

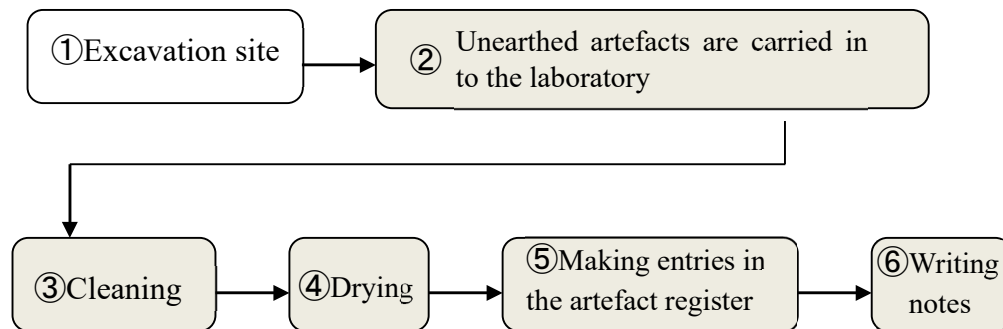
Research Method of Archaeological Artefacts

Nara City Archaeological Research Centre

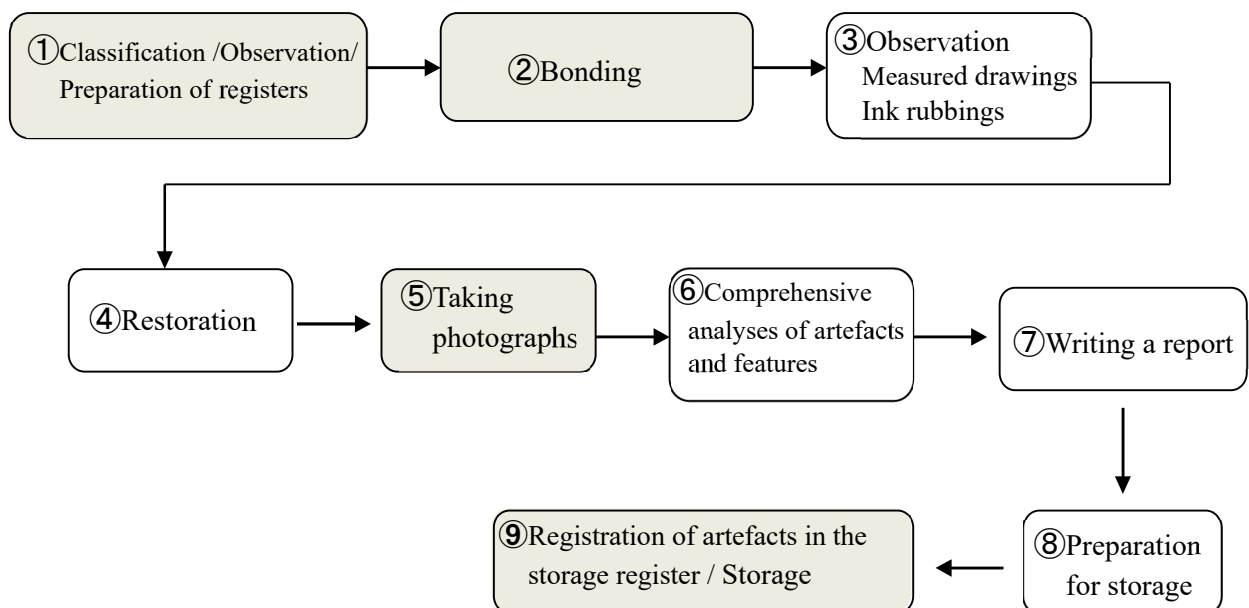
Professional Tips !

- ★ Archaeologists must accurately record all information obtained from the excavated artefacts as archaeological records.
- ★ Research of artefacts is essential for archaeological studies. It gives us an important opportunity to observe them in detail. Further analysis of artefacts can reveal not only the age and characteristics of features, but also the production place and distribution channels of those artefacts. It is possible that we can even understand the economic situation of those days.
- ★ Conduct the sufficient basic research whenever the on-site excavation work ends. It is essential for the study of archaeological artefacts. You must understand that without basic research, archaeological studies cannot make progress.

【Preparatory work before research】



【Research】



② Artefacts are carried in to the laboratory

- Whenever you carry in the artefacts from the excavation site, fill out the form of the “carried-in artefacts register”.

→It is important to record in terms of when, what and how much of artefacts are transported to the laboratory for grasping the situation.

③ Cleaning of artefacts

- Before cleaning, you must make sure whether the artefacts can be washed with water or not.
- The residues of decorative designs, paintings and Japanese lacquer sometimes remain on the surface of earthenware and baked clay objects. You must not scratch or abrade the surface, as a trace of the production methods may also remain on it.
- Each artefact and its information card must be treated as a pair.
- Clean the unearthed artefacts as soon as possible and by keeping pace with the excavation work on the site. It is necessary to establish the system that enables you to plow back the useful information obtained from cleaning into the excavation work.



[Earthenware and baked clay objects]

◆Soft earthenware and baked clay objects◆

- Wash them with water using a soft brush. When you remove the dirt in a pit by use of a bamboo skewer or a toothpick, you should be most careful not to scratch the surface.
- Do not use a hard brush for washing. If you rub the surface with it, it leaves brush marks.
- Carefully wash the broken section (surface) of sherds, too.
- You should be careful! If you soak earthenware and baked clay objects in water for long, they may dissolve.
- The deteriorated earthenware with ragged surface may dissolve by washing. Therefore, do not wash them with water. Instead, just remove the dirt/deposit on the surface with a soft brush or wash out with a spray.
- Do not wash them in a strong water flow, which may cause damage.
- While washing, be careful not to remove Japanese lacquer or vermilion paintings on the surface.
→Dry them in the shady place.
- Do not use a drying machine. It may cause cracks on the surface.

◆Hard earthenware and baked clay objects◆

- You can use somewhat hard brushes (or bamboo brushes), but do not repeatedly rub the surface, which may cause damage on them. It is advisable to move the brush tapping on the dirt.
- If the surface is painted with Japanese lacquer or vermilion paintings, wash them carefully just like soft earthenware and baked clay objects.

- Drying under the sun does not make cracks on the surface.

[Metal objects/ Wooden objects/ Stone implements / Stone objects]

◆Metal objects◆

- Dirt and patina/rust adhere to the most of unearthed metal objects. You must remove dirt to prevent the progress of patina/rust, but avoid using tap water because it contains salt.
- A bamboo spatula, a bamboo skewer and a brush are commonly used to remove dirt. In case of dried and hardened dirt, impregnate it with ethanol by using a brush at first, and soften it. It is easier to remove.

◆Wooden objects◆

- Particles of sand and baked clay tend to penetrate into the cracked part of the most unearthed wooden objects.
Remove them carefully/elaborately with a bamboo skewer.
- Most wooden objects are fragile, so do not rub them hard on the surface not to erase a processing trace.
- If the objects are too fragile to be cleaned with a brush, immerse them in the static water and shake softly. You can remove dirt by softening it.

◆Stone implements/ Stone objects◆

- Bamboo brushes are commonly used to wash stone objects. You should be careful not to rub the surface too hard and not to cause any damage.

④ Drying

- Washed artefacts must be dried completely. Insufficient drying encourages mold growth.
- Soft earthenware/baked clay objects, artefacts with deposit and with paintings must be dried in the well-ventilated and shady place. →When sun drying, there is a risk of surface deterioration.
- Put a washed artefact and its card in a bamboo basket and dry. While drying, be careful that the artefact card is blown away by wind.
- Do not dry artefacts outdoors on windy days. Dry them indoors not to be blown away by wind. High wind may blow off bamboo baskets together with artefacts.
- Movable shelves are useful for drying.
- If you do not have bamboo baskets, make paper boxes with absorbent old newspapers to economize.
- Do not dry artefacts in a plastic bag.
- At the same time of washing and drying, begin to prepare the artefact register.
→Create a memo that contains information of washed artefacts and of artefact cards.
(Later, you can input data in the Excel worksheet based on this memo.)

⑤ Creating the artefact register

- Before writing explanatory notes on the surface of well-dried earthenware, create the artefact register.
- As is already mentioned, allocate the number to each artefact card and mark the number on the artefact.
- Before numbering the artefact, it is necessary to sort them into a group of the same feature or the same stratum.
- The order of numbering must be based on the fixed standard decided by each organisation. It is not good to change the standard of numbering depending on the person in charge.
- By using the time of washing artefacts, input all data into the worksheet of Excel at random based on the memo made from the artefact card beforehand.
- ◆ After inputting all data, sort them in numerical order of features by executing one of Excel functions.
- ◆ When data is rearranged in order, assign the registration number from the top to the bottom.
 - ※ Each organisation should discuss and decide digits of the registration number. Nara city standardises it three digits from 001.
 - ※ If the registration numbers are more than 999, we use four digits.
- After numbering all artefacts, record the number in the corresponding artefact card.
- Store the artefacts in the container arranging in order of serial numbers. It is useful to write the registration number and the number of the feature on the container.

An example of the artefact register

Research No.: HJ 500th (○△×□)
 Name (a person in charge): Miyoshi

1/1

Registration No.	Zone	Feature	Stratum (soil)	Date (Y/M/D)	Earthen-ware	Roof tiles	Wooden objects	Metal objects	Stone implements	Stone objects	Note
001		SB02 Posthole 01	dark grey	150522	✓						
002		SB02 Posthole 02 Post pipe	grey	150522	✓						
003		SB02 Posthole 03	Cutting section	150522	✓						
004		SB02 Posthole 03	dark grey	150522	✓						
005		SB04 Posthole 03	Cutting section	150522	✓						
006		SB04 Posthole 07	dark grey	150522	✓						
007		SB05 Posthole 01	Cutting section	150522	✓						
008	LS-92	Posthole 01	yellowish grey	150519	✓						
009	LS-94	Posthole 02	dark brown	150522	✓						
010	LT-88	Posthole 01	dark grey	150515	●						Old chisel
011	LT-88	Posthole 02	brown grey sandy	150518	✓						
012	LT-88	Posthole 03	reddish brown	150518	✓						
013	LT-89	Posthole 01	dark grey	150515	●						Old chisel
014	LT-89	Posthole 02		150515	✓						
015	LT-90	Posthole 01	dark grey	150515	●						Old chisel
016	LT-90	Posthole 01	dark grey	150522	✓						
017	LT-91	Posthole 01	dark grey	150522	✓						
018	LT-94	Posthole 01	dark grey	150514	●						Old chisel haniwa
019	LT-94	Posthole 01	dark brown	150522	✓						
020	LT-94	Posthole 02	dark grey	150514	✓						
021	LT-94	Posthole 02	dark grey	150522	✓						

Artefact Card

Research No.	HJ 500th (○△×□) 008
Name of Zone	LS-92
Posthole No.	Posthole 01
Name of Stratum	Yellowish grey soil
Date (Y/M/D)	2015 / 05 / 19

Write a registration No. in the upper right corner with a red magic marker.

⑥ Explanatory notes

- Mark every (even small) sherds as possible.
- It is the basic rule to write markings on the inconspicuous part. However, it is better to avoid writing on a cracked surface. When sherds are bonded, you cannot discern the markings.
- When you mark the contents of an artefact card on the sherds,
 - Do not write them side by side such as “HJ500 008”, because we cannot distinguish a research number and a register number. So, it is better to write them dividing into two lines.

HJ500

008

※ Write in two lines!

【Commentary】

- ◆ **HJ** is an abbreviation for the **Heijo** Palace Site.
- ◆ **500** is the number of the feature in the site, which is assigned at the excavation work.
- ◆ **008** is the card number of an artefact. If you search for 008 in the register, you can find the specific information where it was excavated.

◆ Before the research of artefacts ◆

- It is important to sort the artefacts into clear categories according to the feature.

→When all artefacts are temporarily stored, it is often the case that different kinds of artefacts, such as metal objects, wooden objects and special artefacts are stored in the respective sections. For the research of artefacts, you had better assemble all artefacts into the one place. However, because of special circumstances of the organisation, artefacts are assigned by materials to specific sections and in charge of different personnel for investigation. Take measures appropriate to the situation.

① Classification, observation and creating specific registers

◎ Those are essential for the research of artefacts.

◆ The key points that you must investigate in the process of research ◆

1. What types of artefacts were excavated from the site?
2. More specifically, “What” was excavated from “where”?
3. How much is the total amount of artefacts from the site?
4. What are the major artefact and the special artefact?
5. Age differences among unearthed artefacts.

→It is necessary to establish the research method based on above mentioned points to reveal the age and characteristics of the site and the feature. Therefore, start with observing and recording unearthed artefacts per the excavation unit.

1. Keeping records per the excavation unit

- Make a table of observation, and produce the precise observational record on each registration number.
- On this occasion, make drawings and take snapshots. Those can be useful evidence to understand the characteristics of artefacts.
- No matter how small the sherds, make careful observation of them.
- After you finish observation of artefacts from the same feature, record whatever you noticed about the characteristics and age of them.
 - By recording, you can grasp the general characteristics of artefacts later.
 - While recording, check whether any sherds can be joined together.
- On this stage (or on the marking stage), prepare all sorts of registers.

2. Classification beyond the excavation unit

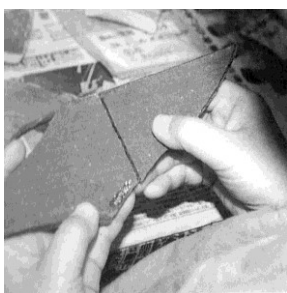
- At first, record a group of artefacts excavated from the same feature based on the excavation unit. Then, extend observation and classification from the artefacts excavated from the same stratum to the whole feature.

- Do not classify artefacts into the same category too hastily just because they are from the same feature. You must not ignore the excavation unit in classification. The excavation unit is the fundamental framework for research.
- Classify artefacts completely by materials and by shape categories.
- If the artefacts from the different age groups mix in a category, you need to examine its reason. It may be caused by your biased assumption. You should be careful in classification.
- When you classify artefacts beyond the excavation unit, you can realize what you did not notice before. So, record your observation in detail.
- After revealing the whole picture of artefacts from the same feature, you can proceed to the bonding work.

② Bonding of sherds

- Do not bond every sherds more than necessary, which is not much effective. Before bonding, classify the artefacts by materials and by shape/type categories.
- Even if you find the matching sherds, do not bond them immediately. Search again for a more appropriate sherd.
- Before bonding, remove particles of sand and dirt adhered to the broken surface of a sherd. Neglecting this process causes the deformation of the whole shape after bonding.
- Cemedine, an adhesive for bonding, does not harden instantly. Leave it for a while.
→ While waiting, you need to think out a method to prevent deformation of bonded sherds.
- Remove excess Cemedine that appears on the surface with a bamboo skewer.

- ◆ At the time of bonding, many artefacts are partially consolidated with plaster.
- ◆ It is preferable that full restoration with plaster should be made after the measured drawing and should be based on it.
- ◆ In some cases, bonding and restoration with plaster are not appropriate for observation of cracks and the inside. Therefore, the bonding work should be carefully proceeded according to the condition of artefact.



Bonding with Cemedine deformation.



Hold tight to prevent



Stand the unstable bonded sherds in sand for a while with both ends pinched by clothes pins. → Be careful about deformation when pinching.

③ **Observation, analysis, measurement and ink rubbing** (Methods for measurement and ink rubbing of earthenware are described in another material.)

- Archaeologists, working under various constraints, cannot measure and take ink rubbings of all excavated artefacts.
- You must select which artefacts should be measured based on some fixed criterion.
→ At least, it is desirable to choose and measure proper artefacts that enable the third party to grasp the characteristics of the site and to trace the chronological change of it.

【Analysis of artefacts】

- Measured drawings of earthenware reveal various information.
 1. Manufacturing techniques
 2. Habits of the artisans
 3. The production place and the producer
 4. The intended purpose of usage
 5. Quality of earthenware
 6. Distribution routes and regional exchanges
 7. Production periods
- It is difficult to fully grasp the characteristics of artefacts in large quantity, just by looking at them (with naked eyes). (→ Beyond human ability)
- The careful observation based on measured drawings and sorted artefacts is necessary.
→ You can extract the typical characteristics from this examination.
- The observation enables you to better understand what should be weighed most among many artefacts excavated from the same feature.
- After observing through above mentioned perspective, you can understand the whole picture of artefacts. Then analyse the information/data of artefacts to estimate the manufactured periods and record them.

④ **Restoration of artefacts**

- Restoration is the process to return artefacts to the original appearance. Artefacts are mostly unearthed in the cracked/broken state, and only those who have the profound knowledge on the artefacts can restore them correctly.
- Restoring the whole shape of an artefact is only limited to those whose photographs are needed to publish the report or those to be displayed in the museum.
- In the process of restoration, defective parts are mostly filled with the dental plaster.
- After the restoration work, the earthenware is partially covered with plaster. So, wash it carefully and dry it well. Then, paint the white (filled) parts with watercolours, which is close to the original colour as a finishing touch.



⑨⑩ Registration in the storage register

● After writing a report, create the storage register and store the artefacts in the repository.

◆ Preparation for storage ◆

1. The artefacts are often stored in the different storage based on materials or shapes. But, if possible, store artefacts from the same feature in one container to make them as compact as possible. Write the name of artefacts clearly on the containers.
2. Use a little ingenuity to store the artefacts so that ones on the report can be immediately taken out.
3. The containers should be numbered serially.
4. Enter the storage locations (places) and the names of artefacts in the container, on the storage register so that anyone can easily locate them.