RESEARCH ARTICLE

Art & Archaeology: Employing Drawing as an Observational Technique[1]

Hailey Kennedy
Department of Anthropology, College of Arts and Science, University of Saskatchewan

Hugh McKenzie
Department of Anthropology, Economics and Political Science, MacEwan University

ABSTRACT
Observational skills provide the foundation for both drawing and archaeological techniques. Drawing was frequently employed within archaeology as a recording technique or to produce technical illustrations for published academic papers. However, in recent years the widespread use and adoption of digital photography and 3D imagery has resulted in a decline of its use and such skills are now only briefly considered in archaeological teaching as practical and worthwhile endeavors. This paper considers the role drawing can have within archaeology and suggests that drawing is a useful tool to aid in critical observation. With the integration of specialist interviews, an art workshop experiment was created. This workshop experiment was created to explore drawing as a learning technique in which to aid in developing the observational skills of undergraduate archaeology students. The results of this study suggest that drawing is a useful mode of observation, one that enables researchers to gain a deeper understanding of what they observe, that it can be used to *see*.

Keywords: Interdisciplinary, Archaeology, Drawing, Ethnoarchaeology, Applied Archaeology

INTRODUCTION

The role of drawing in archaeology is often overlooked despite being considered by many to be intrinsic to archaeological practices, as it imparts critical skills that influence our understanding of the archaeological record (Ingold 2019; James 2015; Morgan et al. 2018; Morgan et al. 2021; Wickstead 2013). It is a skill used to create, from scientific illustrations to drawings done by researchers to record information, the very "practice of archaeology…*is* drawing" (Wickstead 2013,

[1] A Note from the Primary Author: Drawing has been engrained in my life for over fifteen years and yet it did not occur until recently that it had allowed me to become more confident in certain areas of archaeology. This was especially apparent within some of my undergraduate archaeology classes, one in which extra credit was given on assignments if a drawing of the artifact was provided. While you were not marked on how well the drawing was executed, I noticed that many of my peers did not attempt a drawing. While this could have been due to several factors, it nevertheless piqued my interest in this topic. I have also recognized that for me, drawing has assisted in my interpretation of material particularly when learning new concepts or ideas. It has helped me to understand flake scarring patterns on lithic materials and learn features on osteological remains (Figures 1 and 2). In general, drawing has forced me to critically think about what I was seeing and provided me with the tools to master concepts, rather than looking at and subsequently forgetting the diagrams in my textbooks.

561). Both drawing and archaeology rely on employing observational techniques to capture, interpret, and derive information about the material remains of the past (James 2015; Morgan et al. 2018; Morgan et al. 2021). An accurate drawing of an object relies on an understanding of its physical attributes. The perspective in which that object is viewed, the relationship to its surrounding environment and the direction of the light source impact how that object is depicted (Addington 1986; Griffiths et al. 1990). In archaeology, the ability to correctly observe the attributes of artifacts within their context is integral to producing an informed interpretation. The creation of stratigraphic profiles and planview maps during fieldwork, the production of polished illustrations and recreations for academic papers (Figure 1), or the personal interpretations and recordings of ethnographic observations focus on demonstrating and communicating knowledge (Taussig 2011; James 2015; Morgan et al. 2018; Morgan et al. 2021; Wickstead 2013). These formats are useful; they record or capture specific information to explain concepts, attributes, or ideas. However, when drawing is applied to archaeology as a *process* or *method*, it assists individuals in improving their observational skills (James 2015; Morgan et al. 2021). We highlight the importance of drawing in archaeology, that drawing can help in *seeing better,* particularly for the development of observational skills in undergraduate education. Causey (2017) uses drawing as a "way to see better" (151), recognizing that when you try to draw an object you are forced to critically evaluate and understand that object within the context of how you are viewing it. The process of drawing employs observational skills and tactics which lead to a deeper understanding of what is being drawn (Kuschnir 2016; James 2015; Morgan et al. 2018; Morgan et al. 2021; Wickstead 2013).

Taking an interdisciplinary approach, a workshop experiment facilitated by the author was created to further explore the process of drawing as an aid to understanding artifacts.

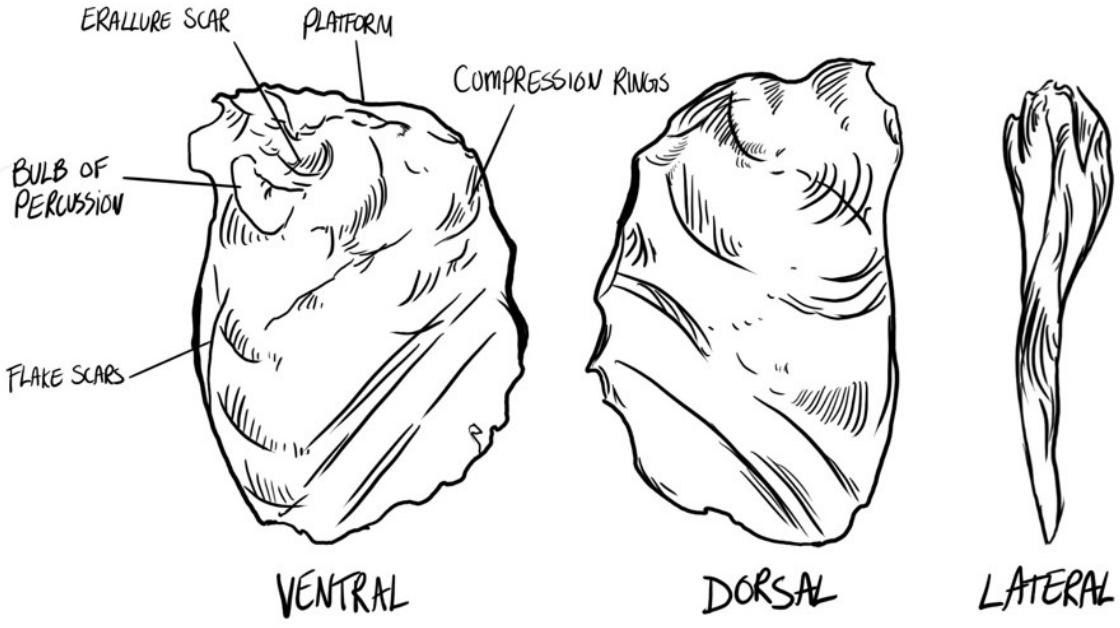

FIGURE 1: *Lithic Diagram Created by Author.*

Aimed at introductory-level undergraduate archaeology students, these workshops were intended to impart basic drawing skills to evaluate if drawing improved students' written observations and interpretations. Prior to the workshops, a series of specialist interviews were conducted to provide additional background information and contextualize current thoughts around drawing practices. The use of interview quotations throughout this paper takes a reflexive approach to incorporate researchers' individual reflections and interpretations of their experiences around drawing within archaeological practices. To disseminate information to the public regarding this research, an online art gallery was constructed and incorporates both quotes from these interviews and completed drawings from the art workshops. This research highlights the usefulness of drawing as a method of improving observations, particularly when it is applied as a learning technique in undergraduate archaeological education.

DRAWING AS A METHOD

To understand the concept and application of drawing in this research, we use the term *mode of observation*. We define this as a method that researchers can employ to collect data or to obtain a greater understanding of what they are observing (Causey 2021). We suggest that drawing is one such mode of observation, particularly when drawing is used as a technique to learn (Figure 2). To consider drawing as a learning technique, the *process* or *act* of drawing an object is what should be emphasized (Kuschnir 2016; James 2015; Morgan et al. 2018; Morgan et al. 2021; Wickstead 2013). But before drawing can be understood as a process, it is important to first understand how drawing is typically employed in archaeology.

Different drawing approaches will produce different end-products. Technical illustrations and drawings done during fieldwork produce aesthetically distinct images, one is typically an accurate and polished piece while the other focuses on recording necessary data in limited amounts of time. However, these drawings are all undertaken with a similar intention, to *communicate* information (James 2015). The intention behind drawing is important to consider as there is a distinct difference between drawing to represent something and drawing as a method to improve a researcher's observations (Causey 2017; James 2015; Morgan et al. 2021). A drawing that results in an accurate or polished illustration takes time and, in most cases, prior artistic knowledge or skills (Addington, 1986; Raczynski-Henk, 2017). For example, artifact illustrations (Figure 3) focus on accurate depictions, following set standards that require an in depth

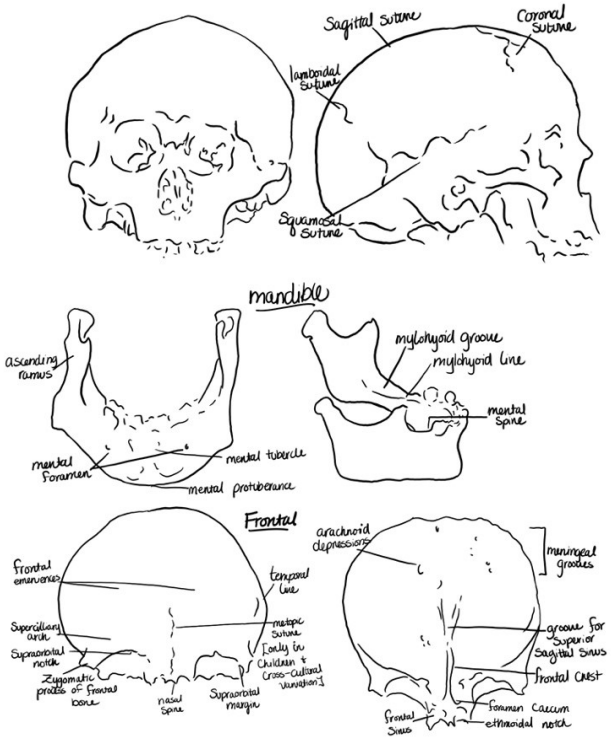

FIGURE 2: *Diagram with Osteological Terminology Created by Author.*

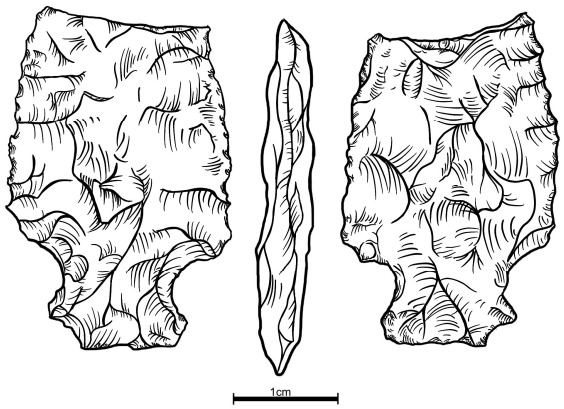

FIGURE 3: *Artifact Illustration Created by Author.*

understanding of texture, lines, perspective, tone, colour, and proportions (Addington 1986; Griffiths et al. 1990; K. Killackey, interview, January 4, 2022.). Consistency and an understanding of employing specific drawing techniques are incredibly important in producing a successful illustration. Standards may vary by region with different specifications around line weight or thickness, directional or descriptive line strokes, and the overall position of the artifact on the page (Addington 1986; Griffiths et al. 1990; James 2015; Morgan et al. 2021; K. Killackey, interview, January 4, 2022).

Fieldnotes, such as planview maps and stratigraphic profiles, require an understanding of the context of the object(s) and the type of information sought to be captured. Some field drawings may be incredibly detailed and combine many descriptive words, phrases, or legends to understand what is happening; others may be messy, quick sketches to roughly capture an idea or relation of objects to each other (James 2015; Morgan et al. 2021; A. Beaudoin, interview, October 3, 2021). The focus on these drawings is to capture and convey information, and to be as accurate as possible. This process might include the use of tape measures, datums, portable grids, and compasses to record measurements or a general layout of how excavation unit blocks are set up. While these drawings could result in a more in-depth observation of what is being recorded, the emphasis is on balancing accuracy with time constraints that come with fieldwork (Morgan et al. 2018).

If drawing is approached as a *method*, the emphasis is on providing a greater understanding of what is being observed rather than whether the final drawing is accurate (James 2015). It is drawing for the purpose of learning about the object, rather than having a specific purpose for the completed image. Drawing to assist with artifact observation assumes that the individual or researcher tries to produce an image that is as accurate as possible, as doing so employs 'active' or 'critical observation' of that artifact (Kuschnir 2016). The success of these drawings is not measured by the quality of the image produced, but rather the critical observations made of the object during the drawing process (James 2015). This research reinforces drawing as a mode of observation to assist in the development of critical thinking skills, particularly for undergraduate archaeological students to train their observational eye.

UNDERSTANDINGS AND INTERPRETATIONS

To employ drawing as a mode of observation, this process must be understood as an *individual* experience. This presents a variety of barriers as the individual decides when, what, how or *if* a drawing is undertaken at all. For example, the amount in which a person draws in archaeology depends on their level of comfort and familiarity regarding their drawing skills (James 2015). Lynne Chapman, a fine artist based in London, has numerous experiences in teaching people with varying levels of drawing abilities and finds that "there are so many barriers to people creating art" (interview, June 21, 2021). While most individuals have the *physical* ability to draw the object in front of them, they *choose* not to because there is an "expectation that either [a

drawing] looks like a photographic version of the thing or it doesn't count, it's invalid, or childish" (interview, June 21, 2021). The expectation that a drawing must be visually appealing or 'perfect' can create obstacles and promotes avoidance for both researchers and students—even though it is the *process* of drawing that assists in developing observational skills, rather than the look of the drawing (Causey 2017; James 2015).

Within formal archaeological education, training in drawing has consistently diminished in recent years and has largely been replaced with digital processes like photography, digital surveys, and 3D scanning (James 2015; Morgan et al. 2018; Morgan et al. 2021; Wickstead 2013). This poses a significant barrier for students to develop basic drawing skills, further limiting the application of drawing within archaeological practices in general. A lack of widespread education about drawing and its employment as a tool can significantly diminish the acceptance, application, and presence within formal archaeological education (James 2015). Courtney Lawrence, a flintknapper and recent master's graduate from UNBC, has had little formal drawing education. While he agrees that drawing "helps visualize the [flintknapping] process and product better" he feels that, compared with 3D reconstructions, "illustration itself doesn't have that same impact or…power." (interview, July 30, 2021). However, comparing the use of hand-drawn images to digital drawings completed during fieldwork and when illustrating artifacts, Morgan et al. (2021) found that in both instances, choosing to draw with digital materials over pen and paper can negatively impact a student's overall understanding and recognition of artifacts and their contexts.

In post-secondary archaeological education, teaching students to draw is typically dependent on social networks, previous experiences, and pedagogical approaches of the educator (James 2015; Morgan et al. 2021). Kathryn Killackey, an archaeological illustrator with a masters in Field and Analytical Techniques in Archaeology, regularly guest-lectures at McMaster University during the pottery unit of the course her husband teaches. Though he does not share her extensive drawing background, "he does insist that it's helpful to understand your [pottery] sherd. To actually sit down and draw it." (interview, January 4, 2022).

Dr. Todd Kristensen, Regional Archaeologist of the Historic Resources Management Branch of Alberta and Assistant Lecturer at the University of Alberta, found that simply working with artists on public outreach projects assisted in new archaeological thought (interview, July 30, 2021). Illustrating scene recreations with artists interested in the minute, technical details made it "an interesting process, because it does force you to think about a single thing, technology or tool, or an artifact in a different way…how would you hold that in your hand…what would the shadows look like and how would that influence why people are attracted to that material or that tool type". Kristensen finds a collaborative approach between archaeologists and artists incredible valuable, and hopes that "staying involved in creating different types of artwork that people will value…will be a part of my career until it ends" (interview, July 30, 2021).

For Dr. Alwynne Beaudoin, now Director of Curatorial and Research at the Royal Alberta Museum, drawing has been something she has always done. It has even influenced her approach to mentoring graduate students by "insisting that they all did what I did, which is draw what they saw under the microscope to train their observational skills." (interview, October 3, 2021). The feedback she received from students was highly variable: "[s]ome of them didn't like it very much…they felt that they weren't very good drawers", while other students "really liked it and did

incredibly detailed drawings…almost illustrations" (interview, October 3, 2021).

An individual's experience, prior knowledge, or skills impact the approach taken when teaching, learning, and employing drawing techniques within archaeological contexts. The individual researcher's interpretation draws on their past experiences to understand and gain deeper knowledge about what they are observing. This interpretation can be incredibly subjective and changes with each researcher's discipline, specific educational background, theoretical approach, and life experience. To be "in the field with archaeologists and with paleontologists at the same time…it's very interesting…you can walk along a river cut bank and the archaeologist will see one thing and the paleontologist will see another. [This is the] difference between seeing and observing. No person will be able to see exactly the same thing when they look at something." (A. Beaudoin, interview, October 3, 2021). Gaining a deeper understanding of material culture requires practice, prior experience, and an understanding of what is being observed. We argue that to use drawing as a method is a useful and important tool when first learning observational skills. It can be employed to assist the researcher in interpreting their observations; drawing can be used to *see* (Causey 2017, 2021).

MATERIALS AND METHODS: DRAWING AS PRACTICE

The goal of drawing within this study, and its application to the workshop experiment, is to learn by doing, "to try and be as accurate as you can with what you see and not worry too much about whether…it is truly high-quality representational art" (Beaudoin, interview, October 3, 2021). The act of drawing itself is what is important as it can assist individuals in initially recognizing and interpretating data, to "focus on using the act of drawing as a process of perception" (Causey 2022, 220). Within this study, a drawn image is viewed as a result of the individual's observations, the quality of which can change depending on an individual's experience with drawing techniques. An *act* of drawing forces the critical evaluation of an object and its attributes, which allows the individual to perceive and interpret information about what they are observing. *How* they interpret and apply their interpretations may change depending on the students' experience levels, the context of the research, or the information that the individual is hoping to obtain by studying the object in the first place. However, this only works if the individual legitimately tries to produce an accurate drawing, that they dedicate the *time* to look at that object and understand its attributes. This does not mean that it will be a "good" drawing or produce a high-quality illustration at the end, but rather emphasizes that a legitimate effort be taken in understanding an object.

To understand what an object looks like, a reference or reference image is typically necessary. A reference refers to the use of images or the objects themselves being consistently viewed during drawing (Aristides 2011; Craig 2015; Gury 2017; Morgan et al. 2021; Piyasena, Philip 2012). They are regularly employed in art practices to help the artist to concretely visualize what is being drawn. Within the context of this study, the artifacts used in the workshop experiment would be considered the reference, as participants directly view the object while drawing. A reference is important as it is the thing in which a basic structural understanding of the object is understood. Drawing from a reference can help challenge an individual's existing perceptions and ideologies surrounding an object; it enables "you to really look closely at all the elements of what it is you're observing so the shape, the size, the structure, whether it has appendages, surface texture, [or] any kind of colour variation" (Beaudoin, interview, October 3, 2021).

THE WORKSHOP

To investigate drawing as a method for improving archaeological observations, an experiment was set up as a series of art workshops. Standard Research Ethics Board (REB) approval, as required by MacEwan University policy, was obtained for both the workshop experiment and interviews. The workshop experiment was intended to generate data to determine whether drawing had any influence or aid in observational skills with individuals at an undergraduate level in archaeology. The effect of drawing to aid in artifact observation was evaluated by having participants complete an initial drawing of an artifact, followed by instruction on basic drawing techniques after which a second drawing of the artifact was undertaken. This study aimed for group size to be between 7-12 individuals. The group size of this study was small to prioritize assistance in what was being taught and ensure that there were ample social distancing protocols in place, in accordance with MacEwan's COVID-19 protocols.

To teach drawing skills, the primary author organized three workshops, each ran for roughly an hour and a half each week for three weeks. There was an option to participate in these workshops either in-person or through an online platform. These two modes made this study accessible to as many interested individuals as possible, particularly taking barriers associated with COVID-19 restrictions into account. The in-person platform met every Wednesday from October 13, 2021 to October 27, 2021 at 1:00-2:30 pm in the Anthropology Lab in MacEwan University, as this location allowed for proper social distancing requirements to be met and housed the appropriate artifacts. The online platform was set up using Google Drive, in which each participant was sent a link to access the materials. The materials contained a lecture video, instructions, and examples of the exercises, with the content varying each week depending on what information was being covered. The link was sent after each in-person meeting to ensure that every participant had approximately the same amount of time in between each workshop. Online participants could then work on the material in an asynchronous format, at their own pace, though it was recommended that they complete the material on Wednesdays, similar to those who participated in the in-person workshop. For both the in-person and online workshops, it was strongly recommended that individuals completed a minimum of 10 minutes a day or a total of 50 minutes within each week of drawing practice. Consistent drawing practice provides a sense of confidence and familiarity with the drawing materials and the objects being drawn, making it easier for the artist to learn and express new techniques (Kistler 2011; Morgan et al. 2021; Chapman, interview, June 21, 2021).

A total of eight participants completed this study, two of which chose the online format. Participants were recruited using indirect recruitment through posters, private social media posts on Instagram and Facebook, and through online class presentation videos. Interested participants were then emailed an outline of what to expect from the workshops and were asked to document their familiarity and experience in art and archaeology. It was required that each participant had at least a basic understanding of archaeology such as an introductory level archaeology class or relevant field experience. This was to ensure participants had some sort of understanding of archaeological terminology and could broadly identify the artifact that they were provided.

Each participant (both in-person and online) was provided with an 8 by 10 inch, 30 sheet sketchbook to be used for the entirety of the study. Each sketchbook was given a number to keep track of which artifact was given to each participant and to assure anonymity. The first page of the sketchbook was where the initial assessment took place, before any drawing techniques were taught.

The participants completed an additional assessment at the end of the last workshop and were then asked to complete an optional end survey. Participants that took part in the online platform were required to book a specific time to do these assessments in the anthropology lab before and after the art workshops, during which time the online participants were provided with sketchbooks.

Both assessments had each participant answer the same three questions about an artifact that they were given, which was to establish a baseline for the participants' confidence in drawing and to provide a comparison between observations before and after learning some drawing techniques. The results of this workshop focused on the assessment questions obtained prior to and at the completion of the workshops. The instructional content within the art workshops was intended to give participants sufficient background to elevate their drawings and to teach them how to observe objects they were attempting to draw. Each assessment question was timed to ensure everyone had ample opportunity to answer the questions. The results of these questions were compared to the assessments done before and after the drawing workshops within the context of each participant's sketchbook. A deception component was also used for this portion of the study in that participants were initially told that *only* their drawings would be analyzed when, in truth, their written observations were analyzed as well. This was done to account for any unintentional biases of the participants. The comparison is outlined in the section below and was used to speculate whether drawing has an impact on observation.

> **Question 1:** Given your archaeology background, please describe this artifact as you would if you were in the field. Describe it in as much detail and using archaeological terminology as you deem appropriate. You'll have 5 mins to do this.
>
> **Question 2:** Draw this artifact to the best of your ability, include at least one side and a profile. You will be given 15 minutes."
>
> **Question 3:** Having now drawn your artifact, would you modify your above description in any way? If so, how? You have 5 minutes.

The criteria for comparing these drawings and observations is outlined as follows:

> **Drawing Quality:** specifically focusing on the accuracy of the objects being drawn, the detail being applied to the objects—quantified as the evidence of lines, tone, perspective, texture, and colour taken into consideration. If there was an improvement based on the initial drawing.
>
> **Descriptive and Observational Skills:** the specificity of the observations (specific textures, presence of flake scars, etc.), terminology being used and amount of details provided—quantified as whether there was a deeper range of observations or terms used compared with the initial artifact drawing or if there were new observations made or visible difference in the quality

The workshop topics themselves were broken into five main principles of art: lines, tones/values, perspective, texture, and colour. These topics were chosen as they are commonly taught within formal fine art classes and other learning materials such as books and videos (Gury 2017; Kistler 2011; Micklewright 2005; Piyasena and Philip 2012; Roig 2006). Specific examples and exercises were chosen because they focused on observation—such as drawing positive or negative silhouettes, contour drawings or line work to create texture (Causey 2017). These five principal concepts were highlighted throughout the workshops and applied within the context of drawing artifacts. Individuals

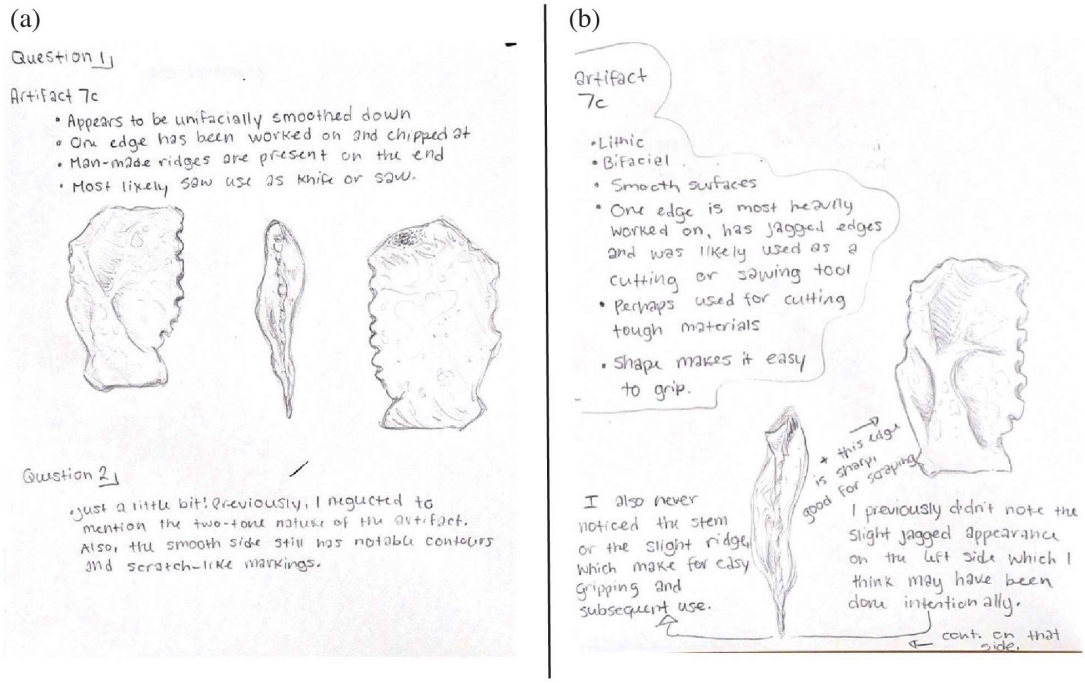

FIGURE 4: *Sketchbook 1, drawings before (a) and after (b) completion of the art workshops.*

who participated in the online workshop supplemented the artifacts with other materials of the individual's choosing as the artifacts were unable to leave the lab. The drawing exercises for each workshop were chosen to develop observational skills and to incorporate the principles covered within each workshop. The first workshop focused on lines, line weight, tone, and shading; the second workshop covered texture, perspectives, and proportions; and the third workshop focused on colour and specifically applying techniques to create traditional artifact illustrations.

After completion, workshop participants were sent a debriefing email and an optional survey questionnaire asking them to reflect on their experience of the workshop. Participants were asked if they thought that drawing had helped with their observations of the artifacts and if there were specific drawing exercises that they found to be the most helpful. The survey was anonymous with the intention to gather data on the teaching methods used and to assist in the planning of future workshops.

An optional art gallery was set up for the participants of this research, the Gray Gallery exhibition run by SAMU (Student's Association of MacEwan University). The gallery showcased drawings by the art workshop participants, relevant art workshop teaching materials, and quotes from the individuals that were interviewed. An online gallery format was chosen to allow access to as many individuals as possible and break any barriers surrounding accessibility to this research, COVID-19 related or otherwise. The link to the art gallery is https://samu.ca/art-and-archeaology-understanding-drawing-within-archaeological-contexts/.

WORKSHOP SKETCHBOOK RESULTS

Below is a comparison between the initial sketches completed by the participants prior to any workshop training and the drawings that were done upon completion of the art workshops. Each sketchbook is compared individually, and the differences are outlined and summarized below (note that

Sketchbook 2 was omitted due to participant withdrawal).

Sketchbook 1 (Figure 4) demonstrates an improvement in drawing quality and descriptive or observational skills. The improvement of drawing quality is more specifically seen in the profile drawing of the artifact; there are more exact lines when compared to the initial profile drawing. The second written analysis uses more exact terminology like "bifacial" and "lithic" than the initial analysis and it summarizes the minute details like the "the slight jagged appearance on the left side which I think may have been done intentionally." Another notable example is when comparing the initial analysis statement, "One edge has been worked on and chipped at. Man-made ridges are present on the end. Most likely [used] as knife or saw", with the second analysis statement of, "one edge is most heavily worked on, has jagged edges, 2nd was likely used as a cutting or sawing tool." Note the addition of the word "tool" assigns a typological use and the distinction that one edge is worked more than the other, infers a comparative analysis between the length and extent of the worked edges.

Sketchbook 3 (Figure 5) demonstrates both an improvement of drawing quality and more detail-specific written observations. Specifically, there are more distinct markings on the side view of the second analysis compared to the initial drawing in which it was just generally shaded as one tone. The profile drawing is also more accurate; it is level with the side view in the second analysis whereas, in the first analysis, it is physically turned on its side. In comparing the written observations, both appear similar. However, the second description of "smooth yet textured lithic stone tool" is more detailed than the former one, which was simply "stone tool debitage". A description of the colour is also present in the second analysis while absent in the first. The added description of texture can also be seen within the drawing, with specific marks depicting the imperfections on the lithic, when

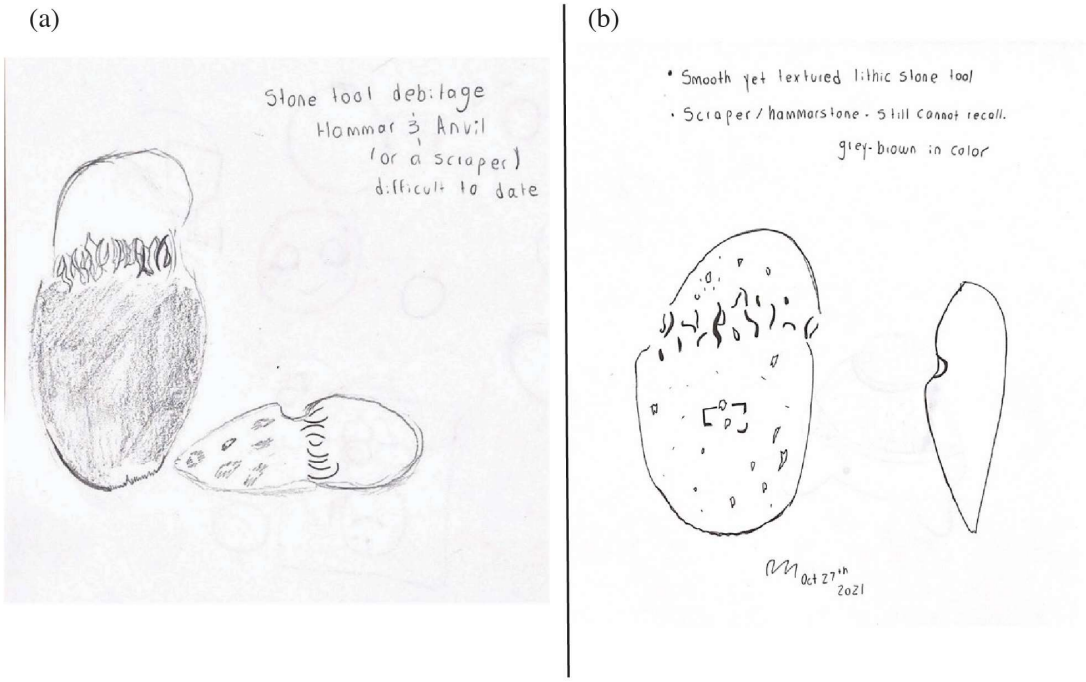

FIGURE 5: *Sketchbook 3, drawings before (a) and after (b) completion of the art workshops.*

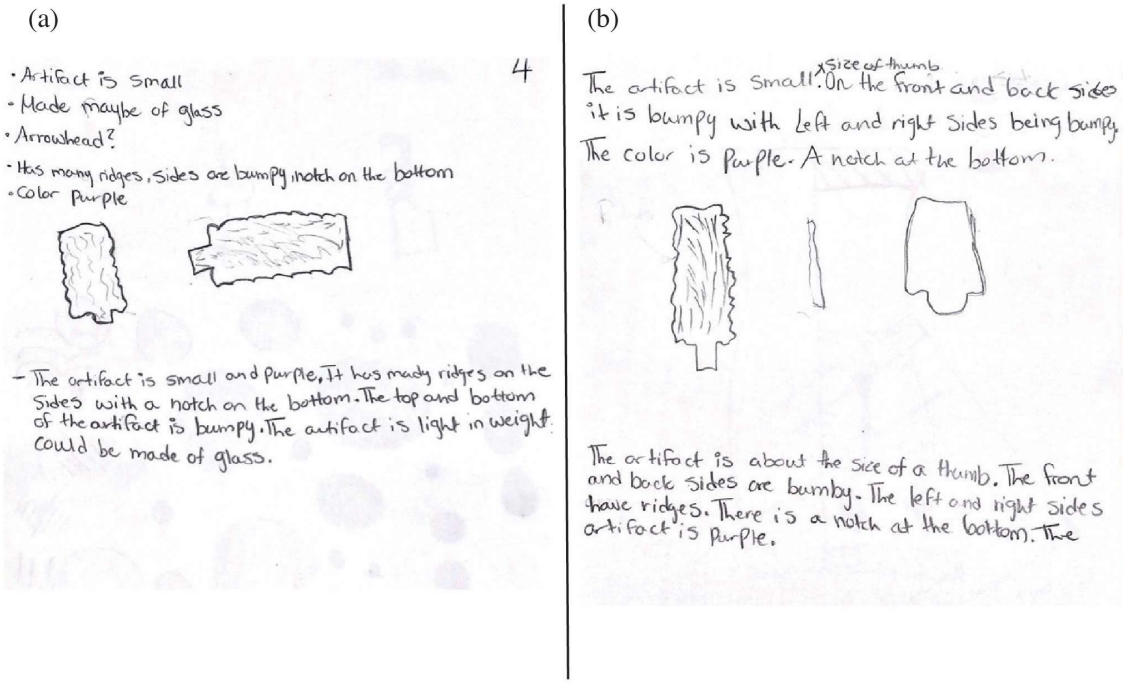

FIGURE 6: *Sketchbook 4, drawings before (a) and after (b) completion of the art workshops.*

compared to just using a single tone on the first drawing.

The drawings of the second analysis of Sketchbook 4 (Figure 6) depict clear worked edges and demonstrate a more accurate understanding of a profile drawing. The initial analysis shows the same drawing of the side view simply rotated, whereas the second analysis shows a more traditional profile drawing. The observations between the two analyses use the same general language, although in the second analysis there is a more concrete size observed as the "size of thumb." The second analysis also includes the "left and right sides being bumpy…the left and right sides have ridges" as the specification of which sides is missing from the first analysis: "has many ridges, sides are bumpy."

Sketchbook 5 (Figure 7) demonstrates clear improvement in both drawing quality and the observational description. The location of the scratches on this artifact is clearly marked on the second analysis drawing, compared with the general overall shading of the first analysis. In addition, the physical size of the second analysis drawing is a 1:1 ratio, which is a standard in archaeological illustration, compared to the much smaller profile and side view in the initial analysis. The overall description of the second analysis is more comprehensive and specific. For example, in the first analysis the observation is simply "scratches," whereas the second analysis mentions "superficial scratching evident across entire artifact. Deeper scratches more prevalent toward tip." The second analysis also mentions specific dimensions, "approximately 4 inches long, 1 inch wide…1/2 cm thick" whereas the first does not mention them at all.

The drawings for Sketchbook 6 (Figure 8) are relatively similar, however, they deviate in their shading. Specifically, in the second analysis there are lines near the proximal end that depict the direction of flake scars. This is contrasted with the first analysis, which only contains shading in the side view. The profile in the second analysis has clear, confident lines, especially when compared with the first

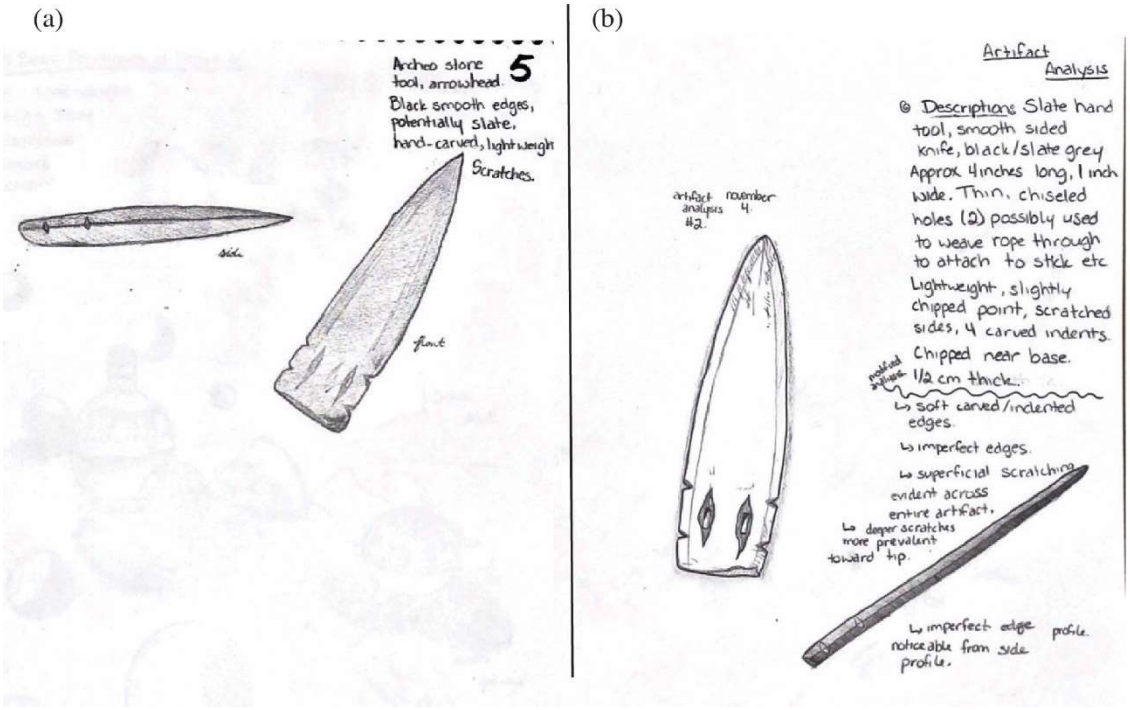

FIGURE 7: *Sketchbook 5, drawings before (a) and after (b) completion of the art workshops.*

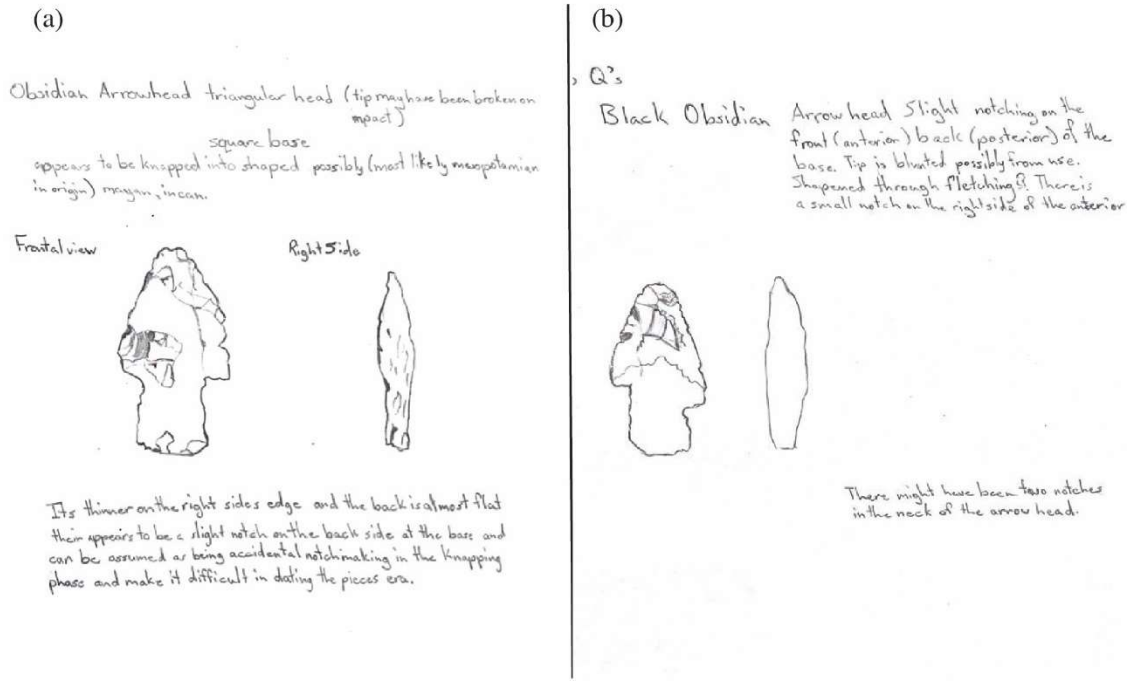

FIGURE 8: *Sketchbook 6, drawings before (a) and after (b) completion of the art workshops. Note the participant drew the other side of the the artifact when compared with the initial drawing.*

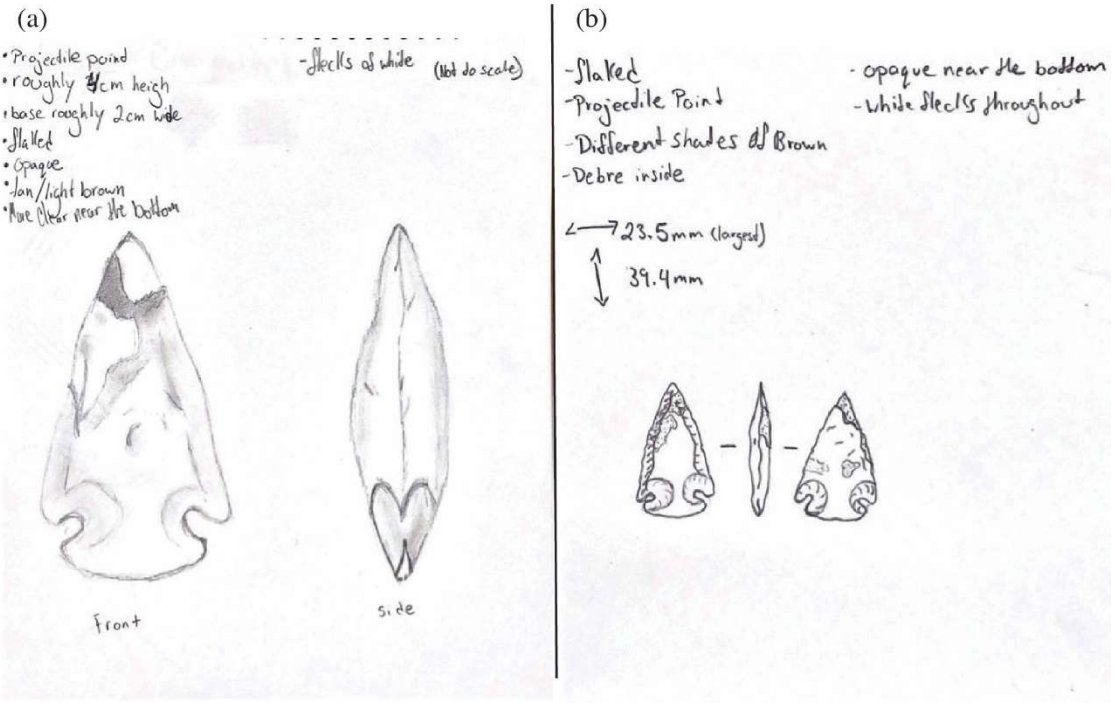

FIGURE 9: *Sketchbook 7, drawings before (a) and after (b) completion of the art workshops.*

analysis. The written observations in the second analysis include more detailed terminology. For example, "black obsidian arrowhead slight notching on the front (anterior) back (posterior) of the base. Tip is blunted possibly from use. Sharpened through fletching?" as compared with the first analysis of "obsidian arrowhead triangular head (tip may have been broken during impact)."

The differences between the analyses of Sketchbook 7 (Figure 9) can be most clearly seen within the drawings. The first analysis is not to scale and shading is heavily used. In contrast, the second analysis is to scale, and the marks made allow readers to gain more information about the artifact; it uses lines rather than shading which allows for a clearer understanding of the artifact as it demonstrates a change in texture. The written observations are similar but differ in that more exact measurements are recorded in the second analysis, "opaque near the bottom…white flecks throughout," compared with the observations of the first analysis, "flecks of white…opaque…more clear near the bottom". Though the specific words between the written observations are similar, these small changes help greatly with description clarity.

The drawings between the two analyses were for the most part the same for Sketchbook 8 (Figure 10). The participant did disclose, however, that they were unable to complete the third online workshop due to unforeseen circumstances. This may have impacted the results of the drawing as both the side view and profile remain unchanged in the second analysis. However, the written description of the second analysis is extremely detailed when compared with the first. The first analysis described the artifact as "a ceramic shard with blue glaze on one edge and several weathered looking spots" and that "the glaze appears partially worn away." This is greatly contrasted with the second analysis as it was described as a "glazed potsherd" and the "paste colour is quite light, no obvious oxidation streak or easily visible temper."

Sketchbook 9 (Figure 11) showcases the second; eraillure scars are evident in the drawing improvement from the first analysis to

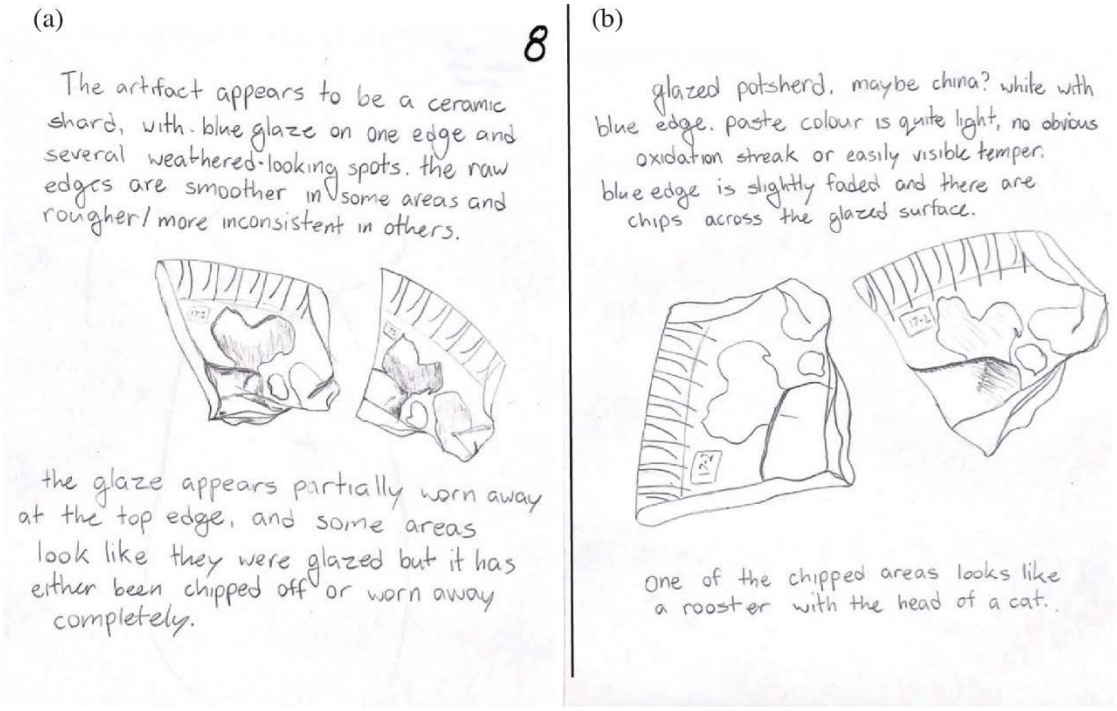

FIGURE 10: *Sketchbook 8, drawings before (a) and after (b) completion of the art workshops.*

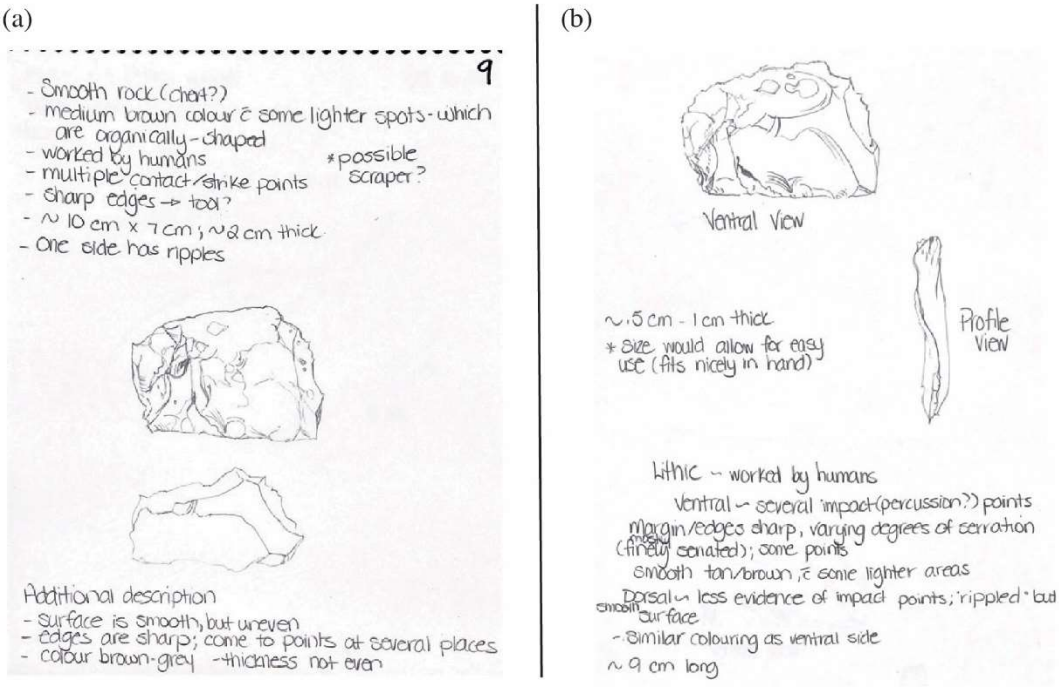

FIGURE 11: *Sketchbook 9, drawings before (a) and after (b) completion of the art workshops.*

second analysis, the line work is more precise, and the overall drawing is clear. The details of the first analysis drawing are smudged and blurred due to the use of a pencil with a blunt end, this can make it harder to interpret when compared to a drawing with crisp or clear lines that is completed with a sharpened pencil. The written observations of the second analysis include a wider use of terminology and is more descriptive with specific colours and measurements. For example, "ventral—several impact (percussion?) points, margin/edges sharp, varying degrees of serration" compared to the observations made in the first analysis: "sharp edges=tool?...edges are sharp; come to points at several places."

DISCUSSIONS IN DRAWING

Drawing teaches fundamental observation techniques. This was noted in our literature review, in specialist interviews, and was supported by the results of the art workshop experiment. In comparing the sketchbooks from the initial artifact analysis with the second analysis, there is a general trend in which participants had either more detailed illustrations or more detailed observations.

The most evident and drastic overall differences can specifically be seen with sketchbook numbers 1, 5, and 9 (Figures 4, 7 and 11). The specificity of the terms used, as well as the quality of the descriptions, changed quite drastically. For Sketchbooks 3, 4, and 6 (Figures 5, 6 and 8) there are more subtle differences. For example, these participants tended to mention if specific attributes were present, such as the introduction of colour terms in Sketchbook 3's second analysis. Sketchbook 7 (Figure 9) had the most drastic drawing difference, to the point where there were inclusions of information surrounding the texture of the flaking scars—an observation that was missing with that participant's initial drawing and written observations. While Sketchbook 7 showed little change in the written observations; the drawing demonstrates that there was a more substantive observation of the artifact. These results demonstrate that there is a difference between the drawings and written observations from the first artifact analysis prior to any art training when compared with the second analysis after the three-week workshop. This is important to understand because if the quality of the observation is improved, then the researcher's interpretations of the artifact will be more accurate and substantive. While this art workshop only had a total of five hours of combined art training and practice time, it is suggestive of the impact that art, specifically drawing, could have within academic and observational settings if it were more widely applied.

For the purposes of this study, a small, focused group was used and the drawing exercises that were taught were aimed at beginners. The participants themselves ranged in their academic knowledge and drawing experience, which was why each participant's work was compared with their own and the quality or improvement of their work was the focus for this experiment. With a 60% response rate, each survey generally agreed that drawing had helped them analyze artifacts. Participants generally stated they had a positive workshop experience, with suggestions centering on providing more learning and practice time for drawing technique activities. Specific reflections included thoughts "that drawing an artifact helps with making observations…because it requires you to focus in on some of the details that you might otherwise overlook." "It helped me pay closer attention to details that my mind would have otherwise glossed over, like differences in texture on the artifacts surface."

The results of this workshop may have been impacted if participants had learned additional information in between the workshops in the classes they were in. However, the impact would most likely be

minimal as the workshop only spanned a three-week period. Since the courses the participants were in (if any) remain unknown, the potential impact on the quality of the analyses also remains an unknown variable. It should also be noted that all participants had a basic understanding of archaeology through either introductory undergraduate classes or relevant field experience. These results do not reflect what would happen if specialists or experienced archaeologists were given the opportunity to learn basic drawing principles and apply them to artifacts, as their analysis may include more exact terminology. This could be an avenue for further research and may be explored in the future.

This art workshop experiment, as well as the background interviews, were intended to demonstrate how drawing as a mode of observation is useful and has a practical role within archaeology. In recent years, there has been a renewed interest in drawing as a means of assisting anthropological researchers in the production of knowledge and to aid in generating new insights and data (Atalay et al. 2019). This idea is primarily considered within the context of ethnography rather than archaeology, with some anthropologists such as Ingold (2007, 2011, 2019), Hendrickson (2008, 2019), and Taussig (2009, 2011) employing drawing as a research method while in the field.

However, within archaeological contexts there has been little work done in understanding drawing as a tool in archaeology or applying it within formal educational frameworks (James 2015; Huggett 2012; Morgan et al. 2018; Morgan et al. 2021; Wickstead 2013). We reiterate that drawing is useful in teaching observational skills, particularly within the context of undergraduate archaeology classes. Drawing assists in exposing undergraduate students to new ways of analyzing and observing materials, as well as potentially formulating additional interpretative analyses. Integration of additional methods of analysis can create different approaches to archaeology (Huggett 2012; Morgan et al. 2021). Though this experiment focused on analyzing material in a laboratory setting, it is essential that additional analyses be done, both within the lab and while in the field, as this would provide a greater scope of how drawing can best be employed. It is important that there be an understanding of the application of methods in which to integrate drawing more formally within academia and to recognize how drawing is useful in the observation and interpretation of artifacts (James 2015).

Archaeology is fundamentally rooted in observation; from interpreting the lives of past civilizations to understanding current communities and cultures, drawing is a practical tool in assisting researchers' archaeological understandings. It provides a method to allow individuals to observe artifacts and archaeology in new ways while "teaching you to not make assumptions about how something has to look" (Chapman, interview, June 21, 2021). To observe something, to really notice how something looks, from the small details of an object to the overall bigger picture, is an incredible skill to have. It is at once a practical skill and one that can facilitate greater bodies of knowledge and collaboration. Applying drawing to archaeology has the profound ability to generate additional data for analysis by forcing critical observation which, in turn, fundamentally impacts the quality of the analysis being done and the application to the academic community.

CONCLUSION

This paper takes an interdisciplinary approach to consider the role of drawing within archaeology and its application in developing observational skills. Drawing assists in exposing undergraduate students to new ways of thinking, informed by the personal examples shared from researchers

and illustrated in the workshop experiment. While further research should be done to understand the extent of drawing and its application, our research highlights that drawing *can* make a significant contribution towards learning archaeological observation and suggests that it should be emphasized within formal archaeological education. Though drawing may seem intimidating for some, it is an extremely useful tool for researchers to develop critical thinking skills. A drawing is merely the result of the critical thoughts and interpretations made by an individual; it is proof that an object and the details of it have been understood enough to be captured. Producing an accurate drawing is simply an ability to understand the complexities of an object, to capture it in a way that does not lose its meaning as "a big part of learning to draw is learning what to leave out" (Chapman, interview, June 21, 2021).

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