Digital Drawing Tablet to Traditional Drawing on Paper:
A Teaching Studio Comparison.

Carol H. Faber*

*Iowa State University, College of Design, Department of Art and Design,
Ames, Iowa, United States, chfaber@iastate.edu

Abstract: This paper analyzes the comparison between traditional drawing on paper and the digital drawing tablet as an effective art and design tool within the studio classroom. It will also analyze how students perceive the differences between the traditional and digital methods. Through a classroom case study, this research investigates how the digital drawing tablet provides an additional way to record the hand drawn mark and how it challenges artists and designers to understand and use it as fluently and precisely as traditional media.   This case study examines how students embrace new technology and all that it offers them in the studio and how this experience compares to the traditional drawing studio.

Key words: Design Creativity, Design Methodology, Design Tools, Digital Art, Digital Media, Design Education Methods, Traditional Studio Media, and Digital Hybrid Techniques.

1. Introduction

Drawing, in its simplest form, is a sketch or doodle of an idea that for most of us requires no more than a piece of paper and a pencil to make.   A sketch provides a record of marks to remember a concept until it can be developed further, while the act of drawing can ask us to recall a memory or engage the perception of seeing objects and forms within a real environment.   Drawing can be the beginning, middle, or end of what artists and designers use as a process to create ideas and take them into final results. It is numerous in its application to the visual way of thinking and showing concepts. So what happens when drawing becomes a technology that has to be learned again through new tools?   What happens when computer software and the digital drawing tablet becomes the paper and pencil of our contemporary studio classroom? How does one teach this technology to students where skills and abilities are mixed with traditional drawing media? What are the advantages and disadvantages of this technology?

In this case study, twenty-five university students in an experimental course entitled "Digital Drawing" attempt to address the comparison between the digital drawing tablets and traditional drawing using paper with traditional media through course assignments specific to this issue.   From student perceptions of their experience with traditional and digital tablet drawing through their journals, process work, critique questions and assignment analysis by the instructor, this research investigates how technology provides an additional way to record the hand drawn mark and how it challenges artists and designers to understand and use it as fluently and preciously as traditional media.   This case study will examine how students embrace new technology in all that

it offers in the studio and how this experience compares to the traditional drawing studio.

2. Overview of students and course of the Case Study

The students consisted of advance third, fourth, and fifth year students; including graduate students, with half of these students graduating at the end of the course to start their careers.   The majority of students were from the art and design disciplines of graphic design, studio fine arts, and digital animation, with five from architecture or landscape architecture.

Of the twenty-five students, only eleven had experience with the digital drawing tablets before the course. Most took the course to learn or improve upon their skills.   All of the students had traditional drawing training ranging from two to four courses.   All of the students had experience with the software program Adobe Photoshop prior to the course, some more extensively than others, but specific to their area of study. Of the fourteen that had no experience with the digital drawing tablet, they also had no experience using layers and blending modes in the way taught in the course to manipulate imagery through Photoshop. The digital drawing tablet used primarily in the course was Wacom's Intuos3, 9" x 12" tablet.   However, three students had their own digital drawing tablets of various brands, which were similar to the tablet provided for the course.

The Digital Drawing course in which this case study takes place consisted of four assignments. The first assignment used traditional drawing, photographs, and textures, which were scanned into the computer. This assignment was giving to allow the integration of traditional media of drawing and to establish a working understanding of the software program Abode Photoshop.   In Photoshop, the layers and blending modes were taught to understand how to manipulate these surfaces together.   The second assignment used these same Photoshop skills but included the digital drawing tablet drawing where students drew from both real and photographed objects.   The students were asked to experiment with the tools of the digital drawing tablet including the brushes and pens types from Photoshop. Students were required to experiment within six drawings using the digital drawing tablet to recreate six objects, three man-made and three organic each in its own composition.   Each of the six objects needed to use a different drawing technique or way of working to experiment with the tablet. These objects were small enough to bring to class and to work from as a real source for drawing, but it was also encouraged to light and photograph the objects to see other angles and characteristic of it to use within the digital realm. Students were required to draw the object through observation and from photographic sources. The last two assignments, three and four, combined the techniques of the first two assignments to reinforce the skills learned earlier in the course while using different themes and techniques developed by the students.

3. Written Critique Questionnaire with Student Answers

After students finished working with the digital tablet, a written questionnaire was filled out which was included with their journal, and process work from the assignments. A series of ten questions were asked of the students. The questions asked students about their experience with assignment two and any previous experience they had with digital tables before taking this course or in the other assignments. The following ten sections are the student responses to the questionnaire.

3.1. How long have you been using the Digital Tablet?

Of the twenty-five students only eleven had experience with the digital drawing tablets before this course, and their experience ranged from 22 weeks to 5 years. Students with the most experience were those in the area of digital animation followed by fine arts, only one graphic design student had experience with the digital tablet before the course.

3.2. How do you believe drawings made with the digital tablet compares to your traditional drawings on paper?

Most students regardless of experience responded that they had to change their techniques of drawing with the digital drawing tablet. They looked at the subject or objects in the same way, and compared proportion and form the same as they would for a traditional drawing.

Most students commented on the time factor. Those with less experience working with a digital tablet believed they spent more time drawing with the digital tablet than that of traditional drawings. Students with more experience expressed it was the same or faster than traditional drawing. Experienced students observed they could change their mistakes easier. Obviously, there were no difficulties with medium such as drying time or keeping a clean work area, as would be experienced when working with a traditional medium such as ink wash or charcoal. Student remarked that they could keep their hands clean and could represent the forms more accurately because of this and other tools provided in the software program. One student with three years of experience stated that the digital drawing tablet gave more freedom than traditional drawing because traditional drawing had a great deal of cost wrapped up with different medium, where the digital process was just one media with different effects. A student with very little experience with the tablet complained that her drawing hand was sore or tender from drawing, where paper and pencil did not have this effect.

3.3. How do you believe drawings made with the digital tablet differ to your experience with traditional drawings on paper?

Students remarked using Photoshop and working directly on the computer benefited them greatly. They could directly engage their design work through drawings they made or techniques they created through drawing on the computer in a software program. Students commented that this direct connection to other computer-based work could better affect other designs they were working on. This was followed by use of color, which was an overwhelming difference to how the tablet with software differs from traditional drawing. They felt more apt to experiment with color and mark making because they easily delete their mistakes without any consequences of material use or starting over from the beginning. Sketching was not as necessary in the digital drawing for many and they were more interested working in shapes of color and area, rather than line qualities. They also mentioned that blending through layers helped enhance their color and give them more options in working with color choices.

3.4. What are some similarities and/or differences in the outcome of traditional drawings compared to digital drawings?

Some similarities in outcomes for student were that they had a particular style that was the same in both types of drawing. A few students commented that their style was similar but not identical. For those students, they felt there were more details and smoother qualities in their digital work than that of traditional. Some difference in outcomes were with edges in a form were crisper, use of more expressive marks in backgrounds, and level of darker values were increased in the digital work than that of traditional drawing. Most students claimed they were more experimental and willing to take risks in their digital work. Some believed that their experience with traditional drawing added to their experience with the digital tablet because of familiarity with traditional drawing methods for texturing surfaces such as cross-hatching, sketching from residual lines, and creating more interesting linear qualities in general.

Students that had more artistic interest in the tablet remarked how they had to have some faith or intuition, and perform a bit of tweaking to make it as successful as a traditional drawing because their was no paper to dictate medium, instead one had to imagine the surface. Some stated it gave them a greater appreciation of traditional drawing because with traditional drawing they had to make it work, unlike in digital drawing where they could delete what was not wanted and start again. Yet, students considered that drawing skills were transferable; once one could draw traditionally, one could draw digitally.

Finally, one major difference in outcome was that digital drawing gave more possibilities to size and application. With traditional drawing, the size and paper was the same from start to finish, where as digital drawings could change in size and paper, or even other materials.   What bothered many students were the fact that their digital prints did not always match their screen images in color and texture.

3.5. What are some similarities and/or differences in the method used to makes digital drawings compared to traditional drawings?

The students compared a similarity of the digital process was holding the pen tool and making marks with hand movements as they did traditional drawing. When drawing, some students used blocking in of shapes and colors first as apposed to linear sketching, while others used sketching of lines, but the latter technique seemed to be far less common. Sketching seems to take too much time as apposed to getting into the drawing with detail and color.   It was a skipped step to create the style of the piece, however some students would then come back to give the drawing a stronger line quality. Many took advantage of zooming in to create detail and accuracy, which was a difference for them from traditional methods. Making strokes or marks were seen as similar between traditional drawing and the digital tablet, as was working with layers to add depth to a drawing much like is done in watercolor painting.   Students felt that the digital drawing was much more forgiving than traditional drawing because no marks or lines not desired were leftover if they are deleted. Most students said they erased much more in the digital method. It is easier to take risks because of the forgiving nature of the delete button. Working from photographic reference and creating under drawings are similar in both methods. However, applying effects directly over a photograph is much quicker for rendering and reference than drawing from life.   So students took clear advantage of the camera to help them with the accuracy of imagery by working in this way.

Students felt limited by the size of the digital drawing tablet and the computer screen commenting that there was something that observed more contained in the digital drawing experience than that of traditional methods. Other students mentioned that the digital drawing area as limitless and that made it a better method. Students' skills with blending values and colors seemed to vary greatly between students. The students who were more experienced with digital drawing tablets remarked it easier to blend digital drawings, while those with less experience found it very difficult.   All commented that color changes could be made easier if something was not working in the drawing. Tablet to screen and hand- eye coordination was a struggle for everyone within his or her experience levels.   Students stated that the tablet offered them more control and precision within their drawings.

A few students redefined drawing by equating the digital tablet and computer with the Internet. These students took openly from other sources to create their drawings, borrowing textures and imagery to help them with their drawings. However, they noted that they had change the imagery significantly that there were no issues with copyright infringement.   Some of the advanced studio fine art students observed that it might be hinging on a new definition of drawing.   It was similar to the traditional experience, but mimicked methods that produced farther-reaching results.

3.6. Do you feel your drawing skills and/or abilities changed from traditional media to the digital tablet?

Students with less experience using a digital tablet said that their style in drawing changed. In addition, these changes in part affected their skills and abilities by either helping them develop a steadier hand or helping them to break down the interpretation of objects by color, rather than by line. Student with more digital tablet experience had no change in skills and abilities as indicated by this survey, but they did indicate that their skills and abilities had improved over time with the tablet. Many students added that the digital aspect offered more stylistic changes in their work. Some believed they had more control within the digital platform. They remarked they drew quicker and experimented more. Students who had equal experience in both traditional drawing and with the digital drawing tablet observed that the traditional methods helped inform their digital process. Two students commented that they felt the digital tablet allowed them to take their traditional drawing skills to the next level and helped to integrate them both together. While two other students stated that they wanted to return to traditional drawing and try the skills they learned digitally to help them draw traditionally.

3.7. Do you feel it takes longer or shorter in time to draw with a digital tablet than traditional drawings?

Students with less experience took more time to create their drawings because of their unfamiliarity with the process needed to make an image look real and their unfamiliarity with what the tablet could allow them to create. They felt there were some learning curve issues to overcome.   For the more experienced, the processes used with the digital drawing tablet was faster as they learned techniques and advanced through the images. However, it did not seem to make a difference overall if students believed it took them longer or shorter in terms of time, because some techniques in digital drawing such as detail work took as much time as they would in traditional drawing.   For all students, time factors depended on what they were drawing and how much detail they added.   Students truly comparing the process of traditional to digital commented that digital drawing had less set up and clean up time than traditional drawing and this was a factor for why they had such an interest in the digital process.

3.8. Did you sketch with the tablet in your techniques?

Some students sketched out ideas on paper and scanned those sketches into a digital file in which to work with in Photoshop with the digital tablet. There was an equal balance between sketching to find the form and sketching afterwards to create interesting line qualities. However, those who preferred traditional drawing tried to imitate as much as possible from traditional ways of working. For students that were less experienced with the digital tablet, they did not know if sketching would help them in the same way it did when working traditionally. These students tended to block in with shape and color. Because students were also allowed to work from photographs, all used the photographs to help them in some way with accuracy. Those who did use sketching had another component to add to their work and give greater line quality.

3.9. Do you feel that the digital drawing tablet takes away or adds to your artistic drawing abilities?

Most students remarked that the digital drawing tablet added to their artistic abilities in some way and gave them another tool to experiment with and make imagery. Some student felt it added and took away, stating while it opens up to new ideas and ways of working, it limited what could be accomplished. Those students who had experience and would continue to use the digital drawing tablet observed that they had much more control and better artistic ability. One student remarked that it depended if one was trying to be abstract then it added artistic ability but if one was drawing realistically, than it did not add to artistic ability. This was a student with very little experience and who struggled with control over the digital tablet. Another student commented that the digital tablet allowed them to be more experimental and ready to take more risks in their work that they thought allowed them to be more artistic.

3.10. Do you believe there are benefits or disadvantages in learning how to use the digital drawing tablet?

All students mentioned that the digital drawing tablet was beneficial to their education because it gave them greater flexibility with drawing and more in experience with Photoshop and other computer software. Most had felt the complexity of the tablet was better than using a mouse. Students did comment that there is lack of tactical quality compared to traditional drawing missing in the digital process. The inability to touch the surface of the drawing with the hand, as one would to move pigment or blend traditional drawing materials was missing because the tablet was controlled only with a pen or stylist. Most commented that knowing how to work with a digital tablet would help with their career goals. The graphic design students remarked they gained skills that would help them in their designs and add an illustration component to their work. A student in landscape architecture expressed that it would help with project presentation to clients when sketching out preliminary ideas. For a fine art student, working with digital drawing helped his fear with color and help him to integrate that aspect into his traditional illustration work. The animation students remarked it helped them with more human and computer interaction issues and also strengthen their portfolio and image making skills.

4. Comparing Student Survey with Visual Drawing created by Students

When students addressed the area of style in their work, there were visual differences between the traditional and digital realm. Many students with advanced skills work very diligently to connect the style barriers, working out a process that allowed them to be authentic to their own style by connecting the traditional style with the

digital tablet style. Yet, some students with advanced skills did not try to connect what they did traditional with the digital realm.   They were much more interested in what new processes could be developed using the computer and tablet. Student with less experience with the digital table had a greater degree of lower or lesser quality marks.   In other words, they let the digital drawing tablet dictate the mark quality, variation, or interest of line.   Beginning students were just less familiar with what was possible. As they worked through the process, they learned what was possible and mark quality and brush variation improved in their visual imagery. In regards to the digital tablet, the mark quality is different from that of traditional tools and it took extra work to get a similar quality of mark or line within the images.

Students were very comfortable with photographic references and many incorporated those into their digital drawings.   Digital drawing and the use of the table lent themselves well to integration of photographic elements. Students used scanned textures, replicated paper surfaces, and highlights from photographed objects to enhance the quality of their drawing effects. Photographic and digital mark making seemed to be a natural pairing within this application. The visual result allowed a bending of photographic imagery and drawing to coexist within the digital imagery.

5. Summary of Case Study and Recommendations

Results of this case study revealed that the traditional drawing process informs the digital drawing tablet process and the digital drawing process also informs traditional drawing processes.   For example, it compares to the practice to film photography versus digital photography, both are similar yet different because of distinctive talents and technical understandings that must be learned to create imagery.   This is similar to the digital drawing tablet and how traditional drawing practices can complement the learning atmosphere. Making the connections for students to look with regard to traditional ways of drawing and how they can incorporate those techniques using the digital drawing tablet can only help to strengthen the experience.   Students that created sketches in layers within Photoshop strengthened the textural or tactile quality of the digital drawing. It gave a sense of the "pentimento" or the underlying image or preliminary drawing, which helped build up a texture of marks allowing the original draft to show through to the top most layer. Student that learned not to erase or delete had a greater sense of surface and traditional quality in their work. It also allowed them to see their mistakes and judge how to make a correct line from it. This also called them to take advantage of the textural and line qualities formed through this process. However, this was difficult to relate to for students who wanted perfection in their drawings.   So it would be a recommendation to create specific drawing exercises to help them learn the difference between techniques by having them mimic traditional drawing methods.

Color became a significant factor within the digital drawing realm and students were much more comfortable with the experimentation of color in the digital media. A recommendation could be made that this type of experience would be an excellent area to teach color theory and the use of color in observing objects and forms. Two dimensional design theory and design drawing applications also would work well with the digital drawing tablet because of the student's increased willingness to take risks in their work. This was much more prevalent in digital drawing than in traditional materials. Finally, because of stylistic quality, forgiveness of the media, and the experimentation that the digital drawing tablet would offer, this provides a good foundation to teach digital

illustrative techniques for graphic design and fine arts students, providing them with more tools and techniques with which to create imagery.

6. Conclusion

Perhaps drawing is something new with the use of the digital drawing tablet.   There is a blurring of lines from traditional to digital, which inspires each process to new concentrative efforts with multi-facetted forms of interpretation. The processes of borrowing of images, brushes, and tools that influences artist and designers into new ways of thinking and seeing when working with the digital drawing tablet.   Certainly, the additional of this new technological tool does not threaten traditional drawing, but strengthens it instead to develop a greater understanding of how we see the world and express ideas through drawing.

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