

# Integration of Autocad Lessons in Comics Form in Teaching Autocad

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**Abstract**— AutoCAD students have difficulties understanding basic commands using drawing software. At times, some applications and steps are supplemented by drawings and yet difficult to grasp. The comic medium can be an important instructional tool that can work within the cognitive domain.

This study utilized a mix of descriptive-developmental type research. The descriptive research intends to produce statistical information about aspects of comics as a tool in teaching AutoCAD that interests students as well as educators. Developmental research has been defined as the systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness.

This research, which is mostly descriptive in nature, presents the results of the data gathered. An assessment summary of the comics was based on the responses of both the students and the faculty as to the given key areas such as format, content, organization, and usability.

The respondents are highly satisfied with the AutoCAD Lessons in Comics Form as suggested by the overall mean of 4.91 and the composite mean of each of the areas and sub-areas of which the comic book was evaluated.

It showed that format and usability are the strongest areas if comics will be integrated with teaching AutoCAD lessons. The quality of the content particularly applying activities to a diversity of student abilities, interests, and learning styles; developing the ability to work individually; and providing real-life application of the lesson were evaluated as highly satisfactory, therefore comics if integrated with teaching AutoCAD lessons manifested very much suited as an instructional tool and keep the students to work on his own.

Likewise, with regards to the usability of comics as a tool in teaching AutoCAD, particularly satisfaction in the content use drawn as the highest composite mean. Realizing that these comics contribute fulfillment to students for them to understand every topic or command presented.

Educators should be encouraged to aspire for good and well-designed instructional materials like comics, to be used not only in AutoCAD subjects but in other areas too to facilitate learning.

**Keywords**— AutoCAD, Comics, Command, Format, Instructional Materials, Software

## I. INTRODUCTION

Recent trends within the domain of drawing techniques and accuracy have led to an increasing emphasis on the role of computers in making your drawing precise. Computers are not only enabling artists and designers to extend the scope of drawing, but they are also helping us to understand aspects of the drawing process

However, there are some conditions in which the use of computers for drawing would seem to discuss few obvious benefits; and in situations where computers are productively engaged, basic command is often strongly bound by purely technical terms and understanding; that's why some practitioners doubt whether the technology has anything new to offer them. Some learners find difficulties in figuring out steps and

instructions in the application of knowledge with plain text only; more so even if it is supplemented by graphics. These assessments would probably have to impasse effect on learners and would get detached from the lesson.

With comics and graphic novels, readers can enjoy more emotion, action, and detail than in a typical word text. When students read enjoyable, complex, and compelling stories, they are motivated to read more, so graphic novels can be great stepping stones to longer text works. They can enjoy the application of AutoCAD commands because of the great stories introduced in the comics and practice high-level reading comprehension skills, even at a lower text reading level.

### **Computer Aided Learning**

In ancient times, artists used pen or pencil and paper to draw pictures. This took a long time when they were dealing with complex pictures. In addition, different drawings were required to depict different design schemes or system layouts. Using computers, depicting such schemes and layouts can be easily employed.

Several studies have been conducted to explore the efficacy of computer-aided software in engineering drawing. Computer-aided learning (CAL) research studies have usually evaluated CAL as a supplement or alternative to traditional learning resources, and have invariably shown CAL to be as effective as or superior to the alternative resources.

Therefore, a computer-aided design tool called AutoCAD started being used to save time and improve productivity. This software application enabled people from one industry to portray complex concepts on paper in the form of drawings. Slowly and gradually, with time, this software application became the language of communication in some industries. What is more, AutoCAD training also started getting people jobs in their dream companies. Therefore, this software application is very important across all industries.

In simple words, AutoCAD is a commercial software application used to draft 2 dimensional and 3-dimensional models with the aid of a computer. Although this description provides an all-encompassing explanation of what AutoCAD is used for, it does not break down its uses into the specialized units the software is known for.

More so, AutoCAD is a technical subject offered in Technical-Vocational institutions and is required also to be learned by engineering students in a limited course of time.

To be able to catch up with commands, principles, and theories of it, an individual should familiarize himself with practical terms related to technical drawing which is primarily introduced to drafting technology major.

AutoCAD students have difficulties understanding basic commands using drawing software. At times, some applications and steps are supplemented by drawings and yet difficult to grasp.

### **Market Potential**

Considering the visual representation of knowledge via comics, it is easier for the students to remember a visual graphic containing key information such as commands in AutoCAD, and develop their creativity to a higher level of thought processes.

Unlike AutoCAD books with multiple wordings that need a deep-thought understanding to follow commands, these comics with interesting visuals, humor, and stories focused on AutoCAD commands enable the students to enjoy learning by themselves.

The reach for distribution of these AutoCAD comics is Technology-Vocational students, engineering students, or ordinary people who wish to learn basic AutoCAD commands and have difficulty memorizing the functions of each command as well as following steps.

### **Comics as a tool**

Relatively little research has been carried out regarding the possible effect of comics within instruction. As a result, not much is known about whether it can be applied per se as a total means of instruction, in the way that non-illustrated or illustrated texts can be. (Mallia, 2007)

The comic medium can be an important instructional tool that can work within the cognitive domain. He reiterated that comics have the intrinsic potential of being a valuable affective and cognitive tool and can be used in instruction for, among others, motivational and retention purposes.

According to Manno (2014), comics and graphic novels are motivating, support struggling readers, enrich the skills of accomplished readers, and are highly effective at teaching sometimes dull or dry material in subject areas such as science and social studies.

Moreover, several researchers have explored the strengths of comics in education. Yang (2003) stated that human beings have a natural tendency towards pictures, hence the ability of comics to capture and maintain learners' interests.

## **II. METHODOLOGY AND MATERIALS**

This study utilized a mix of descriptive-developmental type research. The descriptive function of research is heavily dependent on instrumentation for measurement

and observation. Once the instruments are developed, they can be used to describe phenomena of interest to the researcher.

The descriptive research was intended to produce statistical information about aspects of comics as a tool in teaching AutoCAD that interests students as well as educators. Since descriptive research spans both quantitative and qualitative methodologies, it brings the ability to describe events in greater or less depth as needed. This kind of research intends to focus on various elements of different research techniques and to engage in quantitative statistics to organize information in meaningful ways. Descriptive research can yield rich data that leads to important recommendations.

Developmental research has been defined as the systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness. Developmental research is particularly important in the field of instructional technology. The most common types of developmental research involve situations in which the product-development process is analyzed and described, and the final product is evaluated. (Richey, 1994)

The project was composed of two levels. The first level started with creating comics wherein the sequence of AutoCAD commands was incorporated.

Make a storyboard highlighting command applications about AutoCAD books and lectures. The produced comics were validated by five (5) experts, predominantly by graphic artists, instructors, and engineers teaching AutoCAD subjects.

The second level was the implementation of comics in the delivery of concepts to the respondents. There are 45 students from the College of Technology (BSIT/BTVTE) 1st year because AutoCAD lessons are offered every 2nd semester. Students were exposed to the delivery of concepts using comics. A hard copy was distributed to them to have time to read it and analyze the commands.

A set of questionnaires evaluated their perceptions of the effectiveness of comics in the delivery of concepts. An instrument contains the level of achievement or competency of students in the application of commands from experiencing instructional tools such as comics.

The instruments were administered subsequently. First, the researcher sought permission from the deans and coordinators before floating the questionnaires. A letter explaining the purpose of the research was prepared for both deans and experts. Second, the instruments were disseminated individually to the identified respondents. The retrieval was done according to the scheduled date to give enough time for the respondents to answer them. Some were retrieved personally but some were submitted online via messenger.

The use of a survey questionnaire was supplemented with the necessary follow-up interviews in case of a need for further clarification from any respondents of the research. It also included interviews with the respondents.

The collected data were classified, tallied, and tabulated before they were processed and treated using frequency counts, percentages, mean, and Likert 5-point rating scale together with its descriptive equivalence and range as seen in Table 1.

**Table 1: 5-point rating scale**

Scale of Means	Descriptive Equivalent	Interpretation
4.50 - 5.00	Strongly Agree	Highly Satisfactory
3.50 - 4.49	Agree	Very Satisfactory
2.50 - 3.49	Moderately Agree	Satisfactory
1.50 - 2.49	Disagree	Less Satisfactory
1.00 - 1.49	Strongly Agree	Not Satisfactory

The responses and assumptions in this study were based on the knowledge and observation of students and experts about the tool.

**III. DISCUSSION OF RESULTS AND FINDINGS**

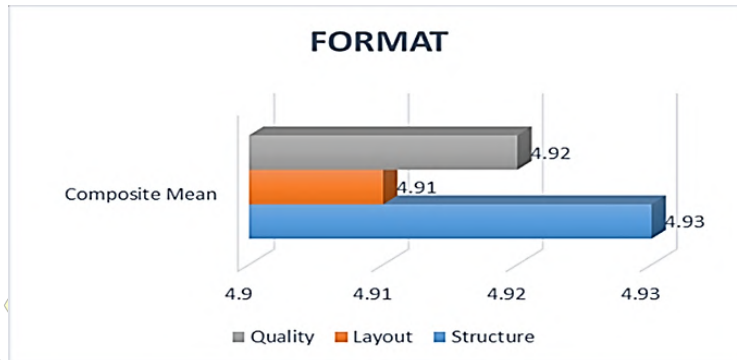
This research, which is mostly descriptive in nature, presents the results of the data gathered. An assessment summary of the comics was based on the responses of both the students and the experts as to the given key areas such as format, content, organization, and

usability. Bachelor of Science in Industrial Technology (BSIT), Bachelor of Technical Vocational Teacher Education (BTVTE) and faculty teaching the subject assessed the development of comics in teaching

AutoCAD lessons in five (5) key areas. Table 2 shows the number of respondents. Students and Experts were exposed to the delivery of concepts using comics. A hard copy is distributed to both groups.

*Table 2: No. of Respondents*

Respondents	BSIT / BTVTE Students	Experts
Population	100	10



*Fig. 1 Feedback from the respondents on the quality, layout, and structure of the format of the AutoCAD Lessons in Comics Form in weighted mean.*

As shown in Fig.1, the graph presented the respondents are highly satisfied with the quality, layout, and structure of the format of the AutoCAD lessons in comic's form with composite means of 4.93, 4.91, and 4.92, respectively. The students have quite equal levels of satisfaction with these three (3) areas of the format of the AutoCAD comics.

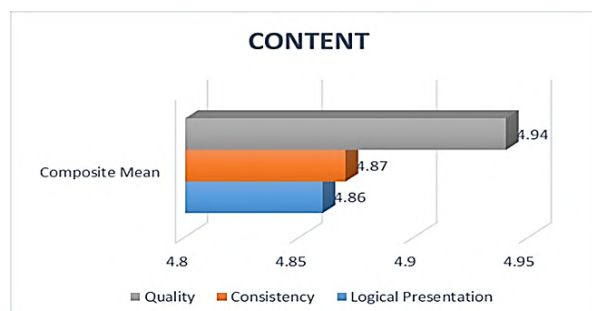
visible font style and size with a composite mean of 5.00, suggesting that all of them provided a rating of 5 on this item. The lowest mean of 4.88 is on both displaying appropriate spacing between letters and illustrations and exhibiting a visually appealing presentation hence sustaining learning.

For structure, the respondents are most satisfied with demonstrating accurate and well-integrated graphics and illustrations into the text with the highest mean of 4.96. The lowest mean of 4.90 is noted on both showing attractive and readable design, quality of print, and containing adequate margins and readable font style suitable for teachers' use.

In terms of the quality of the format, the respondents are also highly satisfied as they strongly agreed with each of the criteria. They provided the highest mean of 4.98 on both illustrating carefully planned instructional designs and showing consistency of illustrations and text in the materials. The lowest mean of 4.80 is on combining attractiveness with effectiveness on page layouts.

With regards to layout, the respondents strongly agreed to all the criteria; but most especially on showing a

As a whole, the respondents are highly satisfied with the format of the AutoCAD lessons in comic form as indicated by the composite mean of 4.92.



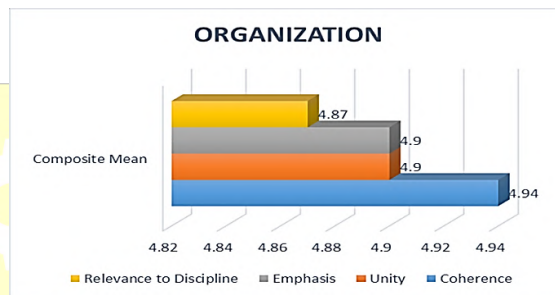
*Fig. 2 Feedback from the respondents on the Content of the AutoCAD Lessons in Comics Form*

Specifically, the respondents provided highly satisfactory mean ratings of 4.86, 4.87, and 4.94 on the logical presentation, consistency, and quality of the content, respectively as shown in Fig.2. It can be surmised they are most satisfied with the quality of the content of the AutoCAD lesson in comic form and less pleased with how the contents are presented logically.

To be more specific on logical presentation, the respondents are most satisfied with how the topics necessary in understanding the subject were covered in

the comic book. They are less satisfied with the inclusion of references at the end of the illustrated comics.

Concerning consistency, the respondents are most satisfied with the content of the comic book specifically on maintaining focus on the topic/subject throughout the response and showing what is important in the topic; both with the highest mean of 4.96. They are least satisfied with aligning lessons to the K to 12 curricula, having the lowest mean of 4.71.

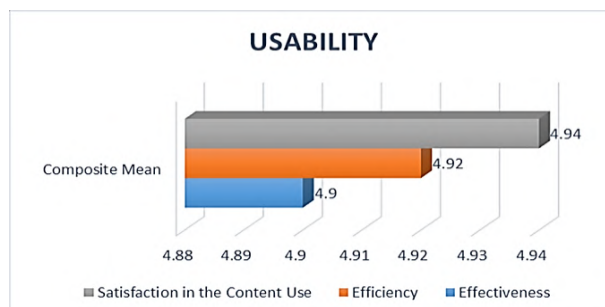


**Fig. 3** Feedback from the respondents on the Organization of the AutoCAD Lessons in Comics Form

On the quality of the content, the AutoCAD comic book was considered to be highly satisfactory. The respondents are most satisfied with applying activities to a diversity of student abilities, interests, and learning styles, and developing the ability to work individually; both with the highest mean of 4.98. The lowest mean of 4.92 is for sharpening analytical skills. Fig. 3 revealed the feedback of the respondents on the organization of the AutoCAD Lessons in Comics Form using weighted mean, particularly in terms of coherence, unity, emphasis, and relevance to discipline. As depicted in the graph, the respondents are highly satisfied with the organization of the AutoCAD lessons in comics form having a high overall composite mean of 4.90. The different areas of the organization were also rated with high levels of satisfaction. Coherence obtained a composite mean of 4.94; unity, 4.90; emphasis, 4.90, and; relevance to discipline, 4.87.

In particular, the respondents are most satisfied with having a clear sense of order when it comes to the coherence of the AutoCAD lessons in comic form. They are least satisfied with the use of logical structure appropriate to the subject, purpose, audience, and disciplinary field having the lowest mean of 4.84 in the area of coherence. With regards to unity of organization, the respondents provided the highest mean of 4.96 on displaying the logical flow of ideas while the lowest mean of 4.82 on guiding the reader through the chain of reasoning or progression of ideas.

On emphasis, the highest mean of 4.98 is on showing a single, distinct focus while the lowest mean of 4.88 is noted on three (3) criteria: expression of the sense of completeness, provision of necessary supporting details and illustrations, and use of real-life examples.



**Fig. 4.** Feedback from the respondents on the Usability of the AutoCAD Lessons in Comics Form

Concerning relevance to the discipline, the respondents are most satisfied with the comic book containing an inviting lead that grabs the teacher's attention, having the highest mean of 4.96.

They are least satisfied, as suggested by the lowest mean of 4.82, with catching the audience's attention effectively but still being connected to the area of discipline, and making connections between the disciplines.

As shown in Fig. 4, the graph presented the feedback on the Usability of the AutoCAD Lessons in Comics Form.

The respondents are highly satisfied with the usability of the AutoCAD lessons in comic's form as indicated by the overall composite mean of 4.92. It can be noted as well that composite mean ratings on the effectiveness, efficiency, and satisfaction in the content use which are 4.90, 4.92, and 4.94, respectively suggest a very high level of satisfaction by the evaluators.

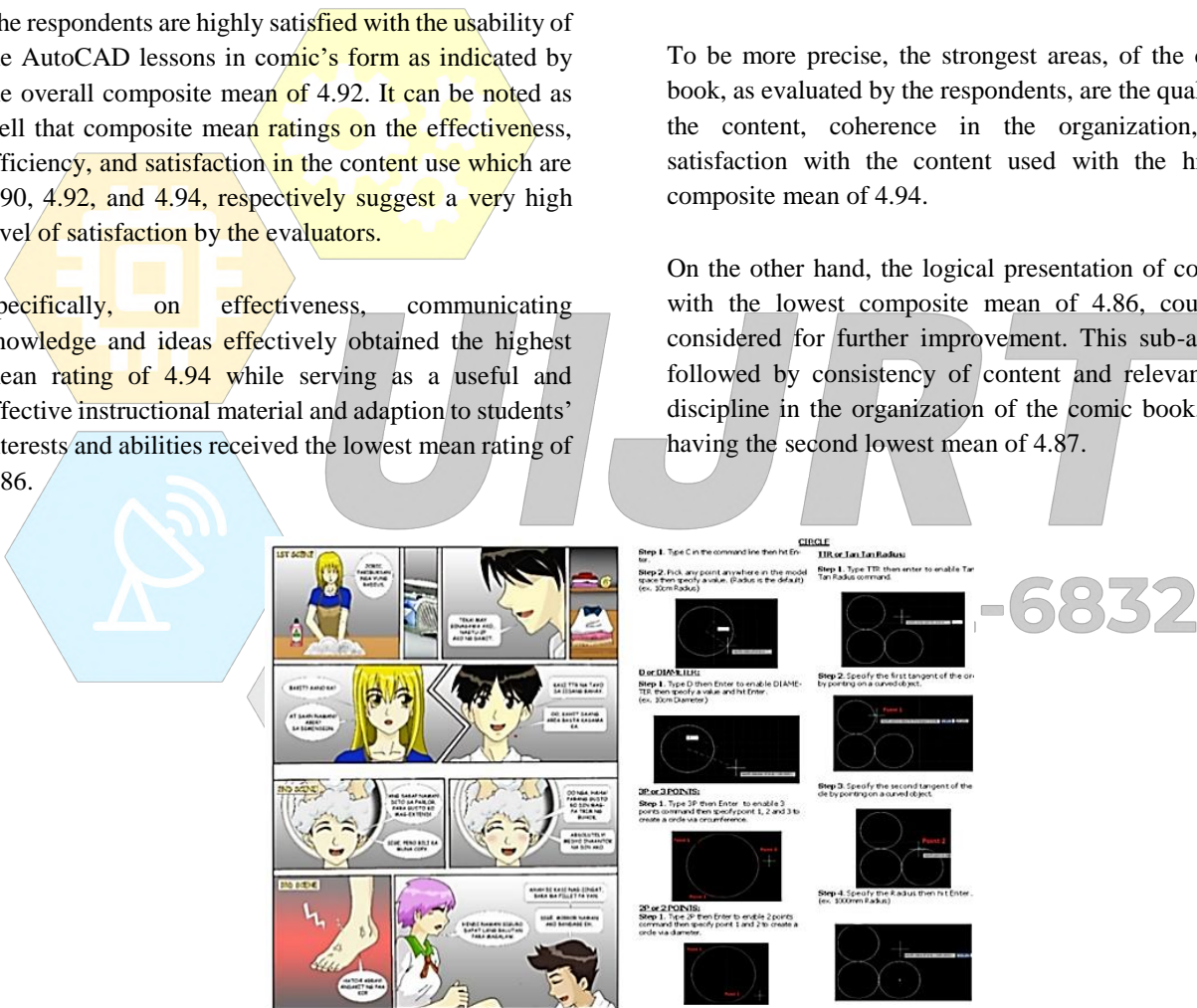
Specifically, on effectiveness, communicating knowledge and ideas effectively obtained the highest mean rating of 4.94 while serving as a useful and effective instructional material and adaption to students' interests and abilities received the lowest mean rating of 4.86.

In terms of efficiency, the AutoCAD lessons in comic form were considered to be most efficient in using a design that supports ease of learning, having the highest mean of 5.00. This comic book's efficiency is deemed the smallest in reinforcing the transfer of learning, with the lowest mean of 4.78.

On satisfaction with the content use, both offering meaningful experiences to the learners in learning the lessons, and stimulating enthusiasm for further learning obtained the highest mean rating of 4.98. The provision of useful information, graphics, and illustrations to better understand the topics presented was rated with the lowest mean of 4.86.

To be more precise, the strongest areas, of the comic book, as evaluated by the respondents, are the quality of the content, coherence in the organization, and satisfaction with the content used with the highest composite mean of 4.94.

On the other hand, the logical presentation of content, with the lowest composite mean of 4.86, could be considered for further improvement. This sub-area is followed by consistency of content and relevance to discipline in the organization of the comic book, both having the second lowest mean of 4.87.



**Fig. 5. Format of AutoCAD Lesson in Comics Form**

**IV. SUMMARY AND CONCLUSIONS**

Based on the findings of this research, the following conclusions were drawn: the faculty and student respondents have perceived those integrating comics in AutoCAD lessons brought high approval in terms of format, content, organization, language, and usability.

It showed that format and usability are the strongest areas if comics will be integrated into teaching AutoCAD lessons. The quality of the content particularly applying activities to a diversity of student abilities, interests, and learning styles; developing the ability to work individually; and providing real-life

application of the lesson were evaluated as highly satisfactory, therefore these comics, if integrated into teaching AutoCAD lessons, manifested very much suited as an instructional tool and keep the students to work on his own.

Likewise, with regards to the usability of comics as a tool in teaching AutoCAD, particularly satisfaction in the content use drawn as the highest composite mean. Realizing that these comics contribute fulfillment to students for them to understand every topic or command presented.

But then again, the consistency in presenting the range of what has to be discovered or learned should be developed and recounted from its lowest mean.

## V. RECOMMENDATIONS

Based on the findings and conclusions of this study, the researcher proposed the following recommendations to the concerned academic authorities and fellow technical instructors.

In the area of administration, the Vice President for Academic Affairs as well as the deans and faculties should exercise general supervision over the strategies and tools used to facilitate learning. Considering the feedback of this study that respondents are highly satisfied with comics as a medium in teaching AutoCAD lessons, deans and faculties should adopt these learning approaches.

Educators should be encouraged to aspire for good and well-designed instructional materials like comics, to be used not only in AutoCAD subjects but in other areas too.

Another extensive study should be conducted in terms of the wider scope of respondents and different subjects that pertain to having a laboratory in a hybrid class.

## REFERENCES

- [1] J. A. Leach, B. Noble, AutoCAD 2010 Instructor, c/o McGraw-Hill Higher Education, Engineering Division, 501 Bell Street Dubuque, IA 52001: University of Louisville.
- [2] R. Gesner, INSIDE AutoCAD, Sixth Ed., New Riders Publishing, 1025 E. Powell, #202, Gresham, OR 97030 USA.
- [3] J. A. Barba, Simple AutoCAD 2, ISBN 971-0454-14-3. Philippine Copyright, 2010

- [4] G. Eyrich, Paul Wallach, Drafting with AutoCAD, Michell McGraw-Hill, 55 Penny Lane Watsonville, CA 95076.
- [5] G. Mallia, Learning from the Sequence: The Use of Comics in Instruction, Malta. M. Manno, "Comics in the Classroom: Why Comics?" 2014. <https://teach.com/blog/why-comics/>
- [6] G.L. Yang, "Comics and Faith with Gene Luen Yang" <https://sojo.net/magazine/september-october-2013/comics-faith-gene-luen-yang>
- [7] J. Berkowitz, T. Packer, Heroes in the Classroom: Comic Books in Art Education, 2015, <https://www.tandfonline.com/doi/ref/10.1080/00043125.2001.11653471?scroll-top>
- [8] Education: The benefits of comics in education, 2024 by plasq, LLC, <https://plasq.com>