AN EXPERIMENTAL TECHNIQUE FOR EVALUATING FURNITURE ARRANGEMENTS

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Educators are constantly striving to find ways to make subject matter more meaningful to their students. There is seemingly an unavoidable lag, however, between theoretical practices as applied in universities and the actual realism of a professional situation. (Kaufman, 1966) It is becoming more essential that learning experiences in the classroom be relevant and that they provide opportunities for testing the student's ability to apply abstract ideas to practical circumstances.

In the opinion of the authors, the field of interior design is experiencing this same difficulty in the preparation and training of students for careers in the profession. Learning procedures are often structured around simulated circumstances which approach reality, yet students frequently leave the classroom still lacking the confidence that they will be able to apply their knowledge in real life situations.

In an effort to stimulate students toward deriving creative ideas and manipulating abstractions, the interior design educator has traditionally focused on methods of presentation. It is essential for the designer to develop sufficient skills to communicate ideas and to interpret plans for implementing these ideas. For the educator, however, the assessment of how well a student can transfer images on paper to actual situations in the environment has been most difficult. Just how effective visual presentations are for this purpose and, more specifically, which techniques offer the greatest advantages are questions yet to be resolved.

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The Problem

This investigation was undertaken to revise a measurement device used to test judgement of furniture arrangement. In the classroom, furniture arrangement traditionally has been taught by manipulating two-dimensional scaled templates on a two-dimensional scaled area designating an interior space. This method has been reasonably successful in translating space relationships and served as the basic pattern for the development of the Furniture Arrangement Floorplan Test (FAFT). (Henton, 1972) The test, designed to measure ability to arrange furniture, was composed of 20 plates of interior spaces. Each plate consisted of three versions of a room depicting identical furnishings, varying only in arrangement. Based on aesthetic and functional criteria, rankings of best, average, and poorest have been established for the three arrangements on each plate. Weights have been placed on the judgement ratings and scoring is determined accordingly. Figure 1 represents one of the plates included in the FAFT.

The value of using floor plans in teaching furniture arrangement has formerly stood without question. The student learns to perceive how the plan fits the actuality of an interior space. The prospective designer must understand relations of sizes and proportions at a glance, evaluate the use of a particular piece of furniture in its position, and control circulation around these pieces of furniture and within the existing structure. The floor plan is instrumental in facilitating this process.

As the transfer is made from the graphic presentation of the floor plan to the interior space including a third dimension, however, there are a significant number of additional factors to be considered. Is it logical to assume that students learn to visualize the actual three dimensional space in the type of two-dimensional learning experience such as the floor plan provides? Although a true relationship exists between the two, this mental expansion to a third dimension is a complex process. Educators are faced with determining the most appropriate method for teaching prospective interior designers this skill.

It was decided that one logical step toward determining whether students accurately perceive reality from a floor plan would be to expand the FAFT, a two-dimensional test, into a third dimension. If the three-dimensional view helps the individual to score higher on the test, then supportive evidence will have been obtained for the inclusion of both the floor plan and the perspective presentations.

In order to further refine the FAFT by expansion into a third dimension, three major purposes were established:

1. To develop plates of perspective graphics corresponding to the floor plans of the FAFT.
2. To obtain agreement from experts in the field that the perspective graphics are consistent with the FAFT in rendering technique and visual form.
3. To administer the two test batteries (floor plans and perspectives) individually to a group of criterion judges at given intervals to determine degree of similarity of ranking among the various arrangements.

It was hypothesized that there would be a positive correlation between scores on the Henton Furniture Arrangement Floorplan Test (FAFT) and the perspective drawings of those plans.

Procedures

A three-dimensional view of the FAFT was derived through a quick sketch technique using a one-point perspective drawing of each of the arrangements on the 20 plates. The station point for the perspectives of the three arrangements of a given plate was held constant. Accessories and decorative treatments designed to create a more realistic appearance in the space were also added. Figure 2 represents a perspective view of the FAFT plate shown in Figure 1.

Figure 1

FURNITURE ARRANGEMENT FLOORPLAN TEST

FAMILY AREA

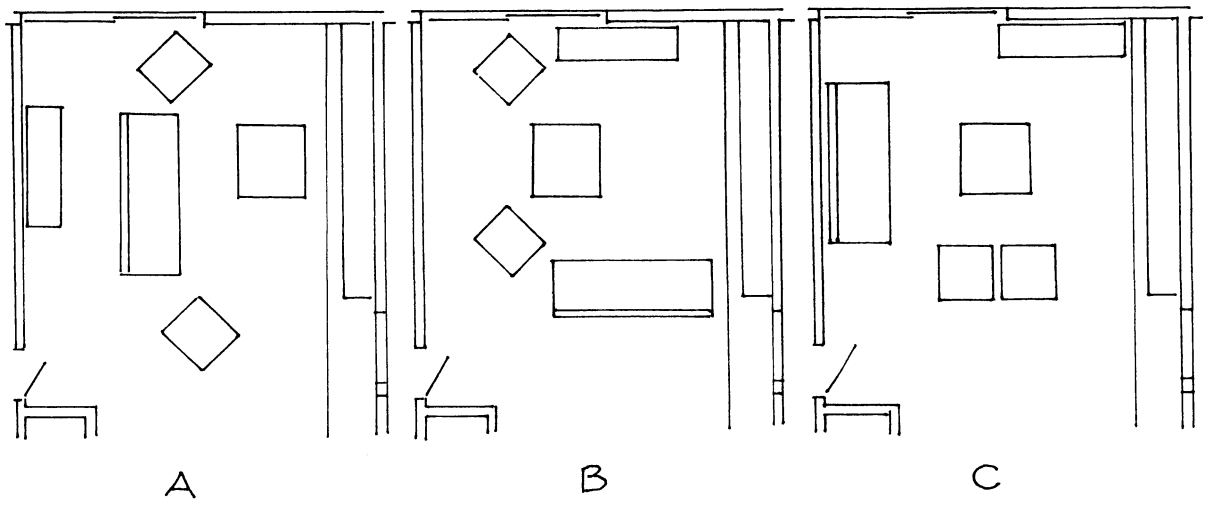
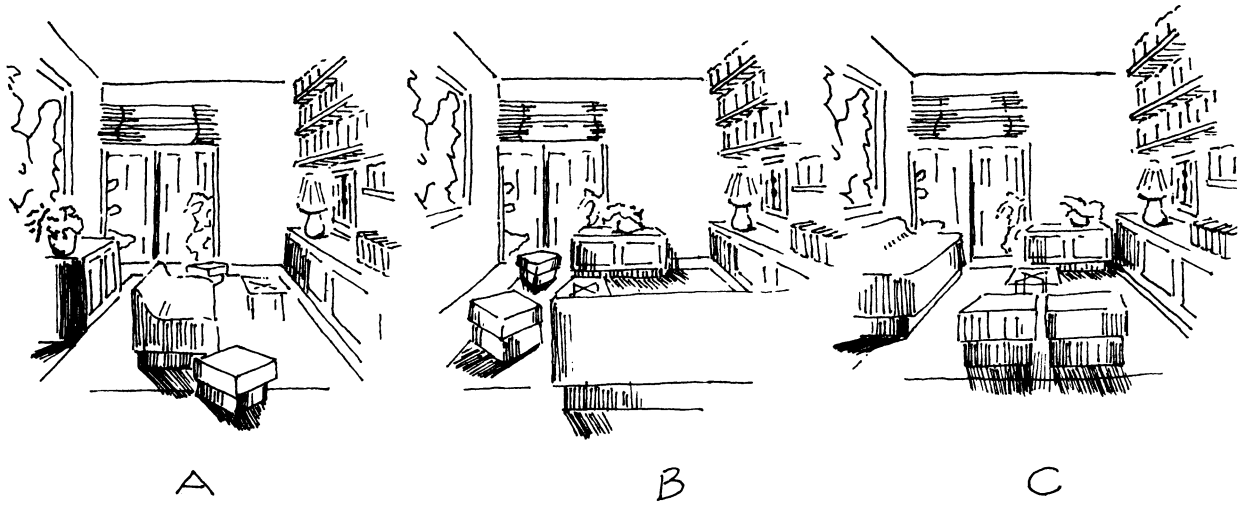


Figure 2

FURNITURE ARRANGEMENT GRAPHICS TEST

FAMILY AREA



A committee of three experienced educators and artists was established for the purpose of checking for consistency of style and techniques as the perspective plates were developed. Preliminary sketches were submitted to these individuals for critiques. Perspectives that did not meet the standards were eliminated and redrawn for committee approval.

Upon completion and acceptance of the perspectives, the two test batteries were then administered to a panel of four criterion judges. These judges were selected on the basis of competencies in a broad range of interior design related areas. The two forms of the test were administered under identical circumstances, the perspectives following the floor plans after a two week time elapse period. Each judge's ranking of the 20 plates on the two forms were then scored according to the method established for use with the original FAFT. Both plate scores and total test scores were derived for each judge on the two forms.

Results

In order to obtain an indication of the relationship between the two test forms, the Pearson product-moment correlation coefficient was applied to the scores in four ways: (1) correlation between the judges' total scores of the perspectives and the floor plans; (2) correlation between the sum of the judges' scores of each plate on the perspectives and the floor plans; (3) correlation between each judge's plate scores on the two test forms, and (4) correlation between the over-all (all judges combined) plate scores on the perspectives and the floor plans.

The correlation between the judges' total scores on the FAFT and the perspective drawings revealed a correlation of .66, too small to be statistically significant, but large enough to give an indication of a positive relationship existing between the two test forms.

Correlations between the sum of the judges' scores of each plate on the two forms showed seven of the plates with positive correlations, four of the plates unrelated, and nine of the plates with positive correlations, four of the plates unrelated, and nine of the plates with negative correlations. Correlations ranged from .84 to -.88. This caused the tests to balance out in such a way that the over-all correlation was virtually zero. These findings apply to plate differences but not to judge differences and establish a guide for revising the perspectives to achieve a more desireable relationship with the FAFT on each plate.

Correlations between each judge's plate scores also indicated on relationship between the two forms. This suggests that the positive correlation obtained between the judges' total scores was due to the plate rankings identified in the previous analysis.

The test correlating over-all (all judges combined) plate scores on the perspectives and floor plans reveals them to be unrelated. This supports the previous findings that plate differences did exist as did the possibility of judge differences. Therefore, a further analysis was undertaken to check for differences among the judges.

The analysis of variance of the four mean judge scores on each test form was computed followed by the F test. The numerical value of F on both forms was below the .05 level of significance which indicates that differences among judges were negligible.

Discussion

Statistical analysis of the scores made by the criterion judges on the test forms indicated the degree of similarity which exists between visualizations of furniture arrangement in floor plan and perspective drawings. The resulting correlation coefficient between total scores (.66) along with the proximity of judges' scores supports the hypothesis and affirms the expectation that furniture arrangement can be evaluated on the basis of perspective drawings as well as floor plans.

Although the findings from this study point up a number of limitations of the furniture arrangement test and the need for revisions of specific plates, there were also several important implications that became apparent. When two views

(perspective and floor plan) of the same interior space with identical furnishings do not highly correlate according to the assessments of experts in the field, the first reaction tends to be that something is wrong with the test. This may well be the fact, but it may not provide the total explanation for the discrepancies which were evident in this investigation.

Perhaps, in our discovery of dissimilar responses among judges, we have touched on the answer to how well individuals visualize actual situations from a two-dimensional presentation. In each of the two test forms, certain data were available to the judges in one that the other did not provide. It may be that neither the perspective view nor the floor plan alone provides the maximum opportunity to visualize the actuality of an interior space. For this reason, the current Furniture Arrangement Floorplan Test will be revised to include both the floor plan and perspective views for judging.

In terms of teaching furniture arrangement to the future interior designer, findings from the current study imply a necessity that specific skills be developed. The workability of actual space relationships must be established, which the floor plan communicates most effectively. At the same time, the need to visualize the reality of this space must not be neglected. Technical ability to represent space in a floor plan must be expanded conceptually to the three-dimensional visualization of the space in order to assure accuracy in the total perception. Although space must function to serve human needs, the aesthetic quality of the space, including the height aspects which cannot be shown in the floor plan, should not be underestimated. While the floor plan may be superior in relating function, perspective drawings provide a means by which a total design concept can be shown.

After the interior designer develops these design perception abilities, he can then adapt his methods of presentation according to his client's level of perception. Clients, being generally unskilled in perception of represented space, are apt to respond more positively to a three-dimensional presentation. They place their confidence in the designer and rely on him to give an accurate representation of the workable space.

References

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