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# EFFICIENCY OF FLOOR PLAN CREATOR APPLICATION IN MAKING FLOOR PLANS

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**Abstract**: While floor planning is a fundamental skill in technical drafting, many students find manual drafting time consuming and prone to errors. This study explored how the use of the Floor Plan Creator application could improve the efficiency, accuracy, and performance of Grade 9 Technical Drafting students in producing floor plans. The main objective was to determine whether students could produce better outputs with the help and guidance provided by the digital features of the Floor Plan Creator. The study utilized a quasi-experimental research design, particularly a single-group pretest-post-test approach. Students were given the requirements and area of a specific floor plan. In the pretest, they were asked to draft the floor plan manually but had no formal instruction or prior experience in creating one. As a result, their manual outputs were generally lacking in structure and technical accuracy. Their outputs were evaluated using a scoring rubric focused on workmanship, accuracy, neatness and speed. The intervention involved introducing the Floor Plan Creator application, which guided students through the floor planning process with built-in tools, auto-dimensioning, and layout suggestions. In the post test, students used the application to recreate the same floor plan. The results showed that with the help and guidance of the Floor Plan Creator, students produced more accurate and complete outputs. Their average scores improved from "Very Satisfactory" in the pretest to "Excellent" in the post test. There was a significant difference before and after the use of Floor Plan Creator application. The mean score after the use of the intervention was higher than the mean score before the intervention. The findings demonstrate that the application not only supported the students in understanding the structure and layout but also increased their confidence and ability to meet the required drafting standards. Additionally, the low standard deviation in the post test scores indicates a consistent level of improvement across the participants, demonstrating that the Floor Plan Creator helped students achieve more uniform and higher quality outputs. Therefore, this study recommends the integration of Floor Plan Creator into the drafting curriculum, as it effectively assists students in producing high-quality outputs through a more guided and efficient process.

**Keywords:** Floor Plan Creator, Digital Drafting, Performance. Accuracy, Technical Drafting, Efficiency.

## I. INTRODUCTION

### Background of the Study

Floor plans are a crucial aspect of architecture, engineering, interior design, and real estate industries. They provide a visual representation of a space as viewed from above, illustrating the spatial relationships between rooms, walls, doors, and fixtures. Traditionally, these plans were created manually through drafting processes, which involved the use of physical tools such as rulers, T-squares, compasses, and drafting paper. However, these methods were known to be time-consuming, labor-intensive, and prone to human error. As design projects grew in complexity and scale, the limitations of traditional drafting methods became increasingly apparent, particularly in terms of accuracy, efficiency, and productivity.

The rapid advancement of technology over the past few decades has revolutionized design processes across industries, particularly digital tools and software applications. Digital design tools offer users a faster and more accurate alternative to manual drafting, enabling them to create, edit, and visualize designs with ease. These tools also integrate advanced features such as automated scaling, error detection, and 3D modeling, which were once difficult to achieve with traditional methods.

Floor plan creator is a digital design application designed for the creation of floor plans. It provides a user-friendly interface that allows users to produce accurate and visually appealing plans with minimal effort. Features such as drag-and-drop components, automated area calculations, and customizable dimensions enable users to work efficiently, reducing the time required for design processes compared to manual methods. Additionally, floor plan creator supports 3D visualization, allowing users to gain a more comprehensive understanding of spatial layouts.

 

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The increasing reliance on digital tools, such as floor plan creator, reflects a broader shift toward technology integration in design education and practice. In academic settings, particularly in architecture and engineering programs, students are expected to produce precise outputs while adhering to strict deadlines. However, students often encounter challenges when relying solely on traditional drafting methods, as these require significant time, effort, and skill to master. Digital tools address these challenges by simplifying the drafting process and offering intuitive features that promote accuracy and efficiency.

Digital tools are essential for several reasons. First, they enhance productivity by producing accurate and detailed floor plans in a shorter time frame. Time is a valuable resource in both academic and professional settings, and inefficiencies in the design process can delay project timelines, increase costs, and compromise the quality of outputs. Digital tools like floor plan creator automate repetitive tasks, reduce the likelihood of errors, and enable users to experiment with different design options quickly.

Furthermore, digital tools foster creativity and experimentation by allowing students to visualize their designs in real-time and make adjustments as needed. This iterative process not only enhances the quality of outputs but also promotes critical thinking and problem-solving skills.

In addition to their educational benefits, digital tools bridge the gap between academia and industry by exposing students to technologies commonly used in professional practice. The integration of tools like floor plan creator into academic curricula becomes increasingly important as the demand for skilled professionals with digital design expertise continues to grow.

This study aimed to determine the efficiency of the Floor Plan Creator application in making floor plans among Junior High School Grade 9 students at Tanque National High School. Specifically, it aimed to:

1. determine the performance of Grade 9 students in making floor plans before using the floor plan creator application;
2. determine the performance of Grade 9 students in making floor plans after using the floor plan creator application;
3. determine if there is a significant difference in the performance of Grade 9 students in making floor plans before and after using the floor plan creator application;
4. determine the effect size of the floor plan creator application in the performance of Grade 9 students.

## II. METHODOLOGY

The study aimed to evaluate the efficiency of the Floor Plan Creator application in enhancing the floor plan-making skills of Grade 9 Technical Drafting students at Tanque National High School. This research employed a quasi-experimental single-group pretest-posttest design. According to Abdullah (2018), this design is effective for measuring changes resulting from an intervention within a single group. Pretest and post test evaluations were conducted to assess students' technical proficiency before and after using the Floor Plan Creator application. This methodology allowed the researcher to determine if the application contributed to improvements in workmanship, accuracy, speed, and neatness. While quasi-experimental designs do not establish causality, they provide insights into the relationship between the intervention and observed outcomes (Stratton, 2019).

The research process included three stages. The research began with an initial evaluation of the students' skills in creating floor plans using traditional drafting methods. This stage was designed to serve as a benchmark to determine their existing level of competence. The students were tasked with designing simple floor plans manually, and their outputs were assessed using a scoring rubric focusing on key aspects such as workmanship, accuracy, neatness, and speed. This assessment provided valuable insights into their technical abilities prior to the intervention.

In the second stage, the Floor Plan Creator application was introduced to the students. The researcher conducted interactive sessions to demonstrate the application's features, functions, and practical uses. During these sessions, students were guided through various activities that progressively increase in complexity, starting from basic layouts to more detailed and intricate designs. This hands-on approach is intended to ensure that the students gain confidence and proficiency in using the application, enhancing their engagement and understanding of modern drafting tools.

The final stage focused on assessing the students' skills after they have used the Floor Plan Creator application. Similar to the baseline assessment, the students were tasked with creating new floor plans, but this time utilizing the application. Their outputs were evaluated using the same scoring criteria as the initial assessment. This comparative analysis measured improvements in their technical competence, highlighting the anticipated effectiveness of the application in enhancing their floor plan-making skills.

 

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**Locale of the study and respondents**

This study was conducted at Tanque National High School during the Academic Year 2024-2025. Data collection will take place over a four-week period, from March 10, 2025, to April 10, 2025. The participants consisted of seventeen (17) Grade 9 students enrolled in the Technical Drafting program. These students were selected due to their focus on drafting and the need to develop practical skills in creating floor plans.

**Research Instruments**

The data needed for this study were obtained through a structured assessment process designed to evaluate the students' floor plan-making skills. The researcher provided specific instructions on creating floor plans, which were presented during class discussions and practice sessions using both traditional methods and the floor plan creator application. For the evaluation of floor plans, the research instrument was scoring rubric developed and validated by experts in the field, including the advisory and examining committee. Feedback and suggestions from these experts were incorporated to ensure the instrument's reliability and accuracy before final approval.

**Data Gathering and Procedure**

The data gathering procedure for this study on the "Efficiency of Floor Plan Creator Application in Making Floor Plans" was divided into three phases: Phase 1 - Pre-Experimental, Phase 2 - Experimental, and Phase 3 - Post-Experimental.

**Intervention**

This study integrated the Floor Plan Creator software to enhance the technical drafting skills of Grade 9 students at Tanque National High School. The intervention aimed to evaluate the software's effectiveness in improving students' ability to design classroom floor plans, focusing on accuracy, efficiency, and usability. The intervention was structured into three key phases: preparation, implementation, and evaluation.

**Data Analysis Procedure**

The study analyzed the data gathered from the pre-test and post-test to evaluate the impact of the intervention on students' performance. The Statistical Package for Social Sciences (SPSS) software version 20 was used to ensure the accuracy and reliability of all computations. Descriptive and inferential statistical methods were applied to determine the impact of the intervention on students' performance in creating floor plans.

## III. FINDINGS AND DISCUSSION

*Performance of Grade 9 Students in Making Floor Plans before using the Floor Plan Creator Application*

From the data gathered, results revealed that the mean score in making floor plans of the participants was 16.58. The result showed that pretest mean scores in the participants' efficiency test were verbally interpreted as "Very Satisfactory." It could likewise be noted that the standard deviation for the pretest was 0.93. This simply indicates that before the intervention, participants already possessed a "Very Satisfactory" level of skill in creating floor plans. However, while this reflects a strong foundational understanding, there remains room for further development, particularly in terms of precision and adherence to technical drafting standards.

The result supports the findings of Yilmaz (2017), who emphasized that integrating digital tools in education significantly enhances student's spatial abilities and technical performance skills that are essential in the development of accurate and well-organized floor plans. Thus, even with promising pretest results, the use of the floor plan creator application is expected to further strengthen students design capabilities and drafting efficiency.

*Performance of Grade 9 Students in Making Floor Plans after using the Floor Plan Creator Application*

From the data gathered, the result revealed that the mean score in the floor plan performance test was 22.25. The mean score in the post-test was verbally interpreted as "Excellent." It could likewise be noted that the standard deviation for the post-test was 0.73 and this simply indicates that after the use of intervention, participants possessed excellent skills in making floor plans. The results of high mean scores and low standard deviations suggest a consistent improvement in the students' efficiency in designing floor plans.

This positive result supports the study of Kwon and Lee (2021), which showed that the use of computer-aided design software significantly enhanced students' spatial abilities and accuracy in technical drawing tasks. This aligns with the findings in the table, confirming that digital tools such as the Floor Plan Creator can play a vital role in developing students' competence in floor plan design.

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*Difference in the Performance of Grade 9 Students in Making Floor Plans before and after using the Floor Plan Creator Application*

The significant difference in their performance in making floor plans was favorable after using the floor plan creator application. It resulted in remarkably higher scores compared to the pretest that was not exposed to the intervention, which was the use of floor plan creator application.

After using the floor plan creator application, the mean score was 22.25, which is 5.67 points higher than the pretest mean of 16.58. This indicates that the participants showed considerable improvement in floor plan creation shifting from a lower descriptive category to an "Excellent" level in the posttest result.

Therefore, these findings imply that technology aided learning using the floor plan creator application can be a highly effective method for enhancing students' efficiency in designing floor plans. This approach can lead to a clearer spatial understanding and a more interactive and engaging design experience for students.

The findings align with the study by Kösa and Karakuş (2018), which demonstrated that computer-aided design (CAD) software-based instruction positively influenced students' spatial visualization skills, leading to improved performance in design tasks. This supports the effectiveness of integrating digital tools like the Floor Plan Creator in enhancing students' efficiency in creating floor plans. Hence, the null hypothesis stating that there is no significant difference in the performance of Grade 9 students before and after using the Floor Plan Creator application was rejected.

*Effect size of the Performance of Grade 9 Students in Making Floor Plans using the Floor Plan Creator Application*

The Cohen's d effect size value was 6.81, which is substantially higher than the threshold of 1.2, indicating an extremely large effect on students' post-test performance. This result suggests that the use of the Floor Plan Creator application had a very strong influence on improving students' skills in designing floor plans.

The effect size indicates that the application served as an effective tool in enhancing students' spatial understanding and technical accuracy in floor plan creation. Therefore, the researcher recommends integrating the Floor Plan Creator application into classroom instruction to support and improve the performance of students in architectural design-related tasks.

The findings of the present study align with the research conducted by Kösa and Karakuş (2018), which demonstrated that computer-aided design (CAD) software positively influenced students' spatial visualization skills and design performance. Similar to their findings, this study revealed that incorporating digital tools into the learning process helps bridge skill gaps by offering students a more interactive and intuitive approach to design.

In both studies, the use of technology allowed for personalized and visually guided learning experiences. The Floor Plan Creator enabled students to visualize layouts, manipulate design elements, and receive immediate feedback, leading to deeper engagement and improved mastery. This improvement was reflected in the significant increase in scores, with students moving from a "very satisfactory" in the pre-test to an "excellent" level in the post-test.

These findings underscore the value of integrating digital tools such as the Floor Plan Creator into design and technology education. They highlight its potential to enhance learning outcomes by making abstract spatial and design concepts more tangible, interactive, and accessible for learners.

## IV. CONCLUSIONS

The following conclusions were drawn based on the summary of findings of the results in the study:
Students showed a significant improvement in their understanding and application of floor planning concepts after using the Floor Plan Creator application. While they demonstrated a very satisfactory level of performance prior to the intervention, their skills progressed to an excellent level following the use of the application. This indicates that the Floor Plan Creator has the potential to enhance students technical drafting performance, particularly in terms of clarity, layout, and structural design of floor plans.

The Floor Plan Creator application served as an effective intervention tool for improving students' organization, accuracy, and speed in producing floor plans. Stu dents post-test scores showed marked improvement, with results reflecting both individual progress and consistency across the group. The increase in scores suggests that the application positively influenced the technical quality and precision of their outputs.

 

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The Floor Plan Creator is an efficient and valuable technological tool for improving technical drafting competencies among junior high school students. It supports the development of essential skills in ICT Technical Drafting and can be considered a beneficial aid in enhancing students' abilities in creating professional and accurate floor plans.

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