5-1-2000

Social interaction differences in regular education classes for a secondary student with multiple disabilities.

Ramona Sue Routley
University of Nebraska at Omaha

SOCIAL INTERACTION DIFFERENCES IN REGULAR EDUCATION CLASSES FOR A SECONDARY STUDENT WITH MULTIPLE DISABILITIES

An EdS Field Project

Presented to the

Department of Psychology

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

of the Requirements for the Degree

Education Specialist

University of Nebraska at Omaha

by

Ramona S. Roufley

May 2000

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

EDS FIELD PROJECT ACCEPTANCE

Acceptance for the faculty of the Graduate College,
University of Nebraska, in partial fulfillment of the
requirements for the degree (EdS),
University of Nebraska at Omaha.

Committee

C. Raymond Williams Psych.

Lisa Kelly-Vance, Psychology

C. Elliott Ostler

Chairperson Norma H. Ham

Date 6/6/00

SOCIAL INTERACTION DIFFERENCES IN REGULAR EDUCATION CLASSES FOR A SECONDARY STUDENT WITH MULTIPLE DISABILITIES

Ramona S. Routley, EdS

University of Nebraska, 2000

Advisor: Dr. Norman Hamm

Since secondary students with severe disabilities are being included into regular education classes, there is no research proposing the best class choices to enhance social interaction with peers without disabilities. One middle school boy with multiple disabilities was observed over five semesters in the same six class subjects (English, Math, Physical Education, Social Studies, Music, and Science). Each school day of observation included collecting data on the number and quality of social interactions using the Social Contact Assessment Form. Results of the analysis found that nonacademic classes (music and physical education) had significantly more interactions than academic classes (English, math). No analysis was able to compare the quality or number of social interactions between semesters or the number of interactions between class subjects. Research design and other variables may have impacted the results, so further research is recommended.

Table of Contents

Social Interaction Differences in Regular Education Classes for a Secondary Student with Multiple Disabilities

The Individual with Disabilities Education Act (IDEA) of 1997 is federal law which requires that children with disabilities be educated in their least restrictive environment. Least restrictive environment is defined as children with disabilities being educated with children who are not disabled, to the maximum extent appropriate. To evaluate least restrictive environment, a four-factor balancing test was adopted by the United States Court of Appeals in 1994. The four factors considered are: (a) the educational benefits of full-time placement in a regular class; (b) the non-academic benefits of such placement; (c) the effect of the student on the teacher and children in the regular class; and (d) the costs involved. Based on these four criteria, the regular classroom setting was considered the least restrictive educational placement for a child classified with moderate mental retardation (Sacramento City Unified School District v. Holland , (U.S. Court of Appeals, 9th Circuit (January 24, 1994)).

Integration or inclusion is the educational term used to describe placing students with disabilities in school and community settings for the purpose of increasing their social participation (Giangreco & Putnam, 1991; Haring, 1993). Integrated environments, such as regular education classrooms, provide opportunities outside the special education classroom for

these students. The integrated settings create proximity to nondisabled peers (Brady, McEvoy, Gunter, Shores, & Fox, 1984; Brinker & Thorpe, 1986; Jenkins, Speltz, & Odom, 1985; Storey, 1993). Proximity provides the possibility for social skills to be practiced and reinforced through modeling and interaction (Shores, 1987) and for people to meet, interact, and develop relationships (Falvey & Rosenberg, 1995; Hughes, et al., 1999; Putnam, 1993; Sailor, 1991). Integrated environments may also necessitate cooperative interaction (Berndt 1986; Gelheiser, McLane, Meyers, & Pruzek, 1998; Hake & Olvera, 1978). Activities with cooperative interaction were found to be used more by general education teachers than special education teachers (Gelheiser, et al., 1998). The proximity, social skill modeling, social interaction, and cooperative interaction of regular education classes provides a natural environment for students with disabilities to work on social skills, interact with others, and learn from them.

Statement of the Problem

Regular education classes are a natural environment containing nondisabled students who are socially skilled. However, not all classes support a high level of social interaction. Guess and Siegal-Causey (1985) found that child-directed activities resulted in greater interactions than adult-directed cooperative activities. For example, classes that are taught primarily through lecture do not offer an environment for interaction between

students. Thus, social skills would not likely be practiced and reinforced in this setting. On the other hand, small group discussions or projects require peer interaction. Therefore, social skills are modelled and reinforced in the small group and/or cooperative class structure.

Class settings and instruction often differ between elementary and secondary schools. Elementary school students are with the same students for most, if not all, of the school day which may aid students with and without disabilities to be comfortable and get to know each other. In contrast, students in secondary school attend seven to nine different classes each day, each class having a different group of students. Secondary students typically choose their classes or follow the suggested pattern given by the school. For students with disabilities (especially severe disabilities), no particular pattern or suggestions for regular education classes are recommended.

Statement of Purpose

Social skills are an important part of the education of students with disabilities. Therefore, social interaction should be an integral part of regular class experience for students with disabilities. The frequency and quality of social interactions within a class needs to be evaluated. However, no research has compared the quantity and quality of peer interactions between class subjects, such as music, physical education, science, and English. The teacher's approach to presenting the content and the student's expression of

learning differ between class subjects and may impact the amount of peer interaction within a class. Teachers may lecture, lead large group discussion, assign small group discussion or projects, or assign independent work. Students may demonstrate their learning in a verbal, written, or constructive manner. Since social interaction is essential to the education of students with disabilities, comparison of peer interaction between class subjects may assist teachers and schools in placing students with disabilities where their social goals will be best met.

Literature Review

Importance of Social Interaction

Life's activities often are reinforced immediately through social interaction (Haring, 1991). For example, for high school students attendance is immediately reinforced by the social contact with friends and classmates each day rather than the learning and receiving of grades. Social interaction is a daily occurrence for all people in all settings. Interaction occurs between strangers, friends, co-workers, and family members whether on the job, at home, in the mall, or on the street.

Skills are required to properly interact with people. Peers are important to the development of social skills. Effective communication skills, proper expression of aggression, and the formation of moral values are learned when children are given the opportunity to interact with peers

(Hartup, 1980).

Natural environments are a place for students with severe disabilities to develop social skills through interaction with nondisabled peers throughout the school years (Giangreco & Putnam, 1991). Integration into natural environments enhances social skills just as the social skills enhance integration.

Development of social skills during the school years is of great importance. Lack of social skills inhibits intellectual and linguistic abilities and other related skills (Hartup, 1980). Therefore, benefits in academics may result with improved social skills. Regardless, social skills are imperative as students transition into vocational work. Lack of social skills on the job is the primary reason for job loss among adults with disabilities (Hill, Wehman, Hill, & Goodall, 1986; Lagomarcino & Rusch, 1990).

Impacts of Social Integration

Social integration implies that students with disabilities are located in general education settings for the primary purpose of social interaction. Segregated settings often have no nondisabled peers, so students with disabilities lack the opportunity to interact with, build relationships with, and observe modeling from nondisabled peers. Therefore, all interactions in segregated settings involved only adults and students with disabilities. (Anderson & Goetz, 1983).

General education settings provide social opportunities as the students with disabilities are in close proximity with nondisabled peers. Jenkins et al. (1985) explained that proximity increases the likelihood that the students with disabilities will use the skills that they possess as they feel more comfortable around peers with advanced social skills. Students with severe disabilities at integrated sites were found to spend five times as much time with nondisabled peers as students at segregated sites (Cole & Meyer, 1991). Anderson and Goetz (1983) indicated that 89% of the interactions in an integrated setting occurred between students with and without severe disabilities. This contrasts with the segregated setting, where 100% of the interactions were between the students with severe disabilities and adults. Therefore, opportunities to interact with nondisabled peers were strongly related to the amount of integration (Filler, Goetz, & Sailor, 1986). When the opportunities for peer to peer interactions arose due to integration, students made the most of the opportunity and interacted with one another. Apparently, students take advantage of the opportunity to interact when it is given. Therefore, with greater integration, students with disabilities would have more opportunity to interact and are more likely to use the occasion.

Individualized Education Plan Results in Integrated Settings

Because of the importance of social skills, these skills are often included on a student's individualized education plan (IEP). Goals and

objectives are written for each student with disabilities to define what skills will be taught and the expected progress to be made by the student. Special educators typically specify the goals and objectives to be reached and generally strive to meet them within the segregated environment of special education. However, greater IEP goal completion was found in integrated settings compared to segregated settings (Brinker & Thorpe, 1984). The rate of social interactions with nondisabled students was positively correlated with the proportion of IEP objectives achieved. This interaction with nondisabled students accounted for a statistically significant proportion of the variance in IEP objectives achieved. Therefore, IEP goals and objectives may be better met in integrated environments.

IEP goals were also found to have higher levels of quality (based on three categories of best practices--age appropriate, functional, generalization) for students with greater disability who attended regular education classes full-time (Hunt, Farron-Davis, Beckstead, Curtis, & Goetz, 1994). Development of communication and social skills were more often goal objectives in comparison with domestic and recreation skill development. Students with disabilities in the regular education classes full-time had a greater percentage of IEP objectives that involved participation with nondisabled peers than students placed part-time. Therefore, IEP goals and objectives for integrated environments have higher quality due to their age

appropriateness, functionality, and generalization.

Effects of Integration on Students with Disabilities

Students with severe disabilities in integrated settings improved in communication and social skills. Enhanced communication skills increased the rate of conversational initiations (Gaylord-Ross & Haring, 1987; Haring, Roger, Lee, Breen, & Gaylord-Ross, 1986; Hunt, et al., 1994), and the continuation of conversation (Gaylord-Ross & Haring, 1987; Hunt, Alwell, Goetz, & Sailor, 1990; Hunt, et al., 1994). Social skill benefits included enhanced rates of social responsiveness (Fryxell & Kennedy, 1995; Goldstein & Wickstrom, 1986; Kennedy, Shukla, & Fryxell, 1997), and social bids directed toward peers (Cole & Meyer, 1991; Brinker & Thorpe, 1986; Strain & Odom, 1986). Other positive changes in social skills included self-regulation, following rules, providing negative feedback, accepting assistance, indicating preferences, coping with negatives, and terminating social contacts (Cole & Meyer, 1991). Negative changes for these skills were found in segregated settings. In general, interactions in integrated settings had greater appropriateness and frequency of interactions with nondisabled peers compared to segregated settings (Brinker & Thorpe, 1986; Fryxell & Kennedy, 1995; Guralnick & Groom, 1988; Hunt, et al., 1994; Kennedy, et al., 1997; Lord & Hopkins, 1986; Voeltz, 1982). Students with disabilities reported feeling more comfortable meeting peers in school (Hughes, et al., 1999). As students

with disabilities act more appropriately, nondisabled students become more comfortable and are more likely to interact with peers with disabilities.

Three studies in particular compared social interactions between special education and regular classroom placements. Students in the studies ranged in age from elementary through intermediate school. In an elementary setting, Hunt et al. (1994) observed 10 minutes of every hour, recording initiations at alternate 15 s intervals. The researchers found students with severe disabilities in fully included settings initiated interaction toward nondisabled peers more often than students in special class programs. Students in the fully included settings also had more interactions that were reciprocal between peers with and without disabilities compared to students in special class settings. More reciprocal interactions also occurred with teachers and other adults in the fully included setting. Fryxell and Kennedy (1995) also found more social contacts between peers with and without severe disabilities in the general education placement compared to self-contained settings. More specifically, as found using the Social Contact Assessment Form, students placed in general education settings had a significantly greater number of contacts per day. A significantly greater number of different nondisabled peers per day also resulted in the general education setting as compared with the self-contained setting. Using the Social Contact Assessment Form, similar results were found with intermediate students

with severe disabilities (Kennedy, et al., 1997) and high school students with severe disabilities (Kennedy & Itkonen, 1994).

Effects of Integration on Nondisabled Students

Nondisabled students were impacted positively from the integration of students with disabilities. High school students conveyed better self-concept (Kishi & Meyer, 1994), social cognition growth, more tolerance for other people, less fear of human differences (Peck, Donaldson, & Pezzoli, 1990), better attitudes and perceptions towards people with disabilities (Voeltz, 1982), and improved social status with nondisabled peers based on having relationships with peers with disabilities (Sasso & Rude, 1988). Students reported improved communication skills and having more new friends (Hughes, et al., 1999). Overall, nondisabled students felt better about themselves and others with and without disabilities from the experience of integration of students with severe disabilities.

Impacts of Social Interaction

Manipulation of the environment was one area of social interaction research. At its broadest level, the environment or classroom was either integrated, having students with and without disabilities in its settings, or it was segregated, having only students with or without disabilities. The daily environments and activities greatly impacted the frequency and quality of a student's opportunity to meet and intermingle with others (Gelheiser, et al.,

1998; O'Neill, Brown, Gordon, & Schonhorn, 1985).

Within the class, organization of the environment was found to impact connections between students (Gelheiser, et al., 1998; Hendrickson, Strain, Tremblay, & Shores, 1981; McEvoy, et al., 1988; Tremblay, Strain, Hendrickson, & Shores, 1980). Structured activities with cooperative focus were found to enhance social interactions (Brinker & Thorpe, 1986; Putnam, Rynders, Johnson, & Johnson, 1989; Rynders, Johnson, Johnson, & Schmidt, 1980). Yet, it was also found that these types of classes are infrequently scheduled for students with severe disabilities (Ellis, Wright, & Cronis, 1996; Rynders, et al., 1980).

Of greatest importance to the present study, social skill development was also a result of cooperative learning (Delude, Fagerson, Gruchot, Keating, & Slovey, 1997; Putnam, et al., 1989). Cooperative learning is a teaching approach in which the students work in small groups. Each group consisted of students with varying ability, each with a role. Students collaborate to complete the team goal. Part of the goal is cooperation, such as praising one another and asking for help. Research found improved self-esteem, positive attitudes, active learning, and higher academic achievement to be outcomes of this approach. Cooperative structured activities promote positive social interaction, even without instruction of social skills (Eichinger, 1990). Ellis, et al. (1996) also found that small groups provide a setting resulting in more

positive social interactions. Students without disabilities also perceive their peers with disabilities more positively at the conclusion of a school year in a cooperative setting (Putnam, Markovchick, Johnson, & Johnson, 1996). Therefore, classes with cooperative learning would be most desirable.

Quality of Social Interactions

The number of social interactions is not the sole goal in social skill development, but the quality of the interaction is also important. If social interaction occurred but had a negative quality, it would not likely be beneficial for any participants of the interaction. When reviewing literature related to mainstreaming, Gresham (1982) found that most interactions are negative between students with and without disabilities. Gottlieb, Semmel, and Veldman (1978) related the negative quality of interactions to nondisabled students rejecting those who misbehave. Therefore, it appeared that peers judge who they will interact with based on the person's appropriate behavior (Safran, Safran, & Rich, 1994). However, upper elementary students showed greater tolerance of inappropriate behavior than lower elementary students and so more often interacted with peers with disabilities.

In contrast, some researchers have found positive social interactions to occur between children with and without disabilities. Fryxell and Kennedy (1995) studied social interaction of elementary students with and without severe disabilities based on educational placement of the child with severe

disabilities. Each child with severe disabilities was selected based on the educational placement, general education or self-contained special education. Findings indicated that interactions between students with and without severe disabilities were positive regardless of the educational placement (general or special education). Kennedy and Itkonen (1994) compared social interactions by the location of the initial contact between students. Interactions were recorded by an event recording system, the Social Contact Assessment Form. Whether in or out of the regular education setting, interactions were found to be positive.

No differences in the quality of a social interaction have been reported based on the placement of the interaction or the location of the first contact. However, social interaction was more positive for students learning cooperatively than students not learning with cooperative strategies (Eichinger, 1990; Putnam, et al., 1989). The quality of an interaction also differed based on the relationship of the peers interacting. Grenot-Scheyer (1994) rated each peer relationship as an acquaintance dyad or friend dyad based on teacher comments. He found that the friend dyads had a greater number of positive affective exchanges and greater length of time engaged in positive interactions compared with the acquaintance dyads.

Regular Education Class Settings

During unstructured time, such as lunch, recess, and passing time,

interacting with nondisabled peers was often difficult for students with disabilities (Chin-Perez, Hartman, Park, Sacks, Wershing, & Gaylord-Ross, 1986). Yet, these are often the only opportunities for students with moderate and severe disabilities to interact with nondisabled peers (Ellis, et al., 1996).

A wide variety of regular education classes have been attended by secondary school students with disabilities. Across research, classes attended were science, social studies, computers, technology, music, art, physical education, family and consumer science, foreign language, English, drama, business (such as typing), industrial arts, and woodworking (Gelheiser, et al., 1998, Kennedy & Itkonen, 1994, McDonnell, Hardman, Hightower, & Kiefer-O'Donnell, 1991). Classes such as typing, woodworking, industrial arts, music, physical education, family and consumer science, and art are often attended since they are nonacademic and may provide a more meaningful education that directly relates to daily living skills and/or vocational opportunities (Gaylord-Ross, & Holvoet, 1985). McDonnell et al. (1991) found a significant positive correlation between the social interactions and class attendance in content area classes. Even when only one class involving small groups was targeted, Kennedy and Itkonen (1994) found an increase in contact frequency and an increase in the number of nondisabled peers involved in the contacts.

In general, some secondary school classes are group-related and others

are more individual. One indicator of the class activities may be the classroom set-up. Physical education classes typically meet outside in a designated area or in a gym. Science classes typically have tables where two students sit for classtime. Cooking classes often have different kitchen stations that are used several times during the week. Such set-ups naturally arranges groups to work together for labs. In contrast, most English, social studies, business, foreign language, and computer classes have a desk for each student. Classroom set-up and amount of group-related activities impact the social environment of a classroom. Group seating and group-related activities, especially if cooperative, are more likely to produce a social environment and lead to social interactions.

Semester Comparisons

No research was found comparing social interaction between semesters or years in the same class or type of class at the secondary level. Semester comparisons are of interest since it is desired that the students with disabilities not just attend a class for one semester, but continue the following semester and year just as other nondisabled students. As students with disabilities continue attending a class for several semesters, they will become more familiar with the class structure, subject, and classmates, and it is expected that they will become more comfortable in that setting (Hughes, et al., 1999). More comfortable feelings about a setting and people may increase

social interactions. Grenot-Scheyer (1994) found that nondisabled peers that were rated as friends to students with disabilities increased their number of initiations and interactions between two play sessions.

Additional research regarding elementary students found a decline in interactions over time, both in frequency and quality. Kleck (1966) observed overfriendliness in the initial contacts from students without disabilities to their peers with learning disabilities. In the later interactions, the overfriendliness decreased. Grenot-Scheyer (1994) found similar results, where acquaintances without disabilities decreased the amount of initiations and interactions with the students with disabilities between play sessions. Other recent research found a decline in social interactions over the school year (Evans, Salisbury, Palombaro, Berryman, & Hollowood, 1992). The assistance and affection displayed towards students with severe disabilities at the first part of the year was less frequent during the second half of the year.

Summary and Conclusions

Integration of students with disabilities into regular education classes provides an environment for people to gain skills and relationships. Social skills are an important part of the education of students with severe disabilities, as often evidenced by goals included on the individualized education plan. Regular class participation was found to be a means of increasing students' social contacts with nondisabled peers (Kennedy &

Itkonen, 1994). Even when only one class was targeted, there was an increase in contact frequency and an increase in the number of nondisabled peers involved in the contacts. Therefore, participation in regular education classes effectively provides a place for students with disabilities to meet and interact with nondisabled peers and work on social skills. No research however was found to have studied the frequency of social contacts between regular education classes and across semesters. Kennedy and Itkonen (1994) suggested that research is needed to identify settings with the greatest likelihood for frequent, high quality social interactions.

Research Proposal

Based on the preceding literature review and overview of the problem, the following research questions will be addressed:

1. What secondary regular education classes result in significantly more social interactions compared to other regular education classes?

2. What semester of taking a course results in significantly more social interactions compared to other semesters within each class?

3. What secondary regular education classes result in social interactions of better quality (more positive)?

4. What semester of taking classes result in social interactions of better quality (more positive) ?

Hypotheses

Based on the literature review, it is hypothesized that:

1. Science and physical education classes will each have significantly more interactions than social studies, English, reading, math, or music. Science and physical education typically have more cooperative activities rather than individual ones as is typical for social studies, English, reading, math, or music. Activities in science and physical education involve group work during labs and physical activities. Classroom set-ups also create a more social environment.

2. The first semester will have more social interactions than the following semesters. Such results are expected based on recent research finding a decline in social interactions over the school year (Evans, et al., 1992; Grenot-Scheyer, 1994).

3. Science and physical education classes each will have more positive social interactions than social studies, English, reading, math, or music. Again, science and physical education typically are more cooperative in activities rather than individualistic as is typical for social studies, English, reading, math, or music. Use of cooperative activities promoted positive interaction (Eichinger, 1990; Ellis, et al., 1996).

4. The first semester will have more positive social interactions than the following semesters. This is proposed based on the research findings that

interactions between peers with and without severe disabilities decreased in quality across the school year (Ellis, et al., 1996; Evans, et al., 1992; Grenot-Scheyer, 1994).

Method

Participants and Setting

One secondary student with multiple disabilities participated in a larger study focused on the best practices of inclusive programs at the middle and high school levels. "Ben" was selected by the district, based on the requirement that the student have severe or multiple disabilities. He was chosen for this study based on his attendance in a variety of classes and consistent attendance across several semesters, as he attended sixth through eighth grade. The middle school that he attended served students from a variety of socioeconomic backgrounds in a rural setting. Ben was supported by two credentialed special education teachers, two instructional assistants, and various related professionals (e.g., physical therapist, speech language therapist). One of the special education teachers and a regular education teacher formed the inclusion team for Ben. The inclusion team chose the regular education classes for the student to attend each semester. He attended Physical Education, Science, English, Social Studies, and Math for five semesters and Music for four semesters. The classes were taught in the traditional manner, not typically using cooperative learning strategies.

Ben was eleven years old and classified with mild mental retardation, cerebral palsy, and behavioral challenges. He used a wheelchair and independently moved between and within his classes. Ben would seek social interactions. At the start of the grant, he had behavior concerns, not keeping his hands to himself and blowing in people's faces. Ben took medication (Ritalin) daily. He lived at home with his mother.

Independent Variables

Regular Education Class. One independent variable was the type of regular education class. Ben attended six regular education classes, which included: Science, English, Social Studies, Math, Physical Education, and Music.

Semester Taken. The second independent variable was the semester in which the class was taken. Five classes were attended by Ben all 5 semesters. Music and physical education were attended during 4 semesters.

Measurement of Dependent Variable

The measure used to study social interactions was the Social Contact Assessment Form (SCAF, see Appendix). This was a direct observation tool recording interactions between the target student and nondisabled peers.

Social Contact Assessment Form. The SCAF is a system for r ecording events using a scatter plot matrix (O'Neill, Horner, Albin, Storey, & Sprague, 1990; Touchette, MacDonald, & Langer, 1985). The events recorded

were social contacts between a focus student with severe disabilities and one or more nondisabled peers.

A social contact was defined as an interaction between the target student with severe disabilities and a nondisabled peer(s) in the same proximity and activity for 5 minutes or longer. A nondisabled peer was any student who did not attend the special education classroom at the same time the target student attended. Interactions between a regular education student in the special education room and the target student were recorded. Students who received support in the special education room at times other than the target student receives support were considered nondisabled peers. Interactions involved an exchange of communication (verbal or nonverbal) between the target student and one or more nondisabled peers within the same proximity and activity. "An 'activity' was a sequence of responses that had a direct outcome for the individuals engaged in it (e.g., shopping, eating lunch, conducting a science project)" (Kennedy & Itkonen, 1994) Proximity was based on the nature of the activity. For example, in a physical education class during kickball, the entire gym was proximity. During classroom lecture or independent seatwork, proximity was the desks immediately surrounding the target student's desk. Examples of a social contact included, a student completing an art mural project with four peers; a student eating lunch with two peers; or a student playing battleship in math with a peer. Nonexamples

of a social contact included a student greeting peers while passing in the hallway; a student attending a regular education class, but interacting with students with disabilities known from the special education setting; or a student interacting with an education staff person.

For each social contact, the observer recorded: (a) the time range of the class or activity, (b) the nondisabled peer(s) involved, (c) the setting (such as classroom, gym, outside), (d) the activity (such as science project, eating lunch, or watching the news), and (e) the perceived quality of the interaction. The perceived quality was rated using a 4-point Likert scale. The rating was given by the observer based on the nonverbal and verbal communication during and around the exchange. The highest rating of "great" was observed when interaction was positive and continuous, at least through turn-taking between the participants. The lowest rating of "bad" consisted of both participants displaying a strong dislike for the interaction through attitude, words, or action.

During the first year of data collection, interactions were only recorded when they occurred at or over 15 minutes in the same proximity and activity, as in previous research (Kennedy & Itkonen, 1994). However, some interactions were observed that failed to meet the time criteria. As a result, during the second and third year, interactions were recorded for 5-, 10-, and 15-minute interactions. In addition to recording the person(s), activity, and

setting, the observer recorded the number (5, 10, or 15) based on the amount of time of the proximity and activity.

A SCAF form was completed for each observation of the student. Each observation included all inclusive settings attended while observing one school day. This data provided information for the assessment of social interactions, including the persons involved, settings, times, and quality of the interactions.

Procedures

The present study is one segment of a grant project which studied best practices of inclusion of students with severe disabilities in secondary schools. The target student was observed throughout school days across a three year period. Social contact data and narrative of the class activities were used to analyze the social interaction between the target student and nondisabled students.

An inclusion team was formed for each target student. At least one inclusion team member attended training in individual education program (IEP) planning, facilitating social inclusion and friendships, and adapting curricula and instruction in inclusive settings by Dr. Pat Mirenda. The inclusion team was responsible for the implementation of training. Support through materials, finances, and consultation was given by grant staff upon school visits and as requested.

All data were collected between October 1995, and January 1998. All information was gathered by researchers and research assistants trained in the use of the measurement protocol. Using the SCAF, each student was observed for social interactions throughout the school day by one or two data collectors. The data collector(s) recorded the time, setting, and activity. When a social contact occurred, the name(s) of the student without disabilities, the length of the interactions (3rd, 4th, and 5th semesters), and the quality of the interaction were recorded. In the first school year (semesters 1 and 2), students were observed five days every month, one observation for each weekday. For the second and third school years (semesters 3, 4, and 5), students were observed once each quarter.

Interobserver Agreement. Interobserver agreement was assessed for twenty percent of the SCAF observations. For each interobserver agreement observation, two people independently recorded the same set of events. The formula used to calculate interobserver agreement was: agreements divided by agreements plus disagreements multiplied by 100. On the SCAF, agreement was scored for social contacts when details recorded under time, people, setting, and activity were identical. Quality ratings were recorded as agreements when observers scored the contact the same. The interobserver agreement was 100%.

Results

Missing data presented several challenges for the current analysis. When analyzing the frequency of interaction data, the cells in the analysis of variance (ANOVA) were unequal, due to the different interaction lengths (semester 3-5 included 5- and 10- min interactions in addition to 15-min interactions). Therefore, the 5- and 10- min interactions were dropped, leaving 15 of 30 cells with no entry, as shown in Table 1. Inspection of the number of observations in Table 2 also indicated that the cells were unequal since every class was not observed during each visit. For example, music and a computer class alternated, so only one would be attended during a visit; or, the target student may not have attended due to inappropriate behavior or physical therapy. As a result, the ANOVA that was planned could not be executed.

Similarly, an ANOVA was not appropriate for the quality of interaction data. Table 3 listed the quality ratings, ranging from one to four, of each interaction observed. The ANOVA matrix included cells with zero, indicating no data because of no interaction rather than a quality rating of zero, as one might assume. Therefore, the assumptions of the ANOVA were violated and an alternative analysis performed.

The missing data problem cited above also made the semester variable difficult to analyze. Change in the number of observations between semesters

created differences in the number of opportunities for interaction. More observations occurred in the first two semesters than in the last three semesters (see Table 2). During each month of the first two semesters, five days of data were collected representing each day of the week (Monday, Tuesday, Wednesday, etc). For the last three semesters, one day of data was collected for each quarter. Due to the change in data collection, the opportunity for interaction was reduced, as well as the frequency of interactions. With fewer and an unequal number of observations within each cell, an important assumption of the ANOVA was violated.

While the planned ANOVA could not be performed, the descriptive statistics for the semester variable were suggestive. The percent of interactions per observation between classes and semesters was compared, as shown in Table 2. Across semesters, physical education was shown to have the highest number of interactions per observation, with 61% of observations involving an interaction. Then, in music, math and science, only about 30% of the observations yielded interaction. Comparing semesters, observations during the first and last semesters yielded interaction about 45% of the time.

The percent of interactions rated with a positive quality of three or four was calculated for each semester and class. Across all classes and semesters, 81% of the interactions were of a positive quality. As shown in Table 4, interactions in physical education, science, English, and math classes yielded a

positive rating 75% of the time or greater. Interactions in Music and Social Studies were positive 60% and 40% of the time, respectively. As shown in Table 5, the interactions were more frequently rated as positive over time, progressing from 62% during the first semester, to around 80% during the second and third semesters, and then to 100% during the last 2 semesters. Therefore, over time, the quality of interactions appeared to improve.

To draw any statistical conclusions, it was necessary to eliminate problems from the additional interaction lengths (5- and 10-min) and the decreased observations across semesters. Therefore, the last three semesters, which had fewer observations and included shorter interactions, were dropped. Since data collection began late in the first semester, few opportunities for interaction were observed as compared with the second semester. To draw any reasonable conclusions about class differences, only the second semester observations were used.

During the second semester, opportunities for interaction differed between classes. Even though the school was visited on 15 occasions, some classes were observed more than others (ranging from 5 to 15, as seen in Table 2). Due to such variance in the opportunities between classes, the classes were collapsed into two groups, academic and nonacademic. Such a conceptual division has been recorded in research. Nonacademic classes included typing, woodworking, industrial arts, music, physical education, family and

consumer science, and art (see Gaylord-Ross, & Holvoet, 1985). Academic classes included science, social studies, English, math, and foreign language. Table 6 shows the nonacademic classes had more interactions per observation, yielding 47%, compared to academic classes which yielded 16%. Despite the fact that an ANOVA could not be performed, percentages including data from all semesters were similar, with 48% of observations in nonacademic classes yielding interaction and 22% in academic classes.

After the data had been reduced to one semester and two groups of classes, a Z test was performed to analyze if any significant difference existed between the proportion of interactions. Results indicated that the nonacademic classes of physical education and music had a significantly higher proportion of interactions than the academic classes of science, math, English, and social studies ($Z = 5.37$, $p < .01$). Therefore, interaction was more likely to occur in the physical education and music classes compared to the science, math, English, and social studies classes.

A simple comparison was made with the quality ratings for both groups of classes by placing them in rank order. The median score was three for both class groups, which indicated that significant differences were unlikely. Therefore, the overall results indicated a difference in the number of interactions for the class grouping, but no apparent difference in quality of interaction.

Discussion

The present study sought to compare the social interactions between classes. The hypotheses proposed to compare between individual classes to find which placement(s) would best include interaction and to compare between semesters to find the impact over time. Conclusions from the present study are limited due to missing data from data collection changes and inconsistencies. Therefore, the proposed hypotheses could not be analyzed. Nevertheless, several suggestive results are reported from comparing academic and nonacademic classes. Since nonacademic classes were found to have more interactions than academic courses, they may meet the social goals of students with disabilities and, therefore, be an integral part of their education.

While the hypotheses reported above could not be tested, the proposition that more interactions would take place in nonacademic versus academic classes was confirmed. Music and physical education had more interactions proportionally than did math, social studies, English, and science. Simply, more interaction takes place in nonacademic classrooms (Ellis, et al., 1996). Therefore, the continued placement of students with disabilities in nonacademic classes appears to be beneficial. Further research is recommended to confirm the validity between academic and nonacademic classes in providing opportunities for students to interact. Class

characteristics that may impact the opportunity for interaction should be studied. For example, physical education and science have environmental and curricular settings that often expect interaction. On the other hand, music and math are less cooperative and students are expected to interact with the material more than with peers. The cooperative learning literature reveals that classes where students help one another will have more interaction (Eichinger, 1990; Ellis, et al., 1996; Putnam, et al., 1989).

Comparing interaction frequency over time, no conclusions were possible in this study due to the missing data across semesters. Previous literature has been inconclusive about interaction frequency over time. Some articles concluded that interactions increased over time, while other studies found that interactions declined over time (Evans, et al., 1992; Grenot-Scheyer, 1994; Kleck, 1966).

Conclusions on the interaction quality between classes and across semesters were unattainable due to the ordinal nature of the scale together with the missing data. Previous literature suggested that classes involving cooperative learning techniques had interactions that were more positive (Eichinger, 1990; Ellis, et al., 1996). Other recent research found that interactions between peers with and without severe disabilities decreased in quality across the school year (Evans, et al., 1992; Grenot-Scheyer, 1994).

Case studies have the advantage of being valid in the naturalistic

setting in which they occur. Certainly, no experimental contriving was attempted so all interactions occurred naturally. For instance, having the same student eliminated extraneous variables like differences between schools and target students. Schools may differ related to their inclusive policies and practices, administrative support for inclusion, personnel willingness to be involved, and class subjects offered. Participants may vary in personality, communication, and social skills. Therefore, the case study likely reduced these individual difference variables. However, at the same time, with only one participant, generalization of the data is very limited. In addition, the missing data limited the scope of the study. Since the present results lack generalization, further research to compare variables between class subjects and across semesters continues to be necessary and recommended.

Unfortunately, the present study lacks generalization. Various situational factors may have impacted the results, including the school dynamics, target student, and research design. The dynamics of the school relate to its size and school policy for and practice of inclusion. In this study, the school size was small, about 290 students. With so few students, familiarity and, therefore, interaction between students may have been easier and more likely. The school was experienced with inclusive practices for four years prior to the inclusion grant's support and data collection. Therefore,

both special and regular education teachers were familiar with inclusive practices. Previous experience with inclusive practices may have impacted the classes and teachers chosen, as well as the number and quality of opportunities and interactions. For example, a teacher's skill or attitude toward inclusion, or class structure could have influenced scheduling. As mentioned earlier in the description of the target student, Ben was outgoing and communicative, and usually sought social interactions. He initiated conversation, often asking students if they would be in a particular class that day (typically gym, his favorite class).

Based on the experience of the present study, some guidelines may be proposed for future research. Consistent data collection, being the foundation of any conclusions, is extremely important. The above study made conclusions based on a semester of data, which had the highest number of observations. Future research should aim to make consistent observations so as not to have the missing data problems in present study. For consistency, each class should be observed the same number of times. Such data collection would allow comparison between classes. Data collection across multiple semesters would allow for a test of whether interactions increased or decreased across that time period. To broaden the generalization, more participants across several school settings should be involved in future studies.

Since nonacademic classes had more interactions than academic classes, additional research should examine the causes of the class differences reported in the present study. Some variables would include the classroom equipment (desks, lab tables), physical arrangement (desks apart or clustered, stations), and the instruction method (cooperative or individualistic). The continuum of class structure could vary from individual to cooperative. Based on the variables, each class would be ranked on the continuum. Then, statistics also could involve a correlation between the class structure rating and interaction frequency.

One of the variables effecting interaction may be the time span of the observation. Since activities within classes vary in length, interaction is impacted. In the last three semesters of the present study, interactions were scored even when activity and proximity was for five or ten minutes. With smaller interaction times recorded, the number of interactions did not greatly increase. However, data collection including interactions of less than fifteen minutes may assist in measuring a student's interaction pattern. If this method is utilized when comparing between classes, an interaction will not be missed due to the short length of the activity and/or proximity. Therefore, interactions would not be limited by the length of the class activity. Or, data may indicate that longer activities are more likely to involve interaction.

The quality rating was a subjective rating by the observer. To involve

more objectivity, future research could have the students themselves rate the quality of their interaction. The observer could ask each participant to point to one of 5 faces on a continuum indicating the quality of the interaction. But, such a rating procedure involves the observer interacting with the students, future interactions or quality rating may be influenced. The potential problem of the observer's involvement with interaction participants should be examined.

The present study confirmed that nonacademic classes have significantly more interactions than academic classes; although, limitations from missing data and a single participant restrict the generalization of such conclusion. Future research should benefit from the methodological issues, limitations, other pitfalls, and proposed guidelines described in the present study.

References

Anderson, J., & Goetz, L. (1983, November). Opportunities for social interaction between severely disabled and nondisabled students in segregated and integrated educational settings. Paper presented at the 10th Annual Conference of the Association for Persons with Severe Handicaps, San Francisco, CA.

Berndt, T. J. (1986). Sharing between friends: Contexts and consequences. In E. C. Mueller & C. R. Cooper (Eds.), Process and outcome in peer relationships (pp. 105-127). New York: Academic Press.

Brady, M. P., McEvoy, M. A., Gunter, P., Shores, R. E., & Fox, J. J. (1984). Considerations for socially integrated school environments for severely handicapped students. Education and Training in Mentally Retardation, 19, 246-253.

Brinker, R. P., & Thorpe, M. E. (1984). Integration of severely handicapped students and the proportion of IEP objectives achieved. Exceptional Children, 51, 168-175.

Brinker, R. P., & Thorpe, M. E. (1986). Features of integrated educational ecologies that predict social behavior among severely mentally retarded and nonretarded students. American Journal of Mental Deficiency, 91, 150-159.

Chin-Perez, G., Hartman, D., Park, H. S., Sacks, S., Wershing, A., &

Gaylord-Ross, R. (1986). Maximizing social contacts for secondary students with severe handicaps. Journal of the Association for Persons with Severe Handicaps, 11, 118-124.

Cole, D. A., & Meyer, L. H. (1991). Social integration and severe disabilities: A longitudinal analysis of child outcomes. Journal of Special Education, 25(3), 340-351.

Delude, C., Fagerson, S., Gruchot, L., Keating, S., & Slovey, K. (1997). Improving student social skills through the use of cooperative learning. Chicago, IL: St. Xavier University. (ERIC Document Reproduction Service No. ED 410 039)

Eichinger, J. (1990). Goal structure effects on social interaction: Nondisabled and disabled elementary students. Exceptional Children, 56, 408-416.

Ellis, D. N., Wright, M., & Cronis, T. G. (1996). A description of the instructional and social interactions of students with mental retardation in regular physical education settings. Education and Training in Mental Retardation and Developmental Disabilities, 31, 235-242.

Evans, I. M., Salisbury, C. L., Palombaro, M. M, Berryman, J. & Hollowood, T. M. (1992). Peer interactions and social acceptance of elementary-age children with severe disabilities in an inclusive school. Journal of the Association for Persons with Severe Handicaps, 17, 205-212.

Falvey, M. A., & Rosenberg, R. L. (1995). Developing and fostering friendships. In M. A. Falvey (Ed.), Inclusive and heterogeneous schooling: Assessment, curriculum, and instruction (pp. 267-285). Baltimore: Paul H. Brookes.

Filler, J., Goetz, L., & Sailor, W. (1986). Factors which predict opportunities for interaction between students with severed disabilities and their nondisabled peers. Unpublished manuscript.

Fryxell, D., & Kennedy, C. H. (1995). Placement along the continuum of services and its impact on students' social relationships. Journal of the Association for Persons with Severe Handicaps, 20, 259-269.

Gaylord-Ross, R. J., & Haring, T. G. (1987). Social interaction research for adolescents with severe handicaps. Behavioral Disorders, 12, 264-275.

Gaylord-Ross, R. J., & Holvoet, J. F. (1985). Strategies for educating students with severe handicaps. Boston: Little, Brown.

Gelheiser, L. M., McLane, M., Meyers, J., & Pruzek, R. M. (1998). IEP-specified peer interaction needs: Accurate but ignored. Exceptional Children, 65, 51-65.

Giangreco, M. F., & Putnam, J. W. (1991). Supporting the education of students with severe disabilities in regular education environments. In L. H. Meyer, C. A. Peck, & L. Brown (Eds.), Critical issues in the lives of people with severe disabilities (pp. 245-270). Baltimore: Paul H. Brookes.

Goldstein, H., & Wickstrom, S. (1986). Peer intervention effects on communicative interaction among handicapped and nonhandicapped preschoolers. Journal of Applied Behavior Analysis, 19, 209-214.

Gottlieb, J., Semmel, M. I., & Veldman, D. J. (1978). Correlates of social status among mainstreamed mentally retarded children. Journal of Educational Psychology, 70, 396-405.

Grenot-Scheyer, M. (1994). The nature of interactions between students with severe disabilities and their friends and acquaintances without disabilities. Journal of the Association for Persons with Severe Handicaps, 19, 253-262.

Gresham, F. M. (1982). Misguided mainstreaming: The case for social skills training with handicapped children. Exceptional Children, 48, 422-434.

Guess, D., & Siegal-Causey, E. (1985). Behavioral control and education of severely handicapped students: Who's doing what to whom? And why? In D. Bricker & J. Filler (Eds.), Severe mental retardation: From theory to practice (pp. 230-244). Reston, VA: Council for Exceptional Children.

Guralnick, M. J., & Groom, J. M. (1988). Peer interactions in mainstreamed and specialized classrooms: A comparative analysis. Exceptional Children, 54, 415-425.

Hake, D. F., & Olvera, D. (1978). Cooperation, competition, and related social phenomena. In A. C. Catania & T. A. Brigham (Eds.), Handbook of

applied behavior analysis (pp. 208-245). New York: Irvington.

Haring, T. G. (1991). Social relationships. In L. H. Meyer, C. A. Peck, & L. Brown (Eds.), Critical issues in the lives of people with severe disabilities (pp. 195-217). Baltimore: Paul H. Brookes.

Haring , T. G. (1993). Research basis of instructional procedures to promote social interaction and integration. In R. A. Gable & S. F. Warren (Eds.), Strategies for teaching students with mild to severe mental retardation (pp. 129-164). Baltimore: Paul H. Brookes.

Haring, T. G., Roger, C., Lee, M., Breen, C., & Gaylord-Ross, R. J. (1986). Teaching social language to moderately handicapped students. Journal of Applied Behavior Analysis, 19, 159-171.

Hartup, W. W. (1980). Peers, play, and pathology: Considerations in the growth and social competence. In T. M. Field, S. Goldberg, D. Stern, & A. A. Sostek (Eds.), High-risk infants and children: Adult and peer interactions (pp. 251-256). New York: Academic Press.

Hendrickson, J. M., Strain, P. S., Tremblay, A., & Shores, R. E. (1981). Relationship between toy and material use and the occurrence of social interactive behaviors by normally developing preschool children. Psychology in the Schools, 18, 500-504.

Hill, J. W., Wehman, P., Hill, M., & Goodall, P. (1986). Differential reasons for job separation of previously employed persons with mental

retardation. Mental Retardation, 24, 347-351.

Hughes, C., Guth, C., Hall, S., Presley, J., Dye, M., & Byers, C. (1999). "They are my best friends:" Peer buddies promote inclusion in high school. Teaching Exceptional Children, 31(5), 32-37.

Hunt, P., Alwell, M., Goetz, L., & Sailor, W. (1990). Generalized effects of conversation skill training. Journal of the Association for Persons with Severe Handicaps, 15, 250-260.

Hunt, P., Farron-Davis, F., Beckstead, S., Curtis, D., & Goetz, L. (1994). Evaluating the effects of placement of students with severe disabilities in general education versus special classes. Journal of the Association for Persons with Severe Handicaps, 19, 200-214.

Jenkins, J. R., Speltz, M. L., & Odom, S. L. (1985). Integrating normal and handicapped preschoolers: Effects on child development and social interaction. Exceptional Children, 52, 7-17.

Kennedy, C. H., & Itkonen, T. (1994). Some effects of regular class participation on the social contacts and social networks of high school students with severe disabilities. Journal of the Association for Persons with Severe Handicaps, 19, 1-10.

Kennedy, C. H., Shukla, S., & Fryxell, D. (1997). Comparing the effects of educational placement on the social relationships of intermediate school students with severe disabilities. Exceptional Children, 64, 31-47.

Kishi, G. S., & Meyer, L. H. (1994). What children report and remember: A six-year follow-up of the effects of social contact between peers with and without severe disabilities. Journal of the Association for Persons with Severe Handicaps, 19, 277-289.

Kleck, R. (1966). Emotional arousal in interaction with stigmatized persons. Psychological Reports, 19, 12-26.

Lagomarcino, T. R., & Rusch, F. (1990). An analysis of the reasons for job separations in relation to disability, placement, job type, and length of employment. Urbana-Champaign, IL: University of Illinois at Urbana-Champaign. (ERIC Document Reproduction Service No. ED 331 228)

Lord, C., & Hopkins, J. M. (1986). The social behavior of autistic children with younger and same-age nonhandicapped peers. Journal of Autism and Developmental Disorders, 86(16), 249-262.

McDonnell, J., Hardman, M., Hightower, J., & Kiefer-O'Donnell, R. (1991). Variables associated with in-school and after-school integration of secondary students with severe disabilities. Education and Training in Mental Retardation, 26, 243-257.

McEvoy, M. A., Nordquist, V. M., Twardosz, S., Heckaman, K. A., Wehby, J. H., & Denny, R. K. (1988). Promoting autistic children's peer interaction in an integrated early childhood setting using affection activities. Journal of Applied Behavior Analysis, 21, 193-200.

O'Neill, J., Brown, M., Gordon, W., & Schonhorn, R. (1985). The impact of deinstitution on activities and skills of severely/profoundly mentally retarded multiply handicapped adults. Applied research in Mental Retardation, 6, 361-71.

O'Neill, R. E., Horner, R. H., Albin, R. W., Storey, K., & Sprague, J. R. (1990). Functional analysis: A practical assessment guide. Sycamore, IL: Sycamore.

Peck, C.A., Donaldson, J., & Pezzoli, M. (1990). Some benefits nonhandicapped adolescents perceive for themselves from their social relationships with peers who have severe handicaps. Journal of the Association for Persons with Severe Handicaps, 15, 241-249.

Putnam, J. W. (1993). Cooperative Learning and Strategies for Inclusion: Celebrating Diversity in the Classroom. Baltimore: Paul H. Brookes.

Putnam, J., Markovchick, K., Johnson, D. W., & Johnson, R. T. (1996). Cooperative learning and peer acceptance of students with learning disabilities. The Journal of Social Psychology, 136, 741-752.

Putnam, J. W., Rynders, J. E., Johnson, R. T., & Johnson, D. W. (1989). Collaborative skill instruction for promoting positive interactions between mentally handicapped and nonhandicapped children. Exceptional Children, 55, 550-557.

Rynders, J. E., Johnson, R. T., Johnson, D. W., & Schmidt, B. (1980). Producing positive interaction among Down's Syndrome and nonhandicapped teenagers through cooperative goal structuring. American Journal of Mental Deficiency, 85, 268-273.

Safran, S. P., Safran, J. S., & Rich, C. E. (1994). What disturbs students? An examination of age and gender differences. Journal of Special Education, 28, 138-148.

Sailor, W. (1991). Special education in the restructured school. Remedial and Special Education, 12(6), 8-22.

Sasso, G. M., & Rude, H. A. (1988). The social effects of integration on nonhandicapped children. Education and Training in Mental Retardation, 23, 18-23.

Shores, R. E. (1987). Overview of research on social interaction: A historical and personal perspective. Behavioral Disorders, 12, 233-241.

Storey, K. (1993). A proposal for assessing integration. Education and Training in Mental Retardation, 28, 279-287.

Strain, P. S., & Odom, S. L. (1986). Peer social initiations: Effective intervention for social skills development of exceptional children. Exceptional Children, 52, 543-551.

Touchette, P. E., MacDonald, R. F., & Langer, S. N. (1985). A scatter plot for identifying the stimulus control of problem behavior. Journal of Applied

Behavior Analysis, 18, 343-351.

Tremblay, A., Strain, P. S., Hendrickson, J. M., & Shores, R. E. (1980). The activity context of preschool children's social interactions: A comparison of high and low social interactors. Psychology in the Schools, 17, 380-385.

Voeltz, L. M. (1982). Effects of structured interactions with severely handicapped peers on children's attitudes. American Journal of Mental Deficiency, 86, 380-390.

SOCIAL CONTACT ASSESSMENT FORM

Student: _____

Dates: _____ to _____

Absence(s): _____

Other: _____

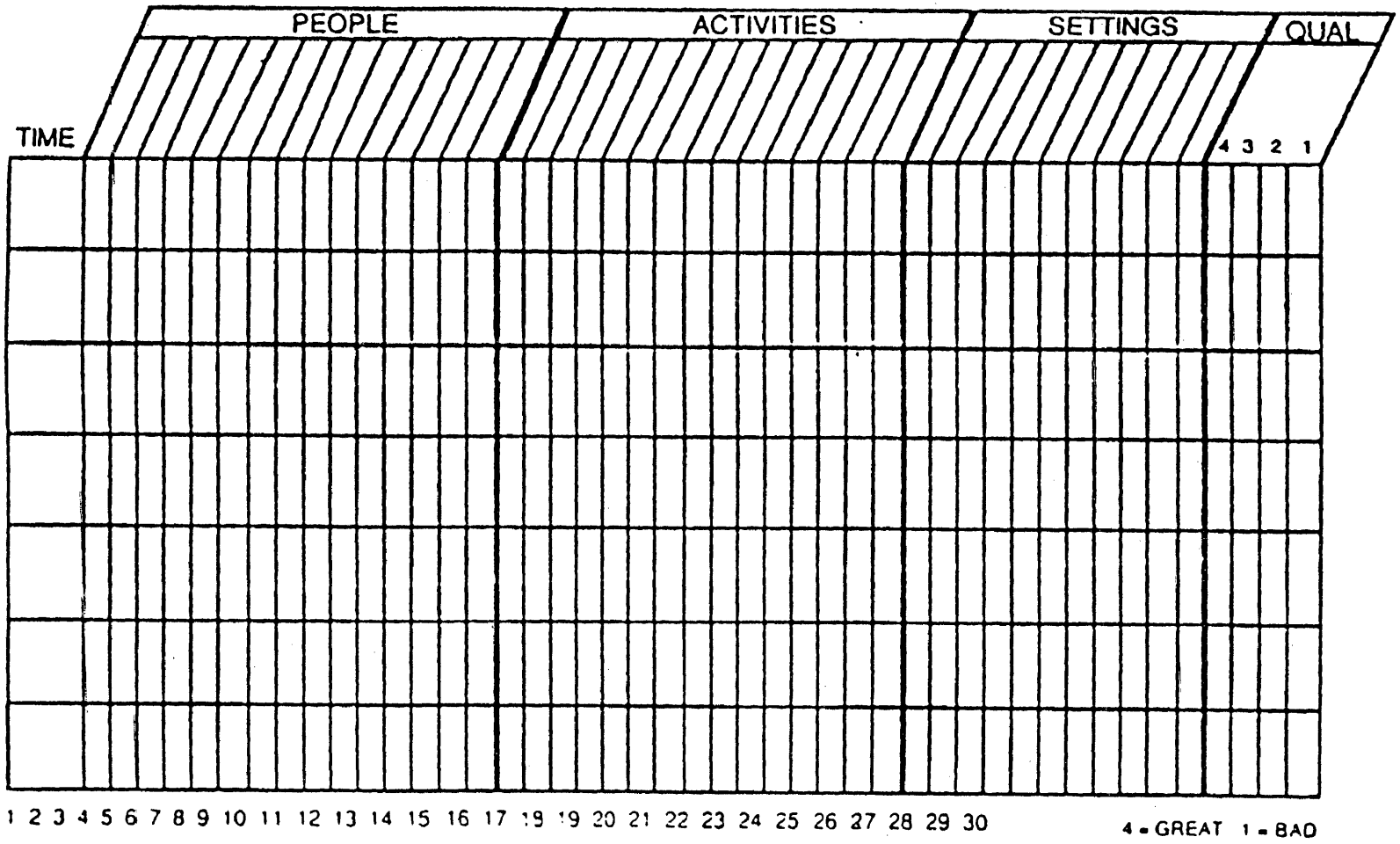

Table 1

Proportion Data of Interactions to Observations for Different Classes and Semesters for the ANOVA

Semester	Science	Math	Social Studies	English	Music	Physical Education
1	.80	.25	.40	.40		--
2	.27	.40		.10	.44	0.50
3		1.00		.67		
4					--	0.50
5		.25			.50	1.25

Note. Cells with -- indicate that no data were collected. Empty cells indicate that no interactions occurred, therefore no proportion of observations included interaction.

Table 2

Number of Interactions per Number of Observations for the Different Classes and Semesters

	Science		Math		Social Studies		English		Music		Gym		Total		P
Semester	I	O	I	O	I	O	I	O	I	O	I	O	I	O	
1	4	5	1	4	2	5	2	5	0	2	--	--	9	21	43
2	4	15	2	5	0	14	1	10	4	9	5	10	16	63	25
3	0	2	1	1	0	3	2	3	0	2	0	2	3	13	23
4	0	2	0	2	0	2	0	2	--	--	1	2	1	10	10
5	0	2	1	4	0	1	0	3	1	2	5	4	7	16	44
Total	8	26	5	16	2	25	5	23	5	14	11	18	36	123	
P		31		31		8		22		33		61		29	

Note. I = Interactions recorded, O = observations, P = percent. Cells with -- indicate that no data were collected. Empty cells indicate that no interactions occurred during the observations.

Table 3

Quality Ratings Given for the Interactions Observed

Semester	Science	Math	Social Studies	English	Music	Physical Education
1	2-2-4-4	4	3-2	2-3		--
2	3-4-3-3	2-3		3	2-3-3-2	3-4-4-4-4
3		3		3-3		
4					--	4
5		4			3	4-4-4-4-3

Note. Cells with -- indicate that no data were collected. Empty cells indicate that no interactions occurred, therefore no ratings would result.

Table 4

Percent of Interactions Scored with a Positive Rating in a Class

Class	Science	Math	Social Studies	English	Music	Gym
Percent	89	75	40	83	60	100

Table 5

Percent of Interactions with a Positive Rating for Each Semester

Semester	1	2	3	4	5
Percent	67	81	100	100	100

Table 6

Number of Interactions per Observation and Percent for Semesters and Class Groups

	Nonacademic			Academic		
Semester	Interactions	Observations	P	Interactions	Observations	P
1		2		9	19	47
2	9	19	47	7	44	16
3		4		3	9	33
4	1	2	50		8	
5	6	6	100	1	10	10
Total	16	33	48	20	90	22

Note. P = percent. Empty cells indicate that no interactions occurred, therefore the percent observations including interaction is zero.