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ACTION ZONE THEORY AND THE HEARING-IMPAIRED STUDENT IN THE MAINSTREAMED CLASSROOM

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ABSTRACT

This study examines the effect of the "action zone" phenomenon on the classroom participation of mainstreamed, hearing-impaired students. They are constrained by their need for visual input to sitting on the sides of the classroom out of the action zone. Six mainstreamed classes were observed and coded for location of student-teacher interactions. Action zone patterns were found in two classes. It was concluded that hearing-impaired students who must sit on the periphery of the classroom have similar opportunities to hearing students for participation when no action zone exists. When one does exist however they are at a great disadvantage.

INTRODUCTION

The relationship between behavior, person, and the environment has been well investigated in recent years (e.g., Barker, 1968; Moos, 1974, 1976). It has been demonstrated that people may behave differently in different situations. For example, a person may respond one way when acting alone and quite another way when a member of a group or as part of a crowd. It is also known that not all persons are affected in the same way by the same environment (Garza & Nelson, 1973, McIntire, 1979; Pfeifer & Schneider, 1974). For some, a group or crowd is inhibiting, for others, stimulating. In the classical Lewinian sense (Lewin, 1935) these variations in behavior are considered to be a product of both personal and environmental characteristics.

Behaviors which can be seen in the classroom are likely specific to that environment (Walberg & Moos, 1980). The environment of the classroom itself is neither stable nor predictable. It is generally acknowledged, for example, that large classrooms and class sizes affect student behavior differently than do small rooms and groups.
(Anderson & Walberg 1972). Thus, teachers may break up a class into small groups in order to change the behavior of students in a desired fashion (i.e., to Licit %% for more discussion). Hearing-impaired* students who are mainstreamed experience a variety of problems in dealing with the usual flow of communication in the regular classroom.

*The term "hearing-impaired" is used throughout this paper to refer to individuals with an educationally significant hearing loss. It includes individuals who are considered hard of hearing as well as those who are profoundly deaf.

The communication environment of the classroom demands that students behave in a number of ways -- responding, initiating, discussing. Hearing-impaired students are limited in their ability to cope with these demands and must compensate for these limitations. They must be able to maximize the use of their residual hearing and utilize the visual mode most effectively. The manual student who uses sign language for communication will likely need an interpreter to convert the oral message into a visual one. The oral student will find it necessary to sit close to the instructor in order to lipread. Such a student may experience difficulties if an instructor turns to the board while speaking, if the lighting is poor, or if there are background noises which interfere.

Since their primary mode of communication is likely to be visual, the hearing-impaired student will need to sit in the areas of the classroom which maximize the range of their visual field. These areas, in a traditional classroom, are most apt to be on the sides and to the front of the room. Sitting here will enable the crucial elements -- interpreter, instructor, blackboard -- to be clearly visible.

Generally, the findings of research on the physical setting of the classroom indicate that students in the center and front of the room interact with the teacher more than do students on the sides and in the back (Good & Brophy, 1980). This area of high participation and interaction has been labeled the "action zone" by some researchers (Adams & Biddle, 1970; Delfes & Jackson, 1972; Schwebel & Cherlin, 1972). Action zone theory suggests that the location of a student within a classroom determines how much he/she will have contact with the teacher.

Further research has linked a seating position and the action zone phenomenon to student achievement (Wulf, 1977). High achievers appear to prefer the center seats in a classroom, for
example. Other studies have linked student personality characteristics to preferred seating position (Dykman, 1979; Totusek & Staton-Spicer, 1982). Teachers' classroom behavior and perceptions of students have also been related to student seating (Daly & Suite, 1981 Owens 1978; Washington 1979). Most of these studies show action zone or seating position effects when students are allowed to choose their own seating or when instructors teach to that select portion of the classroom.

Hearing-impaired students in the mainstreamed classroom are faced with an unusual situation. They are constrained by communication needs to sitting on the sides and side front of the classroom. Therefore, they have little, if any, choice in seating. Normally-hearing students in the same classroom, however, will have the option to choose their seats, as college instructors rarely assign seats to students. Therefore, normally-hearing students will be able to help create an action zone in a classroom. However, their hearing-impaired classmates will have little opportunity to sit in that zone. Thus, hearing-impaired students will be constrained in their ability to participate in class in a manner that is not a problem for the normally hearing.

The purpose of the present study was to extend the findings of earlier research from primary and middle grade levels to the post-secondary educational situation. Observational methods were used to gather data on the action zone phenomenon as it might manifest itself in the actual classroom situation. This was done in order to assess the impact of the action zone on the ability of hearing-impaired students to take part in a regular, hearing class.

METHOD

Procedure

Data were collected during six observation sessions in each of six classes at the Rochester Institute of Technology (RIT) during the spring quarter of 1981. Each class included from one to six hearing-impaired students from the National Technical Institute for the Deaf who were cross-registered or mainstreamed into the programs of the other colleges of RIT. All classes were at the undergraduate level within the College of General Studies. The duration of each class period was approximately fifty minutes.

Three trained observers collected data on the location and nature of student-teacher interaction. This was done in ten minute
segments during portions of each class session. Interactions were coded on a seating chart noting as to whether they were student-initiated or instructor initiated. The seating location of the hearing-impaired students was noted for all coding sessions. Figure I illustrates the coding sheet used to collect the data. At the beginning of a class period the observer noted the seats which were occupied in the classroom. This was done in order to obtain an accurate count of the persons sitting within and outside of the action zone. (No action zone was marked on the actual coding sheet.)

Figure 1. Seating Diagram Showing the Action Zone

Front of Room

O X X X X O
O O X X O O
O O X X O O
O O X X O O
O O X X O O
O O X X O O
O O X X O O
O O X X O O
O O X X O O
O O X X O O

X = Seats Located In Action Zone   O = Seats Not Located In Action Zone

Analysis

All interactions were totaled according to seating position over all observation periods. These interactions were further aggregated according to the designated action zone of the classroom (summed within and outside the action zone area). The action zone was designated as the center two rows of the classroom, front to back, and
the two adjoining front row seats. This conforms to the general designation of action zone in earlier studies.

RESULTS

The data were analyzed to determine if difference existed between the total number of interactions inside and outside the action zone for each class. Frequency data are presented in Table 1. An observed difference is the actual difference in frequency of interactions between two areas. The expected difference was based on the proportion of the total responses which would be expected in each area if responses were distributed in the same manner as students.

Chi-square tests of the differences between expected and observed numbers interactions were conducted for each class. Only two of the six tests yielded significant results at the .05 alpha level. Conceptually this may mean that any differences in the pattern of responses inside and outside the so-called action zone for the other four classes could be attributed to chance variations.

In a second analysis a comparison was made of the frequency of responses between hearing-impaired students within and outside of the action zone for all classes. The analysis was not conducted individually by classes because of the small numbers involved at that level. Rather, data were grouped by classes according to whether or not the action zone had been identified in the previous analysis. Classes A and B (see Table 1) produced an action zone. However, for these classes combined there was one response within the action zone and three outside. These frequencies are insufficient for statistical inference. For the remaining four classes, twelve responses were noted within the hypothetical action zone and twelve outside. Even after accounting for differences in seating patterns, this distribution of responses showed no statistically significant difference between the two areas. It would appear, therefore, that the hearing-impaired students in these classes are no more affected by the action zone phenomenon than their classmates.

A final analysis was conducted to determine whether students were more likely to initiate -- ask questions or venture an opinion -- if sitting in the designated action zone than if outside of it. In five of the six classes the percentage of student initiations within the action zone was higher than or equal to the percentage outside the zone. When a 2 x 2 initiation by location table was analyzed for each class using a
Chi-square test of independence, it was found that none of these was significantly greater than chance at the p=.01 level.

### Table 1. Frequencies of Interactions and Seats Occupied Inside and Outside the Action Zone

<table>
<thead>
<tr>
<th>Course Zone</th>
<th>Number of Seats Occupied Inside</th>
<th>Number of Interactions Inside</th>
<th>Number of Seats Occupied Outside</th>
<th>Number of Interactions Outside</th>
<th>Total Chi Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>61</td>
<td>27</td>
<td>128</td>
<td>27</td>
<td>189</td>
</tr>
<tr>
<td>B</td>
<td>53</td>
<td>53</td>
<td>99</td>
<td>22</td>
<td>152</td>
</tr>
<tr>
<td>C</td>
<td>50</td>
<td>13</td>
<td>102</td>
<td>35</td>
<td>157</td>
</tr>
<tr>
<td>D</td>
<td>63</td>
<td>16</td>
<td>125</td>
<td>31</td>
<td>188</td>
</tr>
<tr>
<td>E</td>
<td>58</td>
<td>34</td>
<td>122</td>
<td>51</td>
<td>180</td>
</tr>
<tr>
<td>F</td>
<td>52</td>
<td>24</td>
<td>91</td>
<td>44</td>
<td>143</td>
</tr>
</tbody>
</table>

p<.05

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**DISCUSSION**

Results from these analyses tend to indicate that an action zone does not necessarily exist in the postsecondary classroom, although it can be produced given the right circumstances which will be discussed below. A student sitting on the periphery is at a disadvantage for participating in classroom interaction because of seating only when these circumstances exist.

How, then, did the classes which were observed differ from one another? What produced the significant action zone in the two classes? In the first case, the statistically significant difference between areas can be traced to an extremely active student who sat center front in all class sessions. The observer for that class reported anecdotally that this student usually had his hand raised, anxious to volunteer an opinion. Other students occasionally made negative comments about his habit of dominating class discussion. This was not an instructor-produced phenomenon, but certainly was instructor-allowed.

In the second class where an action zone was found, it was noted by the observer that the instructor stood behind a podium or lectern for the entire duration of every class session. This tendency gives credence to the supposition that the action zone phenomenon is produced by the natural tendency to focus attention on the perceptual field directly in front of an individual, the instructor in this case.
This observation and interpretation supports an explanation of why no action zone was produced in the remaining four classes. In these classes the instructors rarely remained in one location but moved across the front of the room. This activity enabled almost every student to be in close eye contact at some point with the instructor during the observational period.* This eye contact together with the fact that some instructors made it a point to call upon individual students in all areas of the classroom to respond to questions may have tended to create a more widespread interaction pattern.

* It must be pointed out that eye contact with students is the key rather than physical movement. Too much "roaming" on the part of an instructor will work against a hearing-impaired student's need for visual contact --especially for speech reading.

The dominant teaching style in all classes observed was the traditional lecture method. However, many instructors varied their presentations (i.e. short films, overhead projector, music, board work, etc.) which may have enabled them to capture and hold the interest of a greater number of students within a class regardless of seating location. The result may have been discussion involving students from all areas of the classroom. This suggests that it is not the teaching method per se that dictates the creation of an action zone but the way in which that method is implemented.

It should be noted that the hearing-impaired students in the two classes which produced an action zone responded at a much lower rate (an average of 2 as opposed to 6 interactions per class) than in the "nonaction-zone" classes. It may well be that these students are more inhibited in their class participation, generally when certain students are allowed to dominate class discussion. This observation might be a fruitful topic for future research.

The present study used entirely naturalistic data on classroom interaction. Neither student seating nor instructor position were manipulated. A quasi-experimental study might take these variables into consideration. However, naturalistic data reflects more validly what might actually occur in classrooms. Combined with findings from other research the present work points to what creates an action zone, and how it can be avoided.

CONCLUSION
The findings of the present research study point to two possible conclusions about the so-called action zone phenomenon.

First, an action zone of student-teacher interactions can occur in a college classroom (or any other classroom). However, this phenomenon is not a given unless produced or allowed by an instructor.

Second, in classrooms where no action zone exists, hearing-impaired students are at no more disadvantage for participating when sitting on the periphery than when sitting toward the-center of the classroom. This mirrors the experience of their normally-hearing peers. In classrooms where an action zone exists all students are at a disadvantage for participating when outside the action zone. However, hearing-impaired students may be even more affected than the normally hearing. Hearing-impaired students in action zone classes seem to respond little even when seated within the action zone.

Mainstreamed hearing-impaired students are vulnerable to effects of the classroom environment which impinge directly on their communication needs. Their need to sit on the periphery of the classroom will not be an additional handicap when an instructor teaches in a manner which avoids the formation of a select, action zone in the center of the class. Therefore, all teachers, whether they have special needs students or not, should be aware of how they direct their teaching as well as what they teach. It should be possible for teachers to structure the interaction of the class so that all students have the opportunity to participate.

REFERENCES


