen, Thomas. *River of Ink: Literature, History, Art*, Berkeley, Counterpoint, 2014. Accessed December 31, 2019

We used this book because it had a series of essays that show the history of books and writing. We were able to use one of the essays that connects Gutenberg and the East-Asian movable types. It was one of the few sources that predicts that the technology of East-Asia had spread to Europe and that European printers including Gutenberg had emulated the ways of East-Asian printers of movable types.

Eisenstein, Elizabeth L. *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe*. Cambridge Univ. Pr., 1979.

We used this book because it contains several deep level analyses on the impacts of the development of the printing press and spreading of metal movable types in Europe. The book suggested the development of movable types made it easier to spread knowledge around the area. Such ease on spreading knowledge led to several radical and liberal movements such as the Protestant reformation and the Enlightenment movement in Europe.

Gies, Frances. *The Knight in History*, Harper Perennial, 2011. Accessed December 31, 2019

This book is another depiction of the overpriced state of books just before the usage of movable types. The book states how a warhorse can be bought for 50 shillings which is in fact a quite luxurious object. Compared to this, a normal book on that period is 53 shillings, much more expensive than a horse.

The Gutenberg Museum Mainz and the Gutenberg Sponsorship Association. *The Gutenberg Museum Mainz, A guide to the Museum of Type and Printing*, 2001 <http://blogs.acu.edu/commlaw/files/2015/04/The-Gutenberg-Museum-Mainz.pdf>. Accessed January 3, 2020

We used this source because it serves as the brochure for The Gutenberg Museum giving several information about Johannes Gutenberg and his printing press. It explains how the printing press works and some impacts. It also had some useful images for our exhibit including a picture of a replica of Gutenberg printing press. However, because there were some issues with the quality, we decided that it would be better to use the text in the pamphlet than the picture it has.

Myers, Alec R. *London in the Age of Chaucer (Centers of Civilization)*, University of Oklahoma Press, Norman, 1972. Accessed December 31, 2019

We used this book for the comparison of costs between the bible and the average salary of people in the era before the use of types. A long time ago the average cost of the printed bible was several times the average salary of a worker. Once the development of the movable types came in, the prices of the books dropped exponentially. This caused people to access books more easily and in the long run, also means that there will be easy access to certain knowledges.

Ok, Young Jung. *Early Printings in Korea*, The Center for International Affairs, Seongnam-Si, Korea, The Academy of Korea Studies Press, 2013. Accessed December 30, 2019

This book is used for an explanation in the first ever discovered and proven xylography. It explains the values and the importance of it. We also personally liked this book because it explains detailedly the history of East-Asian movable types that weren't mentioned on American books about printing. It was one of the secondary sources we started off with for our research.

Parshall, Peter. *The Woodcut in Fifteenth-Century Europe (Studies in the History of Art Series)*, New Haven and London, Yale University Press, 2009. Accessed December 31, 2019

We used this book due to the images of some of the very first woodblock printed books in Europe. That is where we got the image of the first woodblock cut print in Europe. The first woodblock printed scroll in Europe is the 1423 German print of St. Christopher. However, in comparison, the first printed scroll in East-Asia is in 751AD almost 7 centuries earlier than the one in Europe.

Wu, Jiang. Chia, Lucille. *Spreading Buddha's World in East Asia: The Formation and Transformation of the Chinese Buddhist Canon*. Columbia University Press. New York. 2016. Accessed December 31, 2019

We used this book to show how hard it was to preserve the types created on producing books. For instance, the woodblock must be in a dry, well-ventilated place where people must guard such prints not only from the environmental conditions such as fire but also creatures such as termites that damage the woodblock.

#### Papers/Essays:

Christensen, Thomas. "Gutenberg and the Koreans." *River of Ink: Literature, History, Art, Counterpoint*, 2014. Accessed December 31, 2019

We used this essay by Thomas Christensen because it shows that there was Chinese influence when developing and spreading movable types in Europe. It shows that European printers have already seen the Chinese model and that there is a possibility that there were European missionaries in China that have already learned such technology

from Chinese printers during their residence in China. The book also contains a quote which we used from Tsien Tsuen-Hsien who studies the history of books.

Constitutional Rights Foundation. "Gutenberg and the Printing Revolution in Europe." *Bill of Rights in Action*. Constitutional Rights 2009. Accessed December 31, 2019

This essay shows the history of printing in Europe prior to Gutenberg. We used this source because it shows the aspects of movable types in the view of Gutenberg. Also depicts the impacts of Gutenberg's movable types making it useful to. Also, the source shows that Europeans used manuscript mainly to publish books showing the labor needed just to copy one book.

Dittmar, Jeremiah; Seabold, Skipper. "New Media and Market Structure: Printing and Europe's Transformation After Gutenberg." ,2017, Accessed January 3, 2020

We used this paper to find the short-term impacts of Gutenberg. It shows the widespread publishing of books with numbers. By showing the numbers which are accurate, we can show the impact of Gutenberg's movable types with solid evidence supporting our exhibit and our topic.

Dittmar, Jeremiah, "Information Technology and Economic Change", *The Quarterly Journal of Economics*, Oxford University Press, 2011. Accessed January 3, 2020

We used this paper due to its images of the spread of printing press after its development by Gutenberg. The diagram we showed on the exhibit was based on the following report. We were able to use this as our short-term impact to depict and show the exponential spread of printing presses and printing shops. Once the first movable type store was established in Mainz, Germany, it was a matter of time for the expansion of other shops around Europe.

Hong Kong Heritage Museum. *The Art of Chinese Traditional Woodblock Printing*, Hong Kong, 2000-2004, The Art of Chinese Traditional Woodblock Printing. Accessed December 30, 2019

This paper/website has summarized the aspects of the developments of Chinese woodblock printing. By showing how they have developed their woodblock printing technology and its roles on further developing it to movable types We were able to estimate the potential progresses the East-Asian countries made on developing initial advanced printing technologies.

Jixing, Pan. "A Comparative Research of Early Movable Metal-type Printing Technique in China, Korea and Europe." *Gutenberg Jahrbuch*, 36-41,1998. Accessed December 30, 2019.

This paper/essay describes the history of movable types in East-Asia. It has several details about Chinese and some Korean developments of both woodblock and especially movable type printings. We used this source in order to use this as our base to support our claim on the achievements of East-Asian countries (specifically China and Korea) on their developments of movable type printing and how it is not being recognized by Europe. One controversial fact it claims though is that *Mugujeonggwang Daedaranigyeong* was in fact printed in China, not Korea.

Nam, Kwon-Heui. "Communication between knowledge and information in chosun dynasty by the study of woodblock and metal type printing." Daegu: 경북대학교 사회과학 연구원 2013. Accessed January 2,2020

We used this essay because it explains the effects of the metal movable types in Korea in a nice way. It gave us an idea of the 3-way structure on distributing books. Between the central government, local government, and the individual. This becomes the short-term impact of movable metal types in Korea due its usage through breaking the barrier of interaction.

#### Websites:

Bellis, Mary. "Biography of Johannes Gutenberg, Inventor of the Printing Press." *ThoughtCo*, ThoughtCo, 21 July 2019, [www.thoughtco.com/johannes-gutenberg-and-the-printing-press-1991865](http://www.thoughtco.com/johannes-gutenberg-and-the-printing-press-1991865). Accessed January 6, 2020.

The website is a short biography of Johannes Gutenberg and what achievements had made. This gave us a brief intro to who Gutenberg was and what he did and the bias it has with him and the printing press.

Cheongju Early Printing Museum. "Jikjiworld.net", *Cheongju.go*, 2014, [cheongju.go.kr/app3/jikjiworld/content/eng\\_main/index.html](http://cheongju.go.kr/app3/jikjiworld/content/eng_main/index.html). Accessed January 2, 2019.

We used this source because it contains several information related to *Jikji* which is the world's oldest existing metal movable type printed book. Cheongju early printing museum is a that shows the history of printing of Korea. *Jikji* itself was printed on a temple near Cheongju which seems reasonable for the location of the museum. We read several articles about the nature of *Jikji* and we found that there was a museum called Cheongju early printing museum which references *Jikji* several times.

“China in 1000 CE.” *The Song Dynasty in China*, [afe.easia.columbia.edu/songdynasty-module/tech-printing.html](http://afe.easia.columbia.edu/songdynasty-module/tech-printing.html). Accessed January 6, 2020.

This source roughly explained the concept of movable type and how it was used in China. We used it to reinforce our understanding of the concept of movable type and some background information.

“Early Printing in Korea - 3.2 Movable Type Printing.” *Early Printing in Korea - 3.2 Movable Type Printing - CefiaWiki*, 19 Jan. 2017, [cefia.aks.ac.kr:84/index.php?title=Early\\_Printing\\_in\\_Korea\\_-\\_3.2\\_Movable\\_Type\\_Printing](http://cefia.aks.ac.kr:84/index.php?title=Early_Printing_in_Korea_-_3.2_Movable_Type_Printing). Accessed January 6, 2020.

This website contains the history of early metal movable type printing in Early Korea. We used this source in order to find several records of the uses of movable types after the creation of *Jikji* which the first recognized printed book in the world was using metal movable types. From here, we discovered that after *Jikji* Koreans developed different types of metal movable types on the Joseon dynasty which is after Goryeo Dynasty. *Jikji* was printed in Goryeo dynasty. Koreans during the Joseon dynasty had developed their printing shops in order to effectively spread certain books to the surrounding areas.

The Editors of Encyclopaedia Britannica. “Printing Press.” *Encyclopædia Britannica*, Encyclopedia Britannica, Inc., 21 Aug. 2019, [www.britannica.com/technology/printing-press](http://www.britannica.com/technology/printing-press). Accessed January 6, 2020.

When we first started our research on movable types, we barely had any knowledge on our topic. Britannica was one of the first basic source we started looking up. Through such research we got the main key terms for

History.com Editors. “Printing Press.” *History.com*, A&E Television Networks, 7 May 2018, [www.history.com/topics/inventions/printing-press](http://www.history.com/topics/inventions/printing-press). Accessed January 6, 2020.

This website explained the history of the printing press. We used it to have a broad view of the timeline of movable type.

History.com Editors. “The Puritans.” *History.com*, A&E Television Networks, 29 Oct. 2009, [www.history.com/topics/colonial-america/puritanism](http://www.history.com/topics/colonial-america/puritanism). Accessed January 6, 2020.

This website explains the origin and of the puritans. We used this source to enhance our learning on the impact of movable type in Europe.

Information Service. "KOREA.NET." *Goryeo : Korea.net : The Official Website of the Republic of Korea*, [www.korea.net/AboutKorea/History/Goryeo](http://www.korea.net/AboutKorea/History/Goryeo). Accessed January 11, 2020.

This website contains the map of Korea in 1377 which is when *Jikji* was printed. The map was used on the exhibit as an image because it gives readers some context on how Korea was like when *Jikji* printed. Korea was still a kingdom when *Jikji* was printed which is different from its current political structure.

"Jikji." *Jikji - New World Encyclopedia*, [www.newworldencyclopedia.org/entry/Jikji](http://www.newworldencyclopedia.org/entry/Jikji). Accessed January 6, 2020.

This website serves as the main component on basic information about *Jikji*. It gives us basic information of the main historical context about *Jikji*. As saw in the website *Jikji* was the world's first book printed using Metal Movable type. We learned that *Jikji's* historical value was greater than itself having itself as a book.

"Johannes Gutenberg." Biography.com, A&E Networks Television, 23 June 2019, [www.biography.com/inventor/johannes-gutenberg](http://www.biography.com/inventor/johannes-gutenberg). Accessed January 6, 2020.

This is the biography. We used this source as an overview for Gutenberg's life and achievements.

Lehmann-Haupt, Hellmut E. "Johannes Gutenberg." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 19 Aug. 2019, [www.britannica.com/biography/Johannes-Gutenberg](http://www.britannica.com/biography/Johannes-Gutenberg).

This is a brief biography on Johannes Gutenberg, including what he did and what he built throughout his lifetime. We used this source to better understand Gutenberg's life.

"Page from Original Gutenberg Bible on Display at Liberty University Museum: Liberty University." *Page from Original Gutenberg Bible on Display at Liberty University Museum | Liberty University*, 15 Aug. 2019, [www.liberty.edu/news/index.cfm?PID=18495&MID=339925](http://www.liberty.edu/news/index.cfm?PID=18495&MID=339925). Accessed January 3, 2020.

We used this source to get an image of the Gutenberg printing press. We have been struggling to find images of printing presses resembling the ones Gutenberg, so we had to get an image of a replica. One technological advancement Gutenberg made while developing his printing press was that the machine was able to press the type onto paper making it more efficient.

Palermo, Elizabeth. "Who Invented the Printing Press?" *LiveScience*, Purch, 25 Feb. 2014, [www.livescience.com/43639-who-invented-the-printing-press.html](http://www.livescience.com/43639-who-invented-the-printing-press.html). Accessed January 6, 2020.

The entire history of the movable type is depicted in this source. Though the source was not detailed, we still used it to reinforce our knowledge.

“Printed Copy of the Diamond Sutra.” *The British Library*, The British Library, 30 Dec. 2014, [www.bl.uk/collection-items/the-diamond-sutra](http://www.bl.uk/collection-items/the-diamond-sutra). Accessed December 30, 2019.

This source has some descriptions about the Diamond Sutra which was printed in China in 868 AD. We used this source in order to get some descriptions on its origins, its texts and its values. This further reinforces our claims of the achievements made in East-Asia while developing wood block types. It also gives us its religious aspect when it talks about the values that are related to Buddhism making it also cultural.

“The Project Gutenberg EBook, A Brief History of Wood-Engraving from Its Invention, by Joseph Cundall.” *The Project Gutenberg EBook of A Brief History of Wood-Engraving from Its Invention, by Joseph Cundall*, [www.gutenberg.org/files/40589/40589-h/40589-h.htm#page11](http://www.gutenberg.org/files/40589/40589-h/40589-h.htm#page11). Accessed December 31, 2019.

We used this website because it shows the history of woodblock printing in Europe. Another reason we used this source is because it has a picture of *Biblia Pauperum* which means the bible for the poor. It is an example of printing because it can lower the costs of the book and allows easier access for the poor people making it better for the society.

Wight. “Gutenberg Bible: Making the Bible - the Ink.” *Gutenberg Bible: Making the Bible - the Ink*, The British Library, 21 July 2004, [www.bl.uk/treasures/gutenberg/ink.html](http://www.bl.uk/treasures/gutenberg/ink.html).

This source from the British Library about the ink that Gutenberg used in printing his Bibles. We used it to understand the achievements of Gutenberg.

황석주 . “U.S., U.K. Publishers Recognize Korea's 'Jikji' as World's Oldest Metal-Printed Book.” *Yonhap News Agency*, 황석주, 25 July 2018, [en.yna.co.kr/view/AEN20180726012200315#none](http://en.yna.co.kr/view/AEN20180726012200315#none). Accessed January 6, 2020.

This source shows how different western publishers now acknowledge that *Jikji* is the oldest movable type printed in the world. It shows that even Europeans understand that East-Asia was faster than Gutenberg on developing movable type technology.

#### Images:

Alphahistory. “Denis Diderot.” Denis Diderot. [www.alphahistory.com/frenchrevolution/denis-diderot/](http://www.alphahistory.com/frenchrevolution/denis-diderot/).

This is an image of Denis Diderot who took an important part on the enlightenment movement in Europe. We used this image on our exhibit board.

Baidu. “北宋佛说观无量寿佛经活字印本.” 北宋佛说观无量寿佛经活字印本.  
[www.baik.baidu.com/item/北宋佛说观无量寿佛经活字印本/4800072](http://www.baik.baidu.com/item/北宋佛说观无量寿佛经活字印本/4800072).

This is an image of an artifact proving movable type started in China. We used this as a visual on our board.

Britannica. “Geoffrey Chaucer, from the 15th-century Ellesmere manuscript of *The Canterbury Tales*.” *The Canterbury Tales*. [www.britannica.com/topic/The-Canterbury-Tales](http://www.britannica.com/topic/The-Canterbury-Tales).

This is an image of Chaucer’s *Canterbury Tales*. We used it on our Exhibit to show influence of movable type on literature.

Britannica. “William Caxton.” William Caxton. <https://www.britannica.com/biography/William-Caxton>.

This is an image of the portrait of William Caxton. We used this image to show William Caxton visually.

“First Protestant Church.” *Official Site for New Braunfels Convention & Visitors Bureau*, [www.playinnewbraunfels.com/listing/first-protestant-church/13801/](http://www.playinnewbraunfels.com/listing/first-protestant-church/13801/).

This is the image of the first protestant church. We used it on our exhibit board.

Garygunderson. “French Bible.” French Bible. [www.garygunderson.net/2014/11/06/deep-roots-new-fruit/img\\_1804/](http://www.garygunderson.net/2014/11/06/deep-roots-new-fruit/img_1804/).

This is the image of the first ever French translation of the Bible to be printed. We used this image to represent the impact of movable type and causing the Protestant Reformation.

History.com. “The Reformation.” *History.com*, A&E Television Networks, 2 Dec. 2009, [www.history.com/topics/reformation/reformation](http://www.history.com/topics/reformation/reformation).

This is an image of the oil painting of the Protestant Reformation. We used this image as a visual for the Protestant Reformation.

Lutheran Reformation. “Martin Luther’s German Translation of Bible.” Luther’s Translation of the Bible. [www.lutheranreformation.org/history/luthers-translation-of-the-bible/](http://www.lutheranreformation.org/history/luthers-translation-of-the-bible/).

This is the image of Martin Luther’s German translation of the Bible. This shows the movable type’s influence in the Protestant Reformation as an example.

Tricycle. “Metal Type Cast.” The Buddhist History of Moveable Type. <https://tricycle.org/magazine/buddhist-history-moveable-type/>.

This is an image of the type cast when printing. We used this picture to show that the need to reverse the text on the type cast.

“Bi Sheng – Who Invented Movable Type”, [www.zglsc.com/a/201811/10231.html](http://www.zglsc.com/a/201811/10231.html).

This is an image of Bi Sheng. We used it as a visual for Bi Sheng.