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AUTHOR Day, Barbara D.; Hunt, Gilbert H.
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ABSTRACT

This investigation was conducted to determine if 5-year-old students randomly chosen from an open classroom for 4-, 5-, and 6-year-olds communicated at random across sex, race, and age groups. The classroom was composed of nine learning centers and was organized around the following activities: math, dramatic play, blocks, art, reading, listening, science, outside play, and games. Each of the 16 subjects was observed separately for one 55-minute period during a free choice or an integrated activity time in centers. Data collected on each child involved: (1) choice of centers; (2) length of time in the center; (3) peer interaction received and initiated across sex, age, and race; and (4) interaction initiated by and received from staff members. The interaction data on each child were combined in order to represent a sample of the overall interaction of all 5-year-olds in this setting. Data were classified as to verbal interaction in each center. Results indicate that students show a bias toward interacting verbally with peers of the same sex and race. It was concluded that simply grouping children heterogeneously by age, sex, and race does not guarantee that the children will communicate across the groups at random. (CS)

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Final Report

**Verbal Interaction Across Age, Race, and Sex
in a Variety of Learning Centers in an Open Classroom Setting**

Barbara D. Day and Gilbert H. Hunt

**Frank Porter Graham Child Development Center
University of North Carolina at Chapel Hill**

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Preface

This research was carried out under a contract to the Frank Porter Graham Child Development Center from the North Carolina State Board of Education. The opinions stated are those of the authors and do not represent the positions or policies of the granting agency.

During the spring of 1974, the research staff of the FPG Center conducted a series of four studies which related to the quality and improvement of kindergarten programs in North Carolina. The study described herein was the third in this series.

All subjects in the studies were students (or their parents) in the multi-age, open classroom housed in the research building at the Frank Porter Graham Child Development Center in Chapel Hill, North Carolina. The class was composed of 60 children, of whom there were 10 four-year-olds, 29 five-year-olds, and 21 six-year-olds. The four-year-old children participate in a kindergarten program supported by the Center; however, the other children are public school students. Ninety-three percent of the parents agreed for their children to be involved in the studies.

The authors appreciate the assistance and cooperation provided by the Chapel Hill-Carrboro Public Schools and the Division of Research in the North Carolina State Department of Public Instruction.

**Verbal Interaction Across Age, Race, and Sex
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Barbara D. Day and Gilbert H. Hunt

There is a great need for descriptive analyses of the open classroom setting. Until recently, there has been very little research to determine if the alternatives to the traditional modes of operation and are actually being carried out as proponents of the open classroom assume (Rogers, 1971). Understanding how alternative programs function aids in their evaluation.

The present authors have recently reported research findings that suggest that grouping children heterogeneously by age does not guarantee that the given children will interact verbally across age levels. The authors concluded that children interact verbally across age groups, but the environment must be prepared in order for it to occur (Day and Hunt, 1974a). If this finding is supported, it would mean that careful planning must go into the preparation of the classroom environment if one of the basic assumptions of open education, i.e., across-age-group interaction, is to be realized (Day and Hunt, 1974b).

Statement of the Problem

The present investigation was conducted to determine if the five-year-old students under observation communicated at random across sex, race, and age groups. Specifically, the following questions were asked:

- 1) Do the five-year-old children under observation interact at random across sex groups when given a free choice to interact with whom they desire?
- 2) Do the five-year-old children under observation interact at random

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across race groups when given a free choice to interact with whom they desire?

3) Do the five-year-old students under observation interact at random across age groups when given a free choice to interact with whom they desire?

The investigators were also concerned with the frequency and type of verbal interaction as it took place across learning and interest centers. Also, the following research questions were generated concerning verbal interaction across the centers:

4) Do five-year-old children tend to choose some learning centers more frequently than others?

5) Do five-year-old children tend to stay in certain learning centers longer than they do in others?

6) Do teachers tend to interact with five-year-olds more frequently in some learning centers than in others?

Method

Subjects

The subjects were 16 five-year-old students who were randomly chosen from the multi-age, open classroom for four-, five-, and six-year-olds at the Frank Porter Graham Child Development Center. Of the 16 students in the sample of five-year-olds selected for this study, 9 of the subjects were males and 7 were females. There were two black males and two black females; the remaining subjects were white.

Experimental Setting

The setting was a multi-age, open classroom composed of nine learning centers. The centers were organized around the following activities:

math, dramatic play, blocks, art, reading, listening, science, outside play, and games. Each of the centers was pleasing esthetically and was fully stocked with learning materials--both commercial and teacher-made. The three teachers and two aids who worked in the centers varied their time depending on the types of activities planned. Often there were activities requiring more teacher help in math, science and art centers; however, the children were free to choose the centers they desired.

Procedure

Each of the five-year-olds was observed separately for one 55-minute period during a free choice or integrated activity time in centers. The same observer was used to record all of the verbal interaction of these students in terms of sex, age, and race of the initiators and receivers of the interaction.

Data were collected on a given child as to 1) choice of center; 2) length of time in the center; 3) peer interaction received and initiated across sex, age, and race; and 4) interaction initiated by and received from staff members. The interaction data on each child were combined in order to represent a sample of the over-all interaction of all five-year-old students in this setting. The data were then classified as to verbal interaction in each center.

Results

Because of low expected frequencies χ^2 analyses could not be carried out on these data. Consequently, the results are presented in a descriptive manner.

The first question dealt with the verbal interaction of five-year-old students across sex groups. The analysis of the overall data, as

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shown in Tables 1 and 2 in the Appendix, indicated that the five-year-olds did not interact at random across sex. Both the males and females initiated and received less verbal interaction from the opposite sex group than would probably be expected by chance.

The second question dealt with the verbal interaction of five-year-old students across race groups. The analysis of the overall data, as shown in Tables 3 and 4, indicated that the five-year-olds did not interact at random across race. Both the blacks and whites initiated and received less verbal interaction from the opposite race group than would be expected if the children were interacting at random.

The third question dealt with the verbal interaction of five-year-old students across age groups. The analysis of the data, as shown in Tables 5 and 6, indicated that the five-year-olds did interact with four-year-olds and six-year olds, as well as with children of their same age. This finding was supportive of an earlier finding by the authors on the same population; in the early part of the school year, it was found that the five-year-olds initiated interaction across age groups as could be expected if they were interacting at random (Day and Hunt, 1974a).

The fourth question dealt with the frequency with which the interest centers were chosen by the students. In order that these data not be confounded by a given subject's preference for working with certain friends or by the number of children in the centers, the frequency of choice was based on the first choices of the subjects. There seemed to be differences among centers in the frequency with which they were chosen first. The frequencies of first choices were as follows: art, four times; outside play and blocks, three times each; reading and dramatic play, two times each;

and math and science, one time each. Games and listening were never chosen first.

The fifth question dealt with the amount of time that the subjects spent in each center. Of the 880 total minutes of observation, 834 minutes were actually spent in centers. There were no data collected on the remaining 46 minutes which were used by the subjects to move to new interest centers. The amount of time spent appeared to vary across centers. For example, the subjects seemed to spend a great deal more time than was expected in the block, science, art, and outside play centers. However, the subjects spent less time than expected in the listening, math, reading, dramatic play, and games centers.

The sixth question dealt with the frequency of staff-student interaction across centers. There were 304 teacher initiated responses and 272 teacher received responses recorded. Teachers appeared to initiate and receive responses across centers at a frequency different from that expected by chance. The teachers initiated and received most of their interactional responses while in the art and science centers. However, they tended to initiate and receive much less interaction in the reading, outside play, dramatic play, games, and listening centers.

Discussion and Conclusions

In terms of the overall patterns of peer interaction, there were three major findings: 1) the five-year-olds interacted across age groups as expected, 2) the five-year-olds interacted more frequently with peers of their own race than was expected, and 3) the five-year-olds interacted more frequently with peers of their own sex than was expected. These findings, however, were not always consistent with what happened in individual learning centers. In some centers the subjects tended to be

even more prone to interact with peers of the same race and sex than the overall analysis indicated; however, in other centers the subjects seemed to be much as prone to interact with members of their same race and sex than the overall analysis indicated. For example, across sex-interaction varied among the different centers. Males talked more to other males in the block, outside, art, reading, and games centers than was expected. Males interacted across sex as expected in the science and math centers, while they talked less than expected to other males in the dramatic play center. Females interacted with each other more than expected in the art, math, and reading centers while interacting less with each other in the outside and science centers than expected; females interacted across sex as expected in the dramatic play center.

The same situation was found in the case of interaction across race in the different centers. Whites interacted with each other more than expected in the block, art, and science centers while interacting less with each other in the dramatic play center than expected. Whites interacted across race as expected in the outside, math, reading, and games centers. Blacks interacted with each other more than expected in the dramatic arts center while interacting less with one another in the art center than expected; blacks interacted across race as expected in the outside and math centers. Therefore, children tended to interact consistently with children of their own race and sex with few exceptions; variation across centers was mainly in degree. Although the five-year-olds interacted at random across age when the data from all centers were combined, the dramatic play center was the only center where the subjects interacted across age as expected. The five-year-olds interacted

more than was expected with six-year-olds in the block and art center; with other five-year-olds in the outside and science centers; and with four-year-olds in the math, games, and reading centers. Therefore, the findings suggest that children can interact across sex, age, and race while in a multi-age, open classroom. However, the data indicate that this is not likely to happen unless the environment is shaped to accommodate this type of behavior. Simply grouping children heterogeneously by age, sex, and race does not guarantee that the children will communicate across the groups at random.

Recommendations

The investigators concluded, on the basis of the above findings, that the observed students showed a bias toward interacting verbally with peers of the same sex and race. It was also concluded that this pattern of interaction was more likely to take place in some interest and learning centers than in others. These conclusions indicate that a more extensive study is needed to follow up the present investigation.

Further study should be done over a long period of time to investigate further 1) if there is much variation in the interactional patterns across sex, age, and race in the different centers; 2) why children tend to go more frequently and stay longer in some centers than in others; and 3) if there is a relationship between the interactional pattern existing in a given center and the quality of work done in that center. This type of investigation would require the development of an instrument to assess the productivity and quality of the children's work. It would also require an in-depth analysis of classroom life to determine if the findings reported here are related to the behavior of students and staff, the background of the students, or both.

References

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Appendix

**Detailed Presentation of Results
of Study 3**

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Table 1

**Total Frequency of Verbal Interaction Initiated
Across Sex Groups**

| | Directed to Males | Directed to Females | Total |
|-------------------------|-------------------------|------------------------|-------|
| Initiated by Males | 615.0 | 238.0 | 853.0 |
| Initiated by Females | 102.0 | 298.0 | 400.0 |
| Total | 626.5 | 626.5 | |

Table 2

**Total Frequency of Verbal Interaction Received
Across Sex Groups**

| | Directed From Males | Directed From Females | Total |
|------------------------|---------------------------|-----------------------------|-------|
| Received by Males | 563.0 | 225.0 | 788 |
| Received by Females | 86.0 | 277.0 | 363 |
| Total | 575.5 | 575.5 | |

Table 3

**Total Frequency of Verbal Interaction Initiated
Across Race Groups**

| | Directed To Whites | Directed To Blacks | Total |
|------------------------|--------------------------|--------------------------|-------|
| Initiated by Whites | 909.00 | 69.00 | 978.0 |
| Initiated by Blacks | 52.00 | 223.00 | 275.0 |
| Total | 939.75 | 313.25 | |

Table 4

**Total Frequency of Verbal interaction Received
Across Race Groups**

| | Directed From Whites | Directed From Blacks | Total |
|-----------------------|----------------------------|----------------------------|-------------|
| Received by Whites | 822.0 | 54.0 | 876 |
| Received by Blacks | 64.00 | 211.0 | 275 |
| Total | 863.25 | 287.75 | 1151 |

Table 5

**Total Frequency of Verbal Interaction Initiated
Across Age Groups**

| | Directed to 4-year-olds | Directed to 5-year-olds | Directed to 6-year-olds |
|-----------------------------|-------------------------------|-------------------------------|-------------------------------|
| Initiated by 5-year-olds | 194.0 | 590.0 | 469.0 |

Table 6

**Total Frequency of Verbal Interaction Received
Across Age Groups**

| | Directed to 4-year-olds | Directed to 5-year-olds | Directed to 6-year-olds |
|----------------------------|-------------------------------|-------------------------------|-------------------------------|
| Received by 5-year-olds | 180.0 | 522.0 | 449.0 |