DOCUMENT RESUME

ED 154 460 CS 502 109

AUTHOR McCroskey, James C.; McVetta, Rod W.
TITLE Classroom Seating Arrangements: Instructional Communication Theory Versus Student Preferences.
PUB DATE Apr 78
NOTE 15p.; Paper presented at the Annual Meeting of the International Communication Association (Chicago, Illinois, April 25-29, 1978)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Anxiety; *Classroom Arrangement; *Classroom Communication; Classroom Design; *Classroom Participation; College Students; Interaction; Interaction Process Analysis; Interpersonal Relationship; *Participant Involvement; *Student Attitudes; Student Teacher Relationship
IDENTIFIERS *Communication Research

ABSTRACT

A study surveyed 972 college students for their preferences in classroom arrangement (tradition straight-row, horseshoe, and modular) and their seating preferences within each style. Results indicated that students' arrangement preferences are influenced by both attractiveness of the course and the individual student's communication apprehension level. The conclusion developed from the data is that manipulation of either the type or the amount of communication in a classroom may be more difficult than previously believed, since such manipulation could hinder learning by engendering negative affective behavior in students. (Tables of findings are included.) (Author/RL)

CLASSROOM SEATING ARRANGEMENTS: INSTRUCTIONAL COMMUNICATION THEORY VERSUS STUDENT PREFERENCES

James C. McCroskey and Rod W. McVetta

West Virginia University

ABSTRACT

A study is reported which investigated student preferences for style of classroom arrangement (traditional straight-row, horseshoe, and modular) and seating preferences within each style. Results indicate that arrangement preferences are influenced by both attractiveness of the course involved and student communication apprehension level. It is concluded that manipulation of either type or amount of communication in a classroom may be more difficult than previously believed and that such manipulations have a high probability of engendering negative affect in students which could hinder learning.

Competitively selected paper presented at the annual convention of the International Communication Association, Instructional Division, Chicago, 1978 (in press, Communication Education).

CLASSROOM SEATING ARRANGEMENTS: INSTRUCTIONAL COMMUNICATION THEORY VERSUS STUDENT PREFERENCES

Effective communication in the classroom is essential to the success of both the student and the teacher. [1] The kind of communication as well as the amount of communication that occurs in the classroom has long been thought to be partially a function of the seating arrangement of students. While there probably is an infinite number of ways of arranging a classroom, three are most common: traditional, horseshoe, and modular.

The traditional arrangement (see Figure 1) for classrooms typically consists of about five or six perfectly straight rows, each containing five to seven chairs equidistant from each other--or as Rosenfeld and Civikly say, "something like tombstones in a military cemetery." [2] Historically, Sommer explains, the straight-row arrangement evolved to make the best use of the only adequate lighting then available-natural light from side windows. [3] In spite of developments in lighting which make the straight-row arrangement unnecessary, this traditional arrangement persists, in fact dominates. A recent survey of classrooms on a university campus found over 90 percent of the classrooms to have this arrangement.

The horseshoe or semi-circular arrangement (see Figure 2) is frequently employed in smaller classes, such as seminars. Some rooms are not physically conducive to this arrangement for larger classes because of the "dead space" in the middle. Consequently a "double horseshoe", two semi-circular rows with one inside the other, is also frequently observed. The modular arrangement (see Figure 3) is found mostly in specialized classrooms (e.g. home economics, science laboratories) and in classrooms at the lower elementary school levels.

Evaluation of Various Arrangements

As we noted above, the traditional straight-row arrangement is predominate in most educational settings, particulary in college and upper elementary through high school settings. The cause of this dominance is elusive, but tradition is the explanation offered most frequently. Discussions with teachers who employ the strait--row arrangement (over 300) yielded other reactions as well. Many commented that they simply had never thought about it. Others commented that the school janitor would become incensed if they rearranged the seats. Some reported trying other arrangements but being chastized by colleagues or superiors for having or leaving a "messy room." Many simply indicated that they liked their room that way, with no explanation for why they had that preference.

This dominance of the traditional arrangement also is difficult to explain from the vantage point of the specialist in instruction. Three-quarters of a century ago John Dewey attacked this arrangement because it inhibits experimentation in the classroom. Subsequent writers in education have agreed almost unanimously. If seating is discussed at all in a teaching methods course, the traditional arrangement is virtually always attacked as less desirable than other alternatives.

The view of specialists in instructional communication departs somewhat from that of Dewey's descendants. Taking a functional approach, for example, Hurt, Scott, and McCroskey argue that each of the three arrangements has positive elements depending on the desired type of communication in the classroom. [4] They suggest that if the purpose of the class is primarily one of information disemination, the traditional arrangement is probably best because it minimizes student-student interaction and places the primary interaction focus in the classroom on the teacher. With regard to the horseshoe arrangement, they suggest this arrangement would be the best if both student-student and student-teacher interaction are important to the learning in the class. Classes such as those concerned with higher-order cognitive or affective goals, particularly where there are few "right" or "wrong" answers, would be benefitted most by this arrangement.

The modular arrangement is advocated for classes in which student-student interaction is most important. [5] If task groups are formed in the class, this arrangement permits maximum interaction among those groups while minimizing the interference of one group with another. This arrangement is also recommended for classes which require that the teacher work closely with individuals or small groups rather than primarily with the class as a whole.

While the teacher is the primary focus in the traditional arrangement and teacher and students share the focus in the horseshoe arrangement, the teacher is removed from the focal point in the modular arrangement. Because of the differences in purpose for which each arrangement is best suited noted above, Hurt et.al. refuse to suggest one system over the other. However, they do argue that the traditional system is least conducive to interaction and that if the teacher seeks to increase communication in the classroom, one of the other arrangements should be chosen. [6]

While much has been written about the comparative values of various seating arrangements, the student's view has been virtually ignored. Only two studies could be found which explored this area. Heston and Garner found that for small, undergraduate classes in interpersonal communication, students demonstrated a marked preference for the horseshoe or semi-circular arrangement. [7] Feitler found a similar preference on the part of graduate and undergraduate students in education. He also found that these students did not like a modular type of arrangement with students seated in small groups. [8]

Since it has been reasonably well established that student affect toward a class is related to student learning, [9] student attitudes toward classroom arrangements are a matter of no small concern when determining a choice of classroom arrangement. An arrangement that is disagreeable to the student may erect a needless barrier, possibly one that will prevent learning in spite of other appropriate behaviors of the teacher. Consequently, the first question we posed for this investigation was:

Do students have differential preferences for the three common types of classroom arrangements?

We were also concerned with elements which might impact any general preferences which students might express, specifically differences in courses to be taken and individual differences in student orientations. The type of course a student would be taking was expected to impact what type of arrangement the student would prefer. Some classes are attractive to students and my inflate their desire to interact, while other classes are disliked and my deflate the students' desire to interact. Consequently, our second research question was:

Does the type of course to be taken affect student preferences for classroom arrangements?

Within this context we restricted our analysis to two types of classes, required classes the student does not want to take and elective classes within the student's major. [10] We felt that these two types were effective operationalizations of unattractive and attractive classes, respectively. Since we assumed that students would be more likely to desire to interact in an attractive course and less likely to desire to interact in an unattractive course, we hypothesized that their preferences in this regard would be reflected in classroom arrangement preferences, since the various arrangements allegedly promote or restrict interaction. Our specific hypothesis was:

> H_1: Students will prefer the traditional classroom arrangement over horseshoe and modular arrangements for required courses but will prefer horseshoe and modular arrangements over the traditional arrangement for elective courses.

While the above hypothesis was expected to hold for the aggregate for all students, we also recognize that students differ sharply in their desire to communicate. This individual difference is partially a function of the personality-type orientation referred to as "communication apprehension" (CA). [11] Thus, we anticipated that students with high levels of CA would be less likely to select interaction promoting arrangements and students with low levels of CA would be more likely to select such arrangements, regardless of type of course involved. Our second hypothesis, therefore, was:

H2: Students with high levels of CA, compared to students with low levels of CA, will express greater preferences for arrangements inhibiting interaction and lesser preferences for arrangements facilitating interaction.

While this hypothesis suggests that arrangement preferences of students with high and low CA levels will be affected by their CA level, it does not posit an impact for students with an intermediate CA level. These individuals, the moderates, are seen as "normal." Consequently, their preferences should fall in between those of the CA extremes and correspond to the preferences of the aggregate of all students.

Preferences Within Arrangements

The second concern of this study involved student preferences for seats within the three types of classroom arrangements. Previous research suggests that students occupying certain seats in a classroom will participate much more than will students occupying other seats. [12] Similar interaction patterns have been observed in small group settings. [13]

Considerable research has been reported which has investigated the nature of communication in traditional-arrangement classrooms. Adams and Biddle conducted one of the most extensive studies concerned with the effects of traditional or straight-row seating. [14] They found location within the seating arrangement to be the main determinant of whether a student was actively involved in the process of classroom communication. The researchers identified the center of activity where most interaction takes place to be the area extending from the front of the room directly up the center line, and diminishing in intensity as it moves farther away from the teacher. Sommer, in an analysis of a number of straight-row arrangements, found precisely the same thing; participation is greatest in the front row and in the center of each row. [15] Crawford repeated Sommer's study with a discussion group and found a linear relationship between row and interaction. [16] Students occupying the first row contributed six times as many statements per session as the last (fourth) row.

There is some reason to believe that these participation patterns are related to student achievement in the natural environment. Daum found that when college students were allowed free choice of seating, the students choosing seats nearer the front obtained higher test scores than students seated nearer the back. However, when students matched for previous achievement were assigned seats, this pattern was only partially replicated: Previous high-achievers maintained their high levels of achievement whether they were assigned to the front or the rear of the room, but previous low-achievers significantly improved their performance if they were assigned seats in the front. [17]

Although less research has been reported involving classroom arrangements other than the traditional straight-row system, Sommer found that in a seminar arrangement, similar to the horseshoe arrangement, the students sitting directly across from the teacher were the most frequent participants. [18] No studies of interaction frequency involving modular classroom arrangements have been reported. However, several studies of small group participation patterns provide an analog to this arrangement, since each module within this arrangement can be viewed as a small group. This research suggests that people occupying central or end seats (head or foot of table) are the most frequent participants in task-oriented groups. [19]

The general conclusion that is commonly drawn from this body of research is that sitting in certain seats in a classroom increases a student's participation, thus inferring a causal relationship between seat and interaction level. [20] Recently this causal link has been challenged. Baxter discovered, while reviewing the literature relating to seating in small groups, that all of the previous studies had permitted subjects to choose freely the seat they were to occupy. Thus, she argued that the results could as well be attributed to differences in people who selected certain seats as to the seats themselves. When she attempted to replicate the earlier find-

ings while randomly assigning subjects to seats, she found that the previously reported interaction patterns did not exist. [21]

Within the classroom context, reported results are somewhat conflicting. While all of the studies allowing free choice of seating have found certain seats to be highly associated with increased interaction, the two previous studies that did not permit free choice have resulted in less consistent findings. Ebert found that in an imposed seating arrangement (i.e., alphabetically) students toward the front of the room still participated more even though the teacher directed an equal number of comments to all areas. [22] Koneya, on the other hand, found that the seats observed in previous studies to produce the most participation did so in his study with random seat assignment, however students who had been identified previously as low verbal interactors did not increase their participation when assigned to high participation seats. [23] This lead Koneya to conclude that both the seat and the orientation of the occupant contribute to participation frequency. He also found that high verbal interactors indicated a significantly greater preference for high interaction seats than other students. [24]

Such differential preferences have also been noted in another recent study. McCroskey and Sheahan hypothesized that students with differential levels of communication apprehension would report differential preferences for seating within the traditional classroom arrangement. [25] Their results supported the hypothesis. Students with low levels of CA preferred seats demonstrated previously to generate higher participation while students with high levels of CA preferred to avoid those seats. These results parallel those reported by Koneya, although Koneya determined which students were high or low verbal interactors by observing previous behavior while McCroskey and Sheahan made this determination by means of a self-report measure of CA.

The present study sought to replicate the McCroskey and Sheahan study involving the traditional, straight-row arrangement while substantially increasing the sample size and to extend the investigation to the other two types of classroom arrangement. [26] Because of the results of the original study and the findings reported by Koneya, [27] the hypothesis tested was:

> H_3: Students with low levels of CA, compared to students with high levels of CA, will express greater preferences for high participation seats and lesser preferences for low participation seats.

As was the case with our second hypothesis, this hypothesis does not specifically take into account students with moderate CA levels. Their preferences were presumed to fall in between those of the CA extremes.

METHOD

Procedure

Subjects were 972 college students who were simultaneously enrolled in two basic courses in communication, one a lecture course with over 300 students per section and the other an experience-based course with a maximum enrollment of 25 per section. Data were collected at two different times in the course of a semester. During the first week of class a measure of CA was obtained in the small classes. Approximately three months later the measures of arrangement and seating preferences were obtained in the lecture course. Coded student numbers were employed at both times so that the two data sets could be merged for analysis.

Measures

The measure of CA employed was the Personal Report of Communication Apprehension (PRCA). [28] This is the most widely used measure in research involving CA. It has a history of high internal reliability and predictive validity. [29] In the present study the estimate of internal (split-half) reliability was .94 and the obtained distribution of scores was found not to deviate from normality. For purposes of analysis, subjects scoring beyond one standard deviation above the mean were classified as "high" in CA, those scoring beyond one standard deviation below the mean were classi-

fied as "low", and the remainder were classified as "moderate."

To obtain measures of classroom arrangement preferences, subjects were provided diagrams of classrooms similar to those in figures 1-3, except that the seats were represented by numbers (01-25). They were asked to check which arrangement they would "usually prefer", which they would prefer "for a required course you don't want to take", and which they would prefer "for an elective course in your major." In addition they were asked to mark an "x" across the seat they would normally prefer in each arrangement. Seats classified a priori as (H) high, (M) moderate, and (L) low interaction areas on the basis of previous research are indicated in figures 1-3.

Most subjects had little difficulty completing the instrument. However, some subjects had to be dropped from some of the analyses because of omitted responses or uninterpretable responses.

Data were submitted to chi-square analyses. The criterion for statistical significance was set at alpha=.05. The power of all tests to detect a moderate effect was above .99.

RESULTS

The general arrangement preferences of the subjects are reported in Table 1. As noted in that table about half of the subjects reported a general preference for the traditional arrangement, a third preferred the horseshoe arrangement, and the remainder opted for the modular arrangement.

Such general preferences, however, may be quite meaningless. It is clear from the results concerning elective and required courses (see Table 1) that type of course has a major influence on arrangement preferences. While over half (55.3%) of the subjects preferred the traditional arrangement for required courses, less than one-third (32.8%) expressed that preference for an elective course in their major. It is particularly interesting to note that the horseshoe arrangement was the one most preferred for an elective course, but only 14.1% preferred it for a required course.

Table 2 reflects arrangement preferences as a function of CA. In terms of general preferences, subjects with low CA favored the horseshoe arrangement but those with moderate and high CA favored the traditional arrangement. When considering an elective course, the low CA subjects were strongly in favor of the horseshoe arrangement. Although in terms of percentages the moderate and high CA subjects also favored that arrangement, the differences between traditional and horseshoe were not statistically significant for either group.

The results concerning the required course were quite unambiguous. All groups most preferred the traditional arrangement and least preferred the horseshoe. The differences, however, increased with level of CA. Traditional was favored over horseshoe by a ratio of less than 3-1 by subjects with low CA but by approximately 4-1 by moderates and over 5-1 by highs.

Seating preferences by CA level within each arrangement are reported in Table 3. In each arrangement CA level and type of seating interacted to produce differential preferences. In all cases subjects with low CA, compared to high CA subjects, showed greater preferences for high interaction seats and lesser preferences for low interaction seats.

DISCUSSION

The answer to our research question concerning whether students have differential preferences among the three common types of classroom arrangements is clear. They do. While the aggregate preference appears to favor the traditional arrangement, this is tempered both by type of course and CA level of student.

As a group, students in this study indicated a preference for the more interaction-restricting, traditional seating arrangement for required courses. However, these same students indicated a preference for the more interaction-enhancing horseshoe and modular arrangements for elective courses. This differential preference was most marked for the students with low CA. This may suggest that these individuals are more sensitive to environmental impact on interaction. When they want to talk they may be more aware of the situational variables which will increase their opportunity to do so.

In any event, our first two hypotheses clearly were supported. Students prefer the traditional classroom arrangement for required courses but prefer the horseshoe or modular arrangement for elective courses. Similarly, students with high CA, compared to students with low CA, express greater preferences for arrangements inhibiting interaction and lesser preferences for arrangements facilitating interaction. Taken together these findings suggest that students are aware of both their own desired level of participation and the participation demands and opportunities of different classroom arrangements, and they desire arrangements compatible with their desire (or lack of desire) for participation.

The above conclusion is additionally supported by the fact that the obtained results also supported our third hypothesis: students with low levels of CA, compared to students with high levels of CA, expressed greater preferences for high participation seats and lesser preferences for low participation seats. This suggests that even if an arrangement is imposed on students which they do not like, if they have free choice of seating, they may find places within that arrangement that are compatible with their levels of desire for interaction.

The implications of the results of this study for instructional communication specialists and classroom teachers are significant. First, decisions on classroom arrangement should take into account the attractiveness of the course to the student. Using the traditional arrangement in an attractive course or the horseshoe arrangement is an unattractive course may not be good practice. Students prefer the opposite. Using the less desired arrangement may only make a bad situation worse. If students want to interact, but the arrangement inhibits interaction, or if students do not want to interact but are arranged so that interaction demands are high, we can expect students to develop negative affect which can interfere with learning.

Second, students should be given as much choice as feasible in selecting their own seats no matter what arrangement is employed. Regardless of type of course, students differ markedly in their desire to communicate in the classroom. If we seat highly verbal students where interaction is difficult or highly apprehensive students where they are the center of attention and communication demands are high, we can expect them to develop negative affect which can hamper learning.

Third, the results of this study, and that reported by Koneya, suggest that our ability to manipulate the level of communication in a classroom may be more limited than we previously have believed. As both we and Koneya have found, students have markedly different seating preferences. When given free choice, highly verbal students will sit where interaction is easiest, less verbal students will sit farther away from the center of interaction. While Koneya found that the interaction of moderately verbal students can be increased by seating them in high interaction areas and high verbal students can be silenced to some extent by seating them away from interaction areas, he also found that low-verbals wouldn't talk no matter where they were seated. [30] The often expressed desire of classroom teachers to "get everyone involved and participating" may not be possible to realize.

Finally, it may also be that our ability to manipulate the type of interaction in a classroom is more limited than we previously believed. As we noted previously, the traditional arrangement is presumed to facilitate teacher-student interaction

while the horseshoe arrangemtnt is presumed to facilitate student-student and student-teacher interaction. Our results suggest that students in required courses want nothing to do with the horseshoe arrangement. This may suggest that if they are placed in that arrangement their communication behavior may not be what the teacher expects. If they do not want to interact, they simply want to get their grade and get out, they may just sit and not talk. Future research should explore the impact on actual communication behavior of students in required and elective courses as a function of seating arrangement. The fact that communication levels are high in some classes and not in others simply may be a function of the type of course and have little or nothing to do with classroom arrangement. Of one thing we can be reasonably certain, however. The more positive affect the student has for the course and the teacher, the more likely the student will be to desire to interact in the classroom. The results of this study suggest that the classroom arrangement the teacher chooses to employ may have a significant impact on that affect.

FOOTNOTES

Dr. McCroskey is Professor and Chairperson of the Department of Speech Communication at West Virginia University. Mr. McVetta is a doctoral candidate specializing in Communication in Instruction at the same institution.

1. For recent books concerned with the role of communication in the classroom, see Gustav W. Friedrich, Kathleen Galvin, and Cassandra Book, Growing Together: Classroom Communication (Columbus, Ohio: Charles E. Merrill, 1976) and H. Thomas Hurt, Michael D. Scott, and James C. McCroskey, Communication in the Classroom (Reading, Mass.: Addison-Wesley Pub. Co., 1978).
2. Lawrence B. Rosenfeld and Jean M. Civikly, With Words Unspoken: The Nonverbal Experience (New York: Holt, Rinehart and Winston, 1976), p.161.
3. Robert Sommer, Personal Space (Englewood Cliffs, N.J. Prentice-Hall, 1969).
4. Hurt, Scott, and McCroskey, pp. 95-99.
5. Hurt, Scott, and McCroskey, pp. 98-99.
6. Hurt, Scott, and McCroskey, pp. 98.
7. Judee Heston and Patrick Garner, "A Study of Personal Spacing and Desk Arrangement in the Learning Environment," paper presented at the annual convention of the International Communication Association, Atlanta, 1972.
8. Fred C. Feitler, as reported by Kenneth Goodall, "Tie Line," Psychology Today, 5, (September, 1971), p. 12.
9. See, for example, Benjamin S. Bloom, Human Characteristics and School Learning (New York: McGraw-Hill, 1976).
10. Other class characteristics should also be expected to affect preferences in specific circumstances, e.g. class content, time of day, previous experience with the class instructor, and affective relationships with other students in the class.
11. For a recent survey of the research in this area, see James C. McCroskey, "Oral Communication Apprehension: A Summary of Recent Theory and Research", Human Communication Research, 4 (1977), pp. 78-96.
12. Sommer, pp. 112-119.
13. For a recent survey of this research, see Leslie A. Baxter, "The Independent Effects of Seating Position on the Frequency and Direction of Group Interaction", paper presented at the annual convention of the Western Speech Communication Association, Seattle, 1975. Classic studies in this area include A. Paul Hare and Robert F. Bales, "Seating Position and Small Group Interaction," Sociometry 26, (1963) pp. 480-486 and Fred Strodtbeck and L. Hook, "The Social Dimensions of a Twelve-Man Jury Table," Sociometry 24, (1961), pp. 397-415.

14. Raymond S. Adams and Bruce J. Biddle, Realities of Teaching: Explorations with Video Tape (New York: Holt, Rinehart and Winston, 1970).

15. Sommer, pp. 115-119.

16. Reviewed in Sommer, p. 116.

17. J. Daum, as cited by Jere E. Brophy and Thomas L. Good, Teacher-Student Relationships: Causes and Consequences (New York: Holt, Rinehart and Winston, 1974), pp. 22-23.

18. Sommer, pp. 112-114.

19. Baxter

20. James J. Thompson, Beyond Words; Nonverbal Communication in the Classroom (New York: Citation Press, 1973).

21. Baxter

22. Reviewed in Sommer, pp. 116-117.

23. Mele Koneya, "The Relationship between Verbal Interaction and Seat Location of Members of Large Groups," unpublished dissertation (Denver, 1973).

24. Koneya

25. James C. McCroskey and Michael E. Sheahan, "Seating Position and Participation: An Alternative Theoretical Explanation," paper presented at the annual convention of the International Communication Association, Portland, Oregon, 1976.

26. McCroskey and Sheahan

27. Koneya

28. James C. McCroskey, "Measures of Communication-Bound Anxiety," Speech Monographs, 37 (1970), pp. 269-277 and "Validity of the PRCA As An Index of Oral Communication Apprehension," paper presented at the annual convention of the Speech Communicatio Association, Houston, 1975.

29. McCroskey, "Validity of the PRCA As An Index of Oral Communication Apprehension."

30. Koneya

TABLE 1
Student Seating Preferences
For Three Classroom Arrangements
By Course Type*

Type of Course	Type of Arrangement		
	Straight Row	Horseshoe	Modular
Required	538 (55.3)**	137 (14.1)	297 (30.6)
Elective	319 (32.8)	428 (44.0)	225 (23.1)
Usual Preference	467 (48.1)	325 (33.5)	179 (18.4)

* $\chi^2 = 233.56$, $p < .001$; $C = .27$

** Numbers in parentheses report percentage expressing preference.

TABLE 2
Arrangement Preferences By Course
Type of Apprehension Level

Apprehension Level	Type of Arrangement: Straight Row	Horseshoe	Modular	Main Effect X^2
General Preference [a]				
Low	31 (34.0)*	69 (46.0)	30 (20.0)	15.24[d]
Moderate	329 (49.6)	213 (32.1)	121 (18.3)	98.32
High	87 (55.1)	43 (27.2)	28 (17.7)	35.69
Required Course [b]				
Low	71 (47.3)	25 (16.7)	54 (34.0)	21.64
Moderate	373 (56.1)	94 (14.1)	198 (29.8)	179.35
High	94 (59.9)	18 (11.5)	45 (28.7)	56.77
Elective Course [c]				
Low	31 (20.7)	85 (56.7)	34 (22.7)	36.84
Moderate	231 (34.7)	274 (41.2)	160 (24.1)	29.90
High	57 (36.3)	69 (43.9)	31 (19.7)	14.42

*Numbers in parentheses report percentage expressing preference

a Test of interaction: $X^2 = 17.60$, $p < .005$, $C = .13$

b Test of interaction: $X^2 = 5.53$, $p < .10$

c Test of interaction: $X^2 = 15.35$, $p < .005$, $C = .12$

d X^2 required for alpha $< .001 = 13.80$

TABLE 3
Seating Preferences By Arrangement
And Apprehension Level

Apprehension Level	Type of Seating: High Interaction	Moderate Interaction	Low Interaction	Main Effect X^2
Straight Row [a]				
Low	64 (44.1)*	64 (44.1)	17 (11.7)	54.76[d]
Moderate	168 (25.7)	372 (56.9)	114 (17.4)	163.27
High	32 (20.3)	88 (55.7)	38 (24.1)	28.00
Seats in Classification	6	9	10	
Horseshoe [b]				
Low	60 (41.7)	35 (24.3)	49 (34.0)	15.48
Moderate	185 (28.5)	119 (18.3)	345 (53.2)	12.34
High	29 (18.6)	19 (12.2)	108 (69.2)	28.66
Seats in Classification	7	6	12	
Modular [c]				
Low	40 (29.6)	53 (39.2)	42 (31.1)	.18
Moderate	150 (25.2)	229 (38.4)	217 (36.4)	5.70
High	25 (16.8)	53 (35.6)	71 (47.8)	18.84
Seats in Classification	7	10	8	

* Numbers in parentheses report percentage expressing preference.

a Test of interaction: $X^2 = 29.61$, $p < .001$; $C = .17$

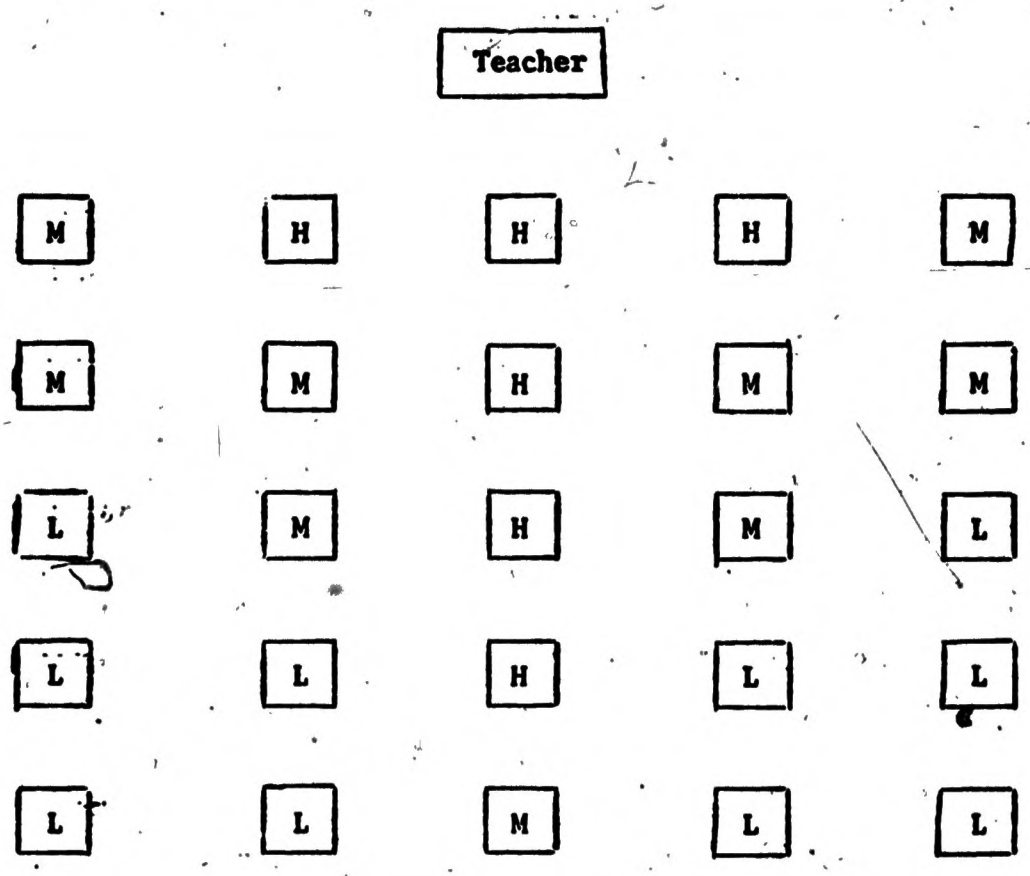
b Test of interaction: $X^2 = 37.52$, $p < .001$; $C = .20$

c Test of interaction: $X^2 = 11.26$, $p < .03$; $C = 11$

d Expected frequencies computed on the basis of the number of seats available in the classification. X^2 required for alpha $< .05 = 6.0$; X^2 required for alpha $< .001 = 13.80$

FIGURE 1

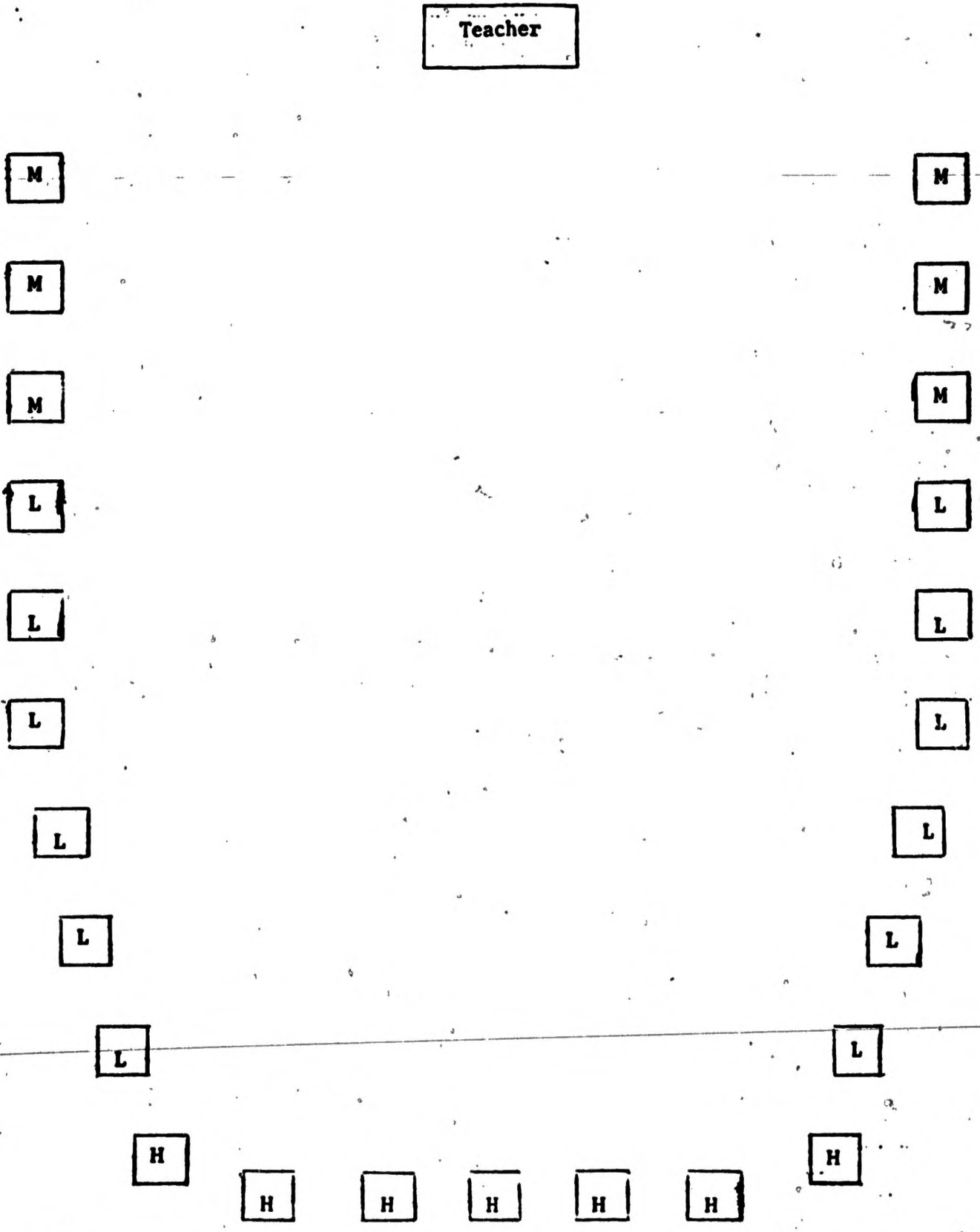
Traditional Arrangement*



*H = High Interaction Seat, M = Moderate Interaction, L = Low Interaction

FIGURE 2

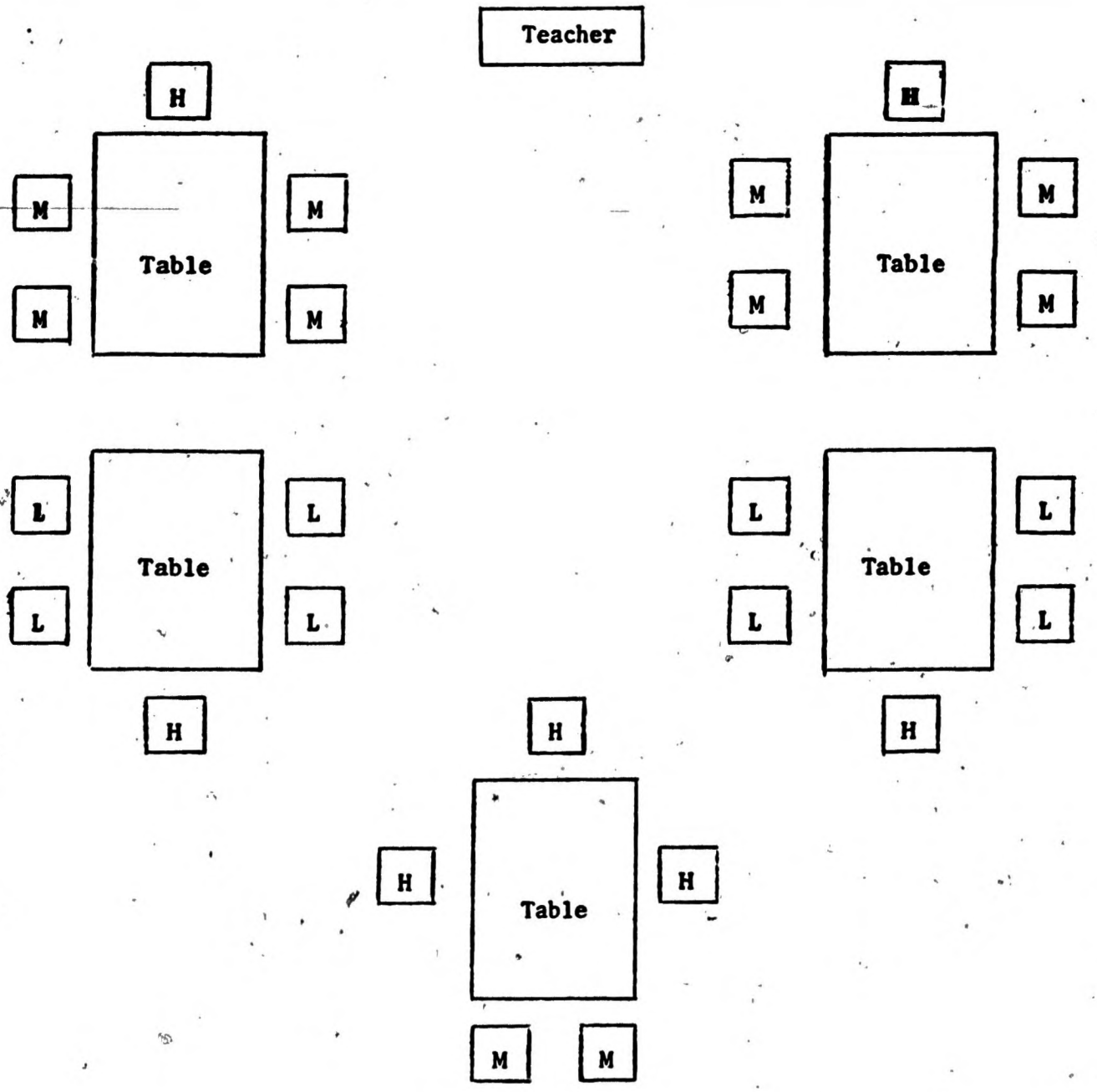
Horseshoe Arrangement*



* H = High Interaction Seat, M = Moderate Interaction, L = Low Interaction

FIGURE 3

Modular Arrangement



*H = High Interaction Seat, M = Moderate Interaction, L = Low Interaction