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ABSTRACT

Individual pupils were observed in junior high school science classes to characterize and record their classroom behaviors. The sample (N=80), drawn from five urban schools, was evenly divided by race (black and white). Instruction in class was based on laboratory work or other activities requiring active pupil participation. Systematic observations made by trained observers over a 3-month period yielded frequencies of 14 behaviors that were combined to form 3 broad behavior categories: (1) active learning; (2) passive learning; and (3) non-attending. No systematic race or sex differences were found in behavior. Entering math and reading scores were the best predictors of final grade but active learning behavior was also a significant contributor to final grade. Pupils tended to interact most frequently with members of the same race. The most significant finding is that, for the junior high school pupils in this sample, obstacles to achievement in science were not related to race and sex, but rather to poor math and reading skills and failure to participate in the learning activities of the classroom. (Author/JN)

AUTHOR ABSTRACT

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Abstract (up to 200 words):

Individual pupils were observed in junior high school science classes in order to characterize and record their classroom behaviors. The sample, which was drawn from five urban schools, was evenly divided by race (black and white) and sex and totalled 80 pupils. Instruction in all classes was based on laboratory work or other activities requiring active pupil participation. Systematic observations made by trained observers over a three-month period yielded frequencies of 14 behaviors that were later combined to form three broad behavior categories: Active Learning, Passive Learning, and Non-Attending.

No systematic race or sex differences were found in behavior. Entering math and reading scores were the best predictors of final grade but Active Learning behavior was also a significant contributor to final grade. Pupils tended to interact most frequently with members of the same race.

The most important finding is that, at this level, the obstacles to achievement in science are not related to race and sex but, rather, to poor math and reading skills and to failure to participate in the learning activities of the classroom.

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Final Report

CLASSROOM PROCESS VARIABLES IN URBAN INTEGRATED JUNIOR HIGH SCHOOL INDIVIDUALIZED SCIENCE PROGRAMS

NSF Award Number SED-8014209
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Projector Director: Ann C. Howe

This study focused on the relationship of pupil classroom behavior, race, and sex to achievement in science at the junior high school level. Activity-centered science classes in desegregated urban schools were the context for the study. We asked whether there were race and/or sex differences in classroom behavior and whether classroom behavior was predictive of final grade. Pupil-pupil interactions were also observed and analyzed to determine the relative frequencies of cross-race and within-race interactions, and cross-sex and within-sex interactions, during task-related and non-task-related activities.

Background

This study was a replication and an expansion of a study completed the previous year. In that study only boys were included in the sample to eliminate the need to take sex-related differences into account. In the sample for the present study girls and boys were included in equal numbers.

We chose activity-centered classrooms because such classrooms allow for student self-direction, maximum student-student interaction, and recognition of individual differences without stigmatizing slower pupils. The basis of instruction was the Intermediate Science Curriculum Study (ISCS) materials, adapted by teachers in a variety of ways. For example, self-pacing, a prominent feature of ISCS, had been replaced in most classes by task schedules set by the teacher. Nevertheless, students

were allowed a large measure of responsibility for their own behavior and were expected to take initiative in making decisions about the use of class time. Although students always have some degree of freedom about whether to pay attention, whether to waste time or work efficiently, and whether to work or pretend to work, the resulting differences in behavior are not so obvious in whole-group, teacher-centered classes as in the informally structured, activity-centered classes used in the study. Thus the probability of observing individual differences in behavior, if they exist, is maximized. Our observation system, which will be described later, allowed us to code a range of behaviors which could then be classified as Active Learning, Passive Learning, or Non-Attending.

Results of the first year's work showed that there were no significant differences in classroom behavior between black and white boys, an interesting finding in view of the many statements in textbooks and elsewhere that "ghetto" children (usually a euphemism for black children) are more "physical", less task-oriented, and less attentive in school than white children (cf. Garrison and Magoon, 1972; Smith, 1978, p. 97). Carefully designed systematic observation did not reveal these differences.

Results of the first year's work also showed that the best predictors of achievement were reading and mathematics ability as measured by the California Achievement Tests and that the white boys scored significantly higher on reading, math and final grade than the black boys.

We also found that one aspect of classroom behavior, Active Learning, was positively related to achievement for black students and that it accounted for a significant amount of variance in final grade after the effect of reading and math ability had been taken into account.

Finally, the results of the first year's work confirmed earlier findings concerning cross-race interactions (Steinberg and Hall, 1980; Singleton and Asher, 1977; and Schofield, 1978). We found significantly more within-race and within-sex interactions then would occur by chance and very few negative student-student interactions of any kind. More interesting were the indications in our data that the frequency of cross-race interactions varied with the context. There appeared to be more cross-race interactions when pupils were on-task than when they were off-task. In the present study we pursued and sought to extend some of these earlier findings.

Research Questions

The first question addressed was whether race and sex are predictors of pupil classroom behavior in activity-centered junior high school science classrooms. Good, Sikes and Brophy (1973) had reported that the classroom behavior of boys and girls was different in other classroom settings; we asked whether sex differences in behavior would also be found at this age level and in settings of this kind. We also wished to know whether our earlier finding of no race difference in behavior would be confirmed.

The second question asked was whether behavior is related to achievement in this type of classroom organization. We asked whether any specific classroom behavior or cluster of behaviors could account for a significant amount of variance in achievement over and above any variance accounted for by sex, race, reading, and math ability. Since curriculum programs of this type are based on the assumption that achievement of the course objectives depends on the individual student's interaction with materials, the teacher, and other students, student behavior would

be expected to be a determinant of achievement.

The third question, or set of questions, followed from our preliminary findings concerning cross-race interactions. We found in the earlier study that the number of cross-race interactions varied with the situation and that there was great variability among individuals with regard to number of positive cross-race interactions. These findings led to two questions, namely, (1) are positive cross-race interactions more likely to occur in task- or non-task oriented situations? and (2) are positive cross-sex interactions more likely to occur in task- or non-task oriented situations?

Method

Schools

The study was conducted in five public junior high schools in Syracuse, New York, a city of 200,000 in the center of a metropolitan area of 500,000. The school population included approximately 35 per cent minority students, mostly black. All schools were desegregated and busing had been used to achieve racial balance. The schools selected had mixed-race classes with heterogeneous ability grouping.

Teachers

One teacher who met the following criteria was selected from each school: (a) volunteered to participate; (b) had had training in ISCS: (c) had had at least three years teaching experience; and (d) used an informal, activity-centered teaching method.

Subjects

Class lists, with students identified by race and sex, were obtained from teachers who had been identified by the above criteria in order to select classes that had at least two black and two white females and two

black and two white males. Students who had more than two unexcused absences per month were eliminated from the class lists before subjects were selected. After the classes had been identified, and chronic absentees eliminated, two black females, two black males, two white females, and two white males were randomly selected by group from each class. Thus there were 8 subjects from each of 10 classes, making a total of 80 subjects evenly divided by race and sex.

Access to Subjects

Permission was obtained from the Syracuse City School District to conduct the project.

Observation Instrument

An on-site multiple-category coding system had previously been developed and tested. This instrument was specifically developed for the collection of observational data in activity-centered science classrooms. A preliminary set of student behavior categories was developed after extended classroom observation, reference to an earlier instrument used in similar classrooms (Power and Tisher, 1974) and by consideration of behaviors expected by the developers of the ISCS materials. An initial form of the instrument was pilot-tested and revised until all observed behaviors could be coded with 80% agreement by two experienced observers. In using this instrument a trained observer codes the behaviors exhibited by one student at a time, coding and recording behaviors on a prepared coding sheet at twelve-second intervals, using five seconds for observation and seven seconds for recording. All behaviors observed during the interval are coded. Time intervals are signaled by an electronic tape on a small tape player carried by the observer and attached by means of an earphone to one ear of the observer (Stanback, 1981).

This instrument was refiend by minor changes in definitions of behavior categories and by elimination of test-taking as a category. Since we had gotten no useful information from observations made during test-taking, we did not observe during testing, whether the test was given to an individual or a group. The result was a set of 14 exhaustive and mutually exclusive categories into which all observed behavior could be coded. Other information coded included the race and sex of the observed student, the race and sex of the students with whom he or she interacted, the initiator of each interaction, and whether the interaction was negative or positive. Interactions with a teacher were also coded. If an interaction was not negative, it was coded as positive (i.e., there was no category for a neutral interaction). The behavior categories were as follows:

Preparing/returning (Pr) - gathering and returning materials; sharpening pencil; walking specifically necessary for gathering and returning materials.

Observing (O) - watching another's performance of experiment or task; listening to a discussion between other students.

Experimenting (E) - purposeful physical manipulation of apparatus.

Discussion (D) - talking about performance of task with a peer, teacher, or group; questioning; follow-up of questions; information giving; answering teacher's questions.

Waiting (Wa) - waiting for the teacher's attention; waiting for teacher to check notebook or quiz.

Reading/writing (RW) - using textbook; recording data. Does not include taking group test.

Copying (C) - copying information without having had any input into its formulation.

Listening (L) - listening to teacher give explanation to class as a group.

Conversing (Cv) - talking about subjects unrelated to class tasks (+ or -).*

Touching (T) - hitting; jabbing; hugging; tapping; putting hands on, etc. (+ or -).*

Disengaged (Dt) - out of contact with people, ideas, classroom situation; daydreaming; looking around the r om at other people, not related to task.

Disengaged (Ta) - not listening while teacher talks to class as a group.

*Two behavior categories.

A copy of the coding sheet is in the Appendix.

Observer Training

In constructing this instrument we took into account the methodological criticisms of other instruments (Shavelson and Dempsey, 1976; Frick and Semmel, 1978) and the necessity of establishing inter-observer and intra-observer reliability as well as reliability of behaviors.

Four experienced graduate students were trained as observers. For purposes of training, two videotapes were produced, one of an actual class and one of a simulated class in which all behavior categories were exhibited by students. After initial training by means of videotapes, training took place in classes similar to those used in the study. Training continued until all observers attained an 80% agreement with a trainer. To measure observer agreement, trainer and trainee listened by means of a double jack to the same signals while observing the same subject. The following formula was used to determine agreement: $A = a/t \times 100$, where A = per cent agreement, a = number of coded behaviors on which both observers agreed for each individual interval, and t = total number of behaviors recorded by trainer.

Collection of Observational Data

Subjects in the same class were observed in random order with no more than one observation per day per subject. No observations were made during the first or last five minutes of the class period. At least two observers were used for each subject, one observer for observations 1-5 and another observer for observations 6-10. After an initial introduction and several practice sessions, observers entered and left classrooms barely noticed and without causing any disruption of classroom routines.

Measures of Academic Ability

For the purposes of this study, academic ability was measured by Mathematics and Reading scores on the Science Research Associate (SRA) tests. Since these tests are used by the school district, scores were available from district records. Scores on these tests were found to be predictive of final grade for both black and white students in our previous study and seemed to be a realistic measure of ability for our purposes.

Measure of Science Achievement

The final grade in the course was used as the measure of achievement. While final grade is not necessarily an accurate measure of how much has been learned in a course, the final grade is what has the most meaning for the students and is used in making decisions about the student's future placement in science classes. The pupil's assessment of his or her own ability is also more influenced by final grade than by other measures.

Results

Classroom Behavior

Comparison of groups on all behavior categories. The frequency of occurrence for each behavior during 60 minutes of observation was calculated for each subject. Data are presented in Table 1.

Table 1

Mean Frequencies of Behaviors per 6-Minute Observation

	Black		White		Male		Female	
Behavior	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
Preparing	2.29	1.61	2.11	1.51	2.18	1.60	2.21	1.52
Waiting	0.41	0.28	0.53	0.34	0.60	0.36	0.35	0.21
Observing	0.92	1.02	0.84	1.00	0.93	1.21	0.82	0.74
Experimenting	2.92	2.27	2.73	2.43	2.32	2.03	3.44	2.54
Discussion	4.20	2.69	4.82	3.19	4.24	2.89	4.78	3.02
Reading/ waiting	11.04	3.44	10.65	3.59	10.18	3.66	11.51	3.24
Copying	0.79	0.85	1.10	0.71	1.18	0.93	0.68	0.55
Listening	5.17	3.19	5.58	3.69	5.12	3.30	5.65	3.60
Conv.- Pos.	4.27	3.38	3.93	3.13	4.48	3.17	3.72	3.31
Conv.- Neg.	0.25	0.26	0.34	0.42	0.30	0.35	0.30	0.37
Touch.-Pos.	0.50	0.46	0.37	0.32	0.49	0.46	0.38	0.32
Touch.-Neg.	0.25	0.21	0.10	0.00	0.18	0.15	0.10	0.00
Detached	4.95	3.44	4.37	2.88	5.28	3.77	4.04	2.30

Two-way analysis of variance (race by sex) yielded no F value with a probabability as low as .05 for race, one minor sex difference (higher frequency of "waiting" for boys) and no race by sex interaction for any category of behavior. This replicates the findings from our previous study in regard to the lack of significant differences in classroom behavior between black

and white pupils and refutes the view that black youngsters are more aggressive, more "physical", and apt to engage in fewer learning activities in the classroom. It also refutes the view that girls are less active than boys in science classes, less interested in experiments or other forms of experiential science, and disinclined to participate.

Formation of three behavior categories. After examining the frequencies of all behavior categories to search for group differences, we collapsed the 14 categories into three conceptually based categories as follows:

Active Learning: Preparing/returning, Observing, Experimenting, Discussion.

These behaviors are actions initiated by students and indicate active engagement in experiential learning.

Passive Learning: Waiting, Reading/writing, Copying, Listening.

These behaviors are task-related but do not overtly indicate the same degree of involvement.

Non-Attending: Conversing (positive or negative), Touching (positive or negative), Disengaged.

These behaviors would not be judged acceptable by the teacher and were unrelated to the purposes of the class.

These categories provided a meaningful way to compare behaviors and to relate behavior to other variables. Frequencies of behaviors in each of the three categories were calculated for each subject for each six-minute observation period.

Stability of behaviors. In order for behavior to be a useful variable in making predictions or establishing relationships, it has to be shown to be a stable characteristic of the learner under the conditions studied. Therefore it was important to have an index of reliability of observed

behavior over time. For this purpose correlation coefficients were computed between the number of behaviors in each category exhibited in the odd-numbered observations with the number of behaviors in each category exhibited in the even-numbered observations. This resulted in correlations of 0.69 for Active Learning, 0.59 for Passive Learning and 0.64 for Non-Attending (all $p = < .01$). These correlations indicate a moderate but acceptable level of stability, particularly for classrooms in which the day-to-day activity had wide variation.

Comparisons of groups on main behavior categories. Having found three main behavior categories and established their reliability, we were able to turn to the question of how students spend their time in activity-centered science classrooms and to ask whether there are race or sex differences in classroom behavior.

Table 2 presents the means and standard deviations for the three main behavior categories by race and sex. In inspecting these data it should be remembered that the possibility of coding and recording more than one behavior in any 6-second interval produced unequal column totals.

Table 2

Means and Standard Deviations by Race and Sex for Behavior Frequencies Per Observation, SRA Scores and Final Grades

	Total		Black		White		Girls		Boys	
Behaviors	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
Active Learning	9.6	5.9	9.5	5.6	9.7	6.3	10.0	6.0	9.1	5.9
Passive Learning	15.8	5.4	15.7	5.3	15.9	5.5	16.7	5.0	14.9	5.6
Non-Attending	8.9	5.1	9.3	5.5	8.4	4.7	7.8	4.2	9.9	5.7

Ability and Achievement

As noted above, scores of school-administered SRA reading and math tests were used as measures of general academic ability and final course grade was used as the measure of achievement. Average scores on these measures are given in Table 3 for the total sample and for the sample divided by race and sex. Analysis of variance showed a significant main effect for race, favoring whites, on SRA Math, SRA Reading, and final grade. There was no main effect for sex.

Table 3

SRA Math Scores, SRA Reading Scores, and Final Grade by Race and Sex

	Total		Black		White		Girls		Boys	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
SRA-Math	51.3	24.9	43.0	26.1	59.7	20.9	51.5	24.5	51.2	25.7
SRA-Rdng.	44.6	23.2	34.0	21.9	55.2	19.6	44.0	21.2	45.1	25.3
Final Grade	73.5	13.5	69.7	11.3	77.3	14.6	75.6	11.5	71.4	15.1

A correlation matrix for the total sample is given in Table 4. Corresponding matrices with the sample divided by race and sex are given in Table 7 in the Appendix. All correlation matrices show similar trends. In all cases, for example, Math and Active Learning were the variables most highly correlated with Final Grade.

Table 4

Correlation Matrix for Total Sample

	SRA Math	SRA Rdng.	Act.Lrng.	Pass.Lrng.	Non-Att.
Final Grade	0.66	0.51	0.64	-0.30	-0.28
SRA Math		0.69	0.50	-0.36	-0.05
SRA Reading			0.25	-0.25	0.03
Act. Lrng.				-0.42	-0.44
Pass. Lrng.					-0.58
Non-Att.					

Behavior And Achievement

Fixed order multiple regression analysis with final grade as the dependent variable was used to determine whether classroom behavior accounted for variance in final grade over and above the variance accounted for by SRA scores (i.e., general ability). In a preliminary analysis we found that math score as the single best predictor of final grade for all groups, but since Math and Reading scores were highly correlated with each other (cf. Table 4), they were entered into the regression equation together. Variables were entered in the following order: (1) SRA Math and SRA Reading, (2) Active Learning. (3) Passive Learning, (4) Non-Attending. Regression analysis was performed for the total sample and for groups formed by race and sex. Results are presented in Table 5.

Table 5

Predictors of Final Grade.
Adjusted Cumulative R^2's for Fixed Order Regression Analyses by Race and Sex

Predictor	Total	Black	White	Girls	Boys
SRA-M + SRA-R	.45*	.46*	.39*	.54*	.41*
Act. Lrng.	.58*	.59*	.56*	.65*	.57*
Passive Lrng.	.59	.64	.57	.66	.57
Non-Attending	.60	.66	.57	.70	.57

*p < .01

Variance accounted for by Math and Reading scores varied from 39% to 54%, with a mean of 45%. When this had been taken into account (or

"removed"), Active Learning accounted for an additional 11% to 17% of variance with a mean of 13%. The other two behaviors, both of which were negatively correlated with final grade, accounted for only an additional 1% each of variance for the total sample. For the black students, Passive Learning and Non-Attending together accounted for 7% of variance, an amount that was not statistically significant but may perhaps be worth further scrutiny. However, since Passive Learning is negatively correlated with final grade, its effect, if any, would be negative. Thus, the analysis shows that Active Learning behavior is the only pupil behavior that is a predictor of final grade. The significance of this finding should not be overlooked and will be discussed later.

Within-Race and Cross-Race Interactions

Two approaches were used to examine the number of cross-race as opposed to within-race interactions. In the first approach the race of students was dichotomized (black = 1, white = 2). Race of student observed was used as the dependent variable in a regression analysis that used as independent variables the number of interactions with (1) black males, (2) black females, (3) white males, (4) white females, (5) other males, (6) other females, (7) teacher, (8) group, (9) entire class. This analysis yielded a total R^2 of .44 ($p < .01$) and significant point biserial correlations for interactions with black males (-.41, $p < .01$), black females (-.41, $p < .01$), and white females (.37, $p < .01$). Thus, the number of interactions with black boys, black girls, and white girls are related to the race of the student observed.

The above analysis did not take into account the number of same race or different race peers in the classroom or the type of activity engaged in when the interactions took place. To take these variables into account a separate analysis was computed. The number of cross-race

interactions which actually occurred and the number which would be expected to occur if all interactions were random were computed for both On-Task (Active and Passive Learning) and Off-Task behaviors. The expected interactions were computed by multiplying the total number of positive interactions by the percentage of cross-race students (excluding the subject) in the classroom. Only positive interactions were used in the analysis since the number of negative interactions was too small to yield significant results. Results of two-way analysis of variance using on-task vs. off-task and observed vs. expected cross-race interactions are shown in Table 6. A similar analysis of cross-sex interactions is also shown in Table 6. For the total sample and for both male and female subjects there were fewer observed cross-race interactions then would have been expected if interactions took place at random without regard to race. For girls there were significantly more cross-race interactions during on-task activities than during off-task activities. For the total sample and for white students, but not for black students, there were more expected than observed cross-sex interactions. For the total sample and for black (but not for white) students the number of off-task cross-sex interactions was greater than the number of on-task cross-sex interactions.

These analyses confirm impressions gained from inspection of the data. Adolescents tend to interact with others whom they identify as members of their own group and in these classes there was a strong racial identification. The situation is somewhat different in regard to cross-sex interactions since the black students interacted with members of the opposite sex off-task (what the teachers call "socializing") with more than the statistically expected frequency.

Table 6

Two-Way Analysis of Variance of Observed vs. Expected, On-Task and Off-Task Interactions by Race and Sex

	Observed		Expected			
	$\bar{x}$	SD	$\bar{x}$	SD	df	F
Cross-Race, MF						
On-Task	.74	1.24	1.55	1.22		
Off-Task	.40	.72	1.65	1.39	1,284	55.73*
Cross-Race, M						
On-Task	.37	.50	.66	.54		
Off-Task	.49	.88	.90	.77	1,140	9.38*
Cross-Race, F(1)						
On-Task	.66	1.40	.97	.96		
Off-Task	.16	.35	.72	.68	1,140	7.85*
Cross-Sex, BW(2)						
On-Task	.50	.84	1.52	1.49		
Off-Task	1.00	1.54	1.62	1.40	1,284	30.41*
Cross-Sex, W						
On-Task	.18	.36	.93	.83		
Off-Task	.58	1.20	.84	.78	1,140	12.77*
Cross-Sex, B(3)						
On-Task	.39	.58	.64	.50		
Off-Task	1.28	1.71	.74	.69	1,140	n.s.

*p < .01

(1) On-Task vs. Off-Task. F = 5.87 (1,140) p < .02

(2) On-Task vs. Off-Task. F = 3.84 (1,284) p < .05

(3) On-Task vs. Off-Task. F = 8.68 (1,140) p < .01

Interaction: On-Task/Off-Task x Observed/Expected. F = 5.65 (1,140) p < .01

Discussion

The results of this study confirm our previous finding of no significant differences between the behaviors of black and white pupils in activity-centered junior high school science classes. In addition, we found no significant differences between behaviors of boys and girls. Thus our data do not support the view that behavioral differences in in-class behavior account for some of the difference in achievement between black and white students. Nor do our data support the view that girls are more passive and less interested in participation in science activities than boys. We found the in-class behaviors of boys and girls and black and white students to be very similar.

The second major finding of this study is the importance of Active Learning behaviors as predictors of final grade. There is a body of literature indicating that time-on-task is an important variable in learning, and common sense suggests that this should be so. Active Learning, as defined here, is related to time-on-task but is different in several important ways. Time-on-task often refers to the amount of time a teacher spends on a certain part of the curriculum. Active Learning, on the other hand, is a measure of time a pupil spends in specified learning behaviors. Another important difference is that time-on-task refers to any on-task activity, while Active Learning refers to actions initiated by the student that involve him or her directly in self-initiated, active participation in purposeful activity.

While our data do not show group differences in behavior, they indicate that individual differences in behavior are related to individual differences in achievement.

The third area of interest in this study, pupil-pupil interaction, confirmed what many other investigators have found; namely, that pupils spend their time in class interacting with members of their own group. Desegregation of a school does not mean that the classes within the school are integrated. Girls also tend to interact with girls and boys with other boys at the junior high level, though there was some indication of cross-sex interaction in off-task behaviors. Unless teachers intervene and assign pupils to work stations or desks, thus requiring them to work together, classes divide themselves into four sub-groups: white girls, black girls, white boys, and black boys, each working in a section of the room. This is an area of research in which intervention studies might be useful in determining whether other patterns of in-class interaction would lead to more learning.

Probably the most important finding of this study is that, at this level, the obstacles to achievement in science are not related to race or sex but, rather, to poor math and reading skills and to failure to participate in the learning activities of the classroom.

Appendix

OBSERVED BEHAVIORS

Coding Sheet

Date _____

Period _____

School _____

Source _____ ( )

Observer _____

Teacher _____

Interval

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Source																														
Black Boy																														
Black Girl																														
White Boy																														
White Girl																														
Others (boy)																														
Others (girl)																														
Teacher																														
Class																														
Group																														
Group Composition	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG
	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB
	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG

CODE:

Active Learning
- Preparing/returning (Pr)
- Observing (O)
- Experimenting (E)
- Discussion (D)

Passive Learning
- Waiting (Wa)
- Reading/writing (Rw)
- Copying (C)
- Listening (L)

Non-Attending
- Conversing (CV); + or -
- Touching (T); + or -
- Disengaged (Dt)

NOTE:

Target Initiated - (CODE)

Source Initiated - CODE

Initiated Unclear - CODE

Table 7

Correlation Matrices for All Variables, by Race and Sex

Black

	SRA Math	SRA Rdng.	Act. Lrng.	Pass. Lrng.	Non-Att.
Final Grade	.68	.43	.67	-.13	-.34
SRA Math		.64	.57	-.47	.09
SRA Reading			.25	-.32	.20
Act. Lrng.				-.28	-.44
Pass. Lrng.					-.70
Non-Att.					

White

	SRA Math	SRA Rdng.	Act. Lrng.	Pass. Lrng.	Non-Att.
Final Grade	.61	.46	.67	-.46	-.21
SRA Math		.63	.50	-.31	-.18
SRA Reading			.31	-.27	-.08
Act. Lrng.				-.53	-.45
Pass. Lrng.					-.46
Non-Att.					

Girls

	SRA Math	SRA Rdng.	Act. Lrng.	Pass. Lrng.	Non-Att.
Final Grade	.73	.52	.73	-.45	-.35
SRA Math		.64	.64	-.46	-.16
SRA Reading			.39	-.41	.09
Act. Lrng.				-.58	-.44
Pass. Lrng.					-.40
Non-Att.					

Boys

	SRA Math	SRA Rdng.	Act. Lrng.	Pass. Lrng.	Non-Att.
Final Grade	.63	.51	.58	-.25	-.20
SRA Math		.73	.36	-.29	.03
SRA Reading			.14	-.13	-.02
Act. Lrng.				-.30	-.44
Pass. Lrng.					
Non-Att.					

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