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ABSTRACT

This supplement to the "Technical Report for the Mathematics Assessment Questionnaire" describes methods for examining student responses to the questionnaire and focuses on the data for criterion-referenced-test (CRT) type scores. The Mathematics Assessment Questionnaire (MAQ) was developed to provide information about students in grades 7 through 9 that is complementary to that provided by teacher assessments or standardized tests of mathematical concepts and principles. The MAQ samples students' thoughts and feelings in relation to doing and learning a particular process of mathematics--solving mathematical word problems. The responses of 1,737 students are discussed on an individual student level and aggregated at the class level (60 classes). Student responses were basically examined at statement level and at the three item cluster level using CRT-type response categories. The final section of the document provides information about how and why several items of the MAQ were rewritten. Twelve tables present data about student responses, and one figure illustrates domain specifications for the project. Three appendices provide tabulated data to supplement the discussion. (SLD)

TECHNICAL REPORT SUPPLEMENT #1

MATHEMATICS ASSESSMENT QUESTIONNAIRE: A SURVEY OF THOUGHTS AND FEELINGS FOR STUDENTS IN GRADES 7 - 9

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Center for Advanced Study in Education
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MATHEMATICS ASSESSMENT QUESTIONNAIRE TECHNICAL REPORT SUPPLEMENT #1

This document is a supplement to the Technical Report for the Mathematics Assessment Questionnaire. A brief description of the Mathematics Assessment Questionnaire is provided, which includes a discussion of its general use and purpose. Further details can be found in the Manual for Users (Tittle & Hecht, 1990) and the Technical Report (Hecht & Tittle, 1990). The present document describes methods for examining student responses to the questionnaire and focuses on the data for CRT-type scores. Responses of approximately 1700 students are discussed on an individual student level and aggregated at the class level (within 60 classes). The final section of this document provides information about how and why several items of the Mathematics Assessment Questionnaire have been rewritten.

DESCRIPTION AND PURPOSE OF THE MATHEMATICS ASSESSMENT QUESTIONNAIRE: TEACHER PLANNING AND CLASSROOM USE

The Mathematics Assessment Questionnaire: A survey of thoughts and feelings, for students in grades 7-9, was developed to provide information which is complementary to that provided by teacher assessments or standardized tests of mathematical concepts and procedures. The Mathematics Assessment Questionnaire, MAQ, is designed to sample students' thoughts and feelings in relation to doing and learning a particular process of mathematics -- solving mathematical word problems. The facets or dimensions used to design the questionnaire are:

1. Mathematical content,
2. Psychological construct, and
3. Classroom-related learning or activity setting.

The first facet, the mathematical content, is the same in all statements--mathematical word problems. The second facet, the psychological construct, focuses upon students' thoughts and feelings. It includes metacognitive activities; self-regulatory activities; affective beliefs of the utility or value of mathematical word problems, interest in word problems, confidence or expectation of success, and anxiety or concern about doing word problems; the motivations of internal learning goals and external performance goals; and the attributions of beliefs about the causes or reasons for one's success or failure. The affective beliefs, motivations and attributions are assessed by three-item sets of statements within each of the three

activity settings[1]. The third facet, the activity setting, includes three mathematics classroom-related situations during which students engage in problem-solving: during classroom instruction, while working with other students in a group, and while doing homework. Figure 1 depicts the psychological construct by activity setting design used for the MAQ.

The Mathematics Assessment Questionnaire includes 161 statements. Except for the Metacognitive statements, students rate how true each statement is for them using a five point scale from 1 VERY TRUE to 5 NOT AT ALL TRUE. For the Metacognitive statements, response categories are YES, MAYBE and NO.

The psychological constructs and classroom activity settings were selected to be relevant and useful for mathematics classrooms from both a research and a theoretical perspective. The MAQ is based on the view that a teacher's role is concerned with understanding and supporting or facilitating change in students' beliefs and thinking in a specific context, that of mathematical problem-solving. Embedding the assessment of student beliefs in the context of mathematics classroom activities is an attempt to directly link students' beliefs to teachers' thinking about instructional planning. Both the MAQ statements and methods of reporting students' responses were developed with the assistance of teachers and teacher educators.

METHODS FOR EXAMINING STUDENT RESPONSES

The statements of the Mathematics Assessment Questionnaire were written to provide information for classroom instructional planning. They were not written to provide normative data, but rather to help teachers to better understand their students, to develop instructional plans, and to use the statements directly with students. Different methods have been developed to help identify students who may need additional instructional work.

Student responses can be examined in two basic ways:

Level 1. Statement-level

Level 2. Three item cluster-level using CRT-type response categories. The CRT-type response categories are only applicable to the affective

[1] There is one exception -- Internal Learning Goals within the Homework activity setting has two items. A third item has been written and is discussed in the section titled Revision of the Mathematics Assessment Questionnaire.

Figure 1

Specifications for the Mathematics Assessment Questionnaire: Number of Statements for Psychological Constructs and Activity Settings

PSYCHOLOGICAL CONSTRUCT	ACTIVITY SETTING: During Class (Teacher-led)	Working With Other Students	Doing Homework
Metacognitive: Solving a math problem			
.before you begin, planning, defining objective, setting goals	20 METACOGNITIVE STATEMENTS LINKED TO ONE NON-ROUTINE PROBLEM		
.as you work, monitoring progress, keeping track			
.after you finish, evaluating, judging what done			
.strategies employed			
Self-regulation			
.before beginning, planning, defining objective, setting goals	6	7	3
.during the activity, monitoring progress, keeping track	8	8	3
.after the activity, evaluation, judging what done	5	8	3

PSYCHOLOGICAL CONSTRUCT	ACTIVITY SETTING: During Class (Teacher-led)	Working With Other Students	Doing Homework
Affective Beliefs			
.utility, value of math	3	3	3
.interests	3	3	3
.expectancies of success/confidence	3	3	3
.anxiety	3	3	3
Motivations			
.internal learning goals	3	3	3
.external performance goals	3	3	3
Attributions			
.internal stable controllable	3	3	3
.internal stable uncontrollable	3	3	3
.external stable uncontrollable	3	3	3
.unknown control	3	3	3

belief, motivation and attribution statements. Responses to all three items within a cluster are used to indicate possible need for follow-up instructional work.

LEVEL 1. Statement-Level Responses: All Statements

Responses of either an individual student or a group of students can be examined at the individual statement level. That is, responses to items are not grouped or summed. For example, an individual student's actual response to statement number 10 in the During Class Activity Setting can be examined. Similarly, the responses of the class to the statement can be summarized in frequencies or percentages. The focus is to examine responses to individual statements by individuals or by the class.

This method can be used with all of the items. However, it is the only approach used with the Metacognitive and Self-Regulatory statements. It is not justifiable to summarize the responses to these statements since the characteristics of both the statements and of student responses to the statements do not suggest a simple structure. This conclusion is supported by statistical analyses of the statements and student responses which indicate that there is not a single factor or dimension underlying the Metacognitive or Self-Regulatory statements (see Chapter IV of the Technical Report). Furthermore, these statements are closely linked to actual classroom related activities. A judgement concerning the appropriate use of self-regulatory behaviors is therefore situationally dependent upon the classroom-related activity. Examples of individual and class responses as well as uses for the responses are given in Chapter IV of the Manual for Users.

LEVEL 2. Statement Clusters for CRT-Type Scores: Affective, Motivational and Attributional Statements

Three statements were written to assess each affective belief, motivation and attribution construct within each setting (see Figure 1). Student responses to these statements can be summed, or otherwise combined to provide a "cluster-score." Thus, at Level 2, the focus is upon the three-item clusters, not individual items.[2]

Criterion or objective referenced scores have been useful in achievement testing. Such scores typically have

[2] Although these three-item clusters can be examined in two ways -- a summed score based on the 1-5 ratings, or a CRT-Type approach, only the latter is discussed in this report. Analyses based upon the statement summed scores are in the Technical Report and the Manual for Users.

direct meaning for instructional planning because:

1. they are referenced to smaller units of statements or questions, typically from 3-6; and

2. a standard or cutoff score is set indicating mastery or non-mastery in the achievement test context, where "non-mastery" suggests a need for additional information to decide if further classroom instruction is appropriate.

In the context of the Mathematics Assessment Questionnaire a similar strategy has been developed for the three-item clusters of the affective beliefs, motivations and attributions in each setting. Criterion-referenced test-like scores are created for students on each of the 3-statement clusters. These scores indicate if a student has responded to at least two of the three statements in a cluster in a manner indicating the need for follow-up by the teacher. On any single item, the student has to select one of the two most extreme response options to indicate need. These CRT-type scores have direct meaning, as opposed to the use of summed scores on the five point rating scales. Summed scores on the five point rating scale can range from 3 to 15, and students with the same score can have different response patterns.

For the affective beliefs, indicators of need are low Value, low Interest, low Confidence and high Anxiety. For the motivations, being motivated by External Performance Goals and not motivated by Internal Learning Goals are indicators of need. For the attributions, one indicator of need is success or failure which is NOT attributed to causes which are Internal Stable Controllable. Other indicators of need for the attributions include success or failure attributed to causes which are External Stable Uncontrollable or a feeling of Unknown Control. A list of item numbers for each category and the direction in which they are counted to determine if they meet the criteria of need are presented in Table 1.

An indicator of need is not created for the attribution construct Internal Stable Uncontrollable. Students who attribute success or failure to something which is uncontrollable, such as ability, would be identified as possibly needing additional instructional work. However, when used with items dealing with successful problem solving the need indicator can provide ambiguous results. An example is statement number 38 in the Working With Other Students setting. This Internal Stable Uncontrollable statement is "If I can solve a word problem with other students, it is because we have enough ability." Students who respond VERY TRUE or TRUE indicate a possible need for

Table 1

Statement Numbers, Scale Response Numbers for Indicators, and Interpretation of Diagnostic Indicators for Affective Belief, Motivation and Attribution Categories

	Activity Setting			
Psychological Construct	During Class	Working W/Others	Homework	Interpretation
Value	26(R)[a] 28 34	32 44 46(R)	12(R) 20 39(R)	4 or 5 indicates low value
Interest	24 44(R) 49	30 36 40(R)	18 28 34(R)	4 or 5 indicates low interest
Confidence	20 31(R) 48(R)	24 27(R) 48	13(R) 22 35(R)	4 or 5 indicates low confidence
Anxiety	27 35(R) 39	25 31(R) 51	19 26(R) 36(R)	1 or 2 indicates high anxiety
Internal Learning Goals	30 32 42	29 33 39	15[b] 23 31	4 or 5 indicates not inter. motivated
External Performance Goals	25 36 40	37 43 53	14 29 33	1 or 2 indicates exter. motivated
Internal Stable Controllable	43 45 47	34 41 49	17 25 37	4 or 5 indicates internal stable uncontrol
External Stable Uncontrollable	23 29 46	35 45 50	21 27 32	1 or 2 indicates external stable uncontrol.

Table 1 (continued)

Psychological Construct	Activity Setting: During Class	Working W/Others	Homework	Interpretation
Unknown	21	28	11	1 or 2
Control	33	42	24	indicates unknown
	38	47	30	sense of control.

[a] Where an (R) appears, the reverse end of a scale is counted: e.g., for Confidence a 4 or 5 indicates low confidence and the (R) next to number 31 indicates that the reverse end, a 1 or 2, is counted as an indicator of low confidence.

[b] For analyses, item 15 in the Homework activity setting is not included due to inconsistencies with other items in the cluster. This item was revised (see the Revision section).

follow-up instructional work. In the 1988 study, 53% of the 1737 students who participated responded to the Internal Stable Uncontrollable setting in a way which would contribute to a CRT-type score. These students are attributing their success to something which is uncontrollable -- ability. Over half the sample felt this was an appropriate response. However, to identify these students as needing follow-up work is questionable. Furthermore, a small scale study with two classes suggests that if failure rather than success is examined, the percentage of students identified as needing follow-up work decreases. (This small-scale study is discussed later in the section on revisions and in Appendix I.)

The procedures for creating the CRT-type scores for a three-item cluster are as follows:

1) Responses to each item are dichotomized: If students select either of the two extreme response options which indicate need in that area, they receive a "1," otherwise a "0." (These scores are referred to as the dichotomized statement scores.)

2) The number of 1's is summed across the three statement cluster.

3, If this sum equals 2 or 3, students are identified as in need of attention in that area.

An example of how a CRT-type score is computed follows for the construct of Anxiety in the Homework setting.

Suppose a student responds to the three Anxiety items:

ANXIETY: (* is the student's response)

	VERY TRUE	TRUE	SORT OF TRUE	NOT VERY TRUE	NOT AT ALL TRUE
19. I feel nervous when I think about doing hard word problems for homework.	*				
26. I feel relaxed when I am doing math word problems at home.					*
36. Doing word problems for homework does not make me nervous.			*		

The student's responses are then recoded:

item 19 - student reports feeling anxious as indicated by a response in one of the two extreme categories. (a VERY TRUE response); - the student receives a "1" for this response -- need is indicated

item 26 - the student reports feeling anxious as reported in one of the two extreme categories. (a NOT AT ALL TRUE response) - student receives a "1" for this response -- need is indicated

item 36 - the student does <u>not</u> report feeling anxious as indicated by marking one of the two extreme categories. (a TRUE response) - student receives a "0" for this response -- need is not indicated. To receive a "1" the student would have had to respond NOT VERY TRUE or NOT AT ALL TRUE.

The "1's" are summed. The total of 2 falls within the cutoff (two or three responses indicating need). Therefore, this student is identified for follow-up work by the teacher to determine whether instructional activities are needed in this area.

ANALYSES OF INDIVIDUAL STUDENT RESPONSES: CRT-TYPE SCORES

In the fall of 1988, responses to the Mathematics Assessment Questionnaire were collected from 1737 students in grades seven, eight, and nine at eight New York City public schools. The criteria for selecting students and classes were that students read at the seventh-grade level and that the classes were not at the very top (gifted) or very bottom (low remedial) of the mathematics sections in the school. The MAQ booklets were administered during one 40 minute class period with project staff present. Forty-four percent of the students were male, 56% female. The students ranged in age from 11 to 16 years, with the majority of students (93%) between 12 and 14 years of age. Self-reported ethnicity was: 8% Asian, 22% Black, 22% Hispanic, 43% White, 13% Other, and 2% not responding. Further details concerning this sample can be found in the Technical Report.

In this section several analyses are presented that focus on the CRT-type scores. First there is a discussion of data basic to the CRT-type scores -- the dichotomized scores for each statement in the affective, motivational and attributional categories. Then reliabilities, correlations and other data are presented for the CRT-type scores.

Dichotomized Statement-Level - Frequencies and Percentages of Individual Student Responses

As discussed earlier, the first step in calculating the CRT-type need scores is to dichotomize students' responses to individual statements. Thus, for each statement, a student is assigned a "1" (response contributes to CRT-type score) or "0" (response does not contribute to CRT-type score). For all three items within a cluster, a student can respond to between 0 (no evidence of further work needed) and 3 (indicator of additional work needed) items in a way to suggest the need for follow-up instruction.

Appendix II, Table 1, presents, by statement, the number and percentage of students with dichotomized statement scores which contribute to the CRT-type score. In other words, for each statement, the number of students who received a score of 1 is indicated. Although presented for individual statements, these data are not intended for interpretation of need. The interpretation of need would be

based upon the CRT-type scores, a summary of the dichotomized statement-level scores.

In the During Class setting, the statement which identified the greatest number of students as needing additional work (73% of the students) is statement 36 "I pay attention when my teacher explains word problems if I know I will have a test on them." This statement, written to examine External Performance Goals, is keyed so that a response of VERY TRUE or TRUE indicates a possible need for additional work. The student is responding to an external motivator -- the test. Need is indicated for 46% of the students on statement 40, "I volunteer to do a word problem on the board if I think it will help my grade."[3] Forty-four percent of the students indicate need to statement 23, "If I understand the word problems my teacher does on the board, it is because I have a good teacher." The students responded VERY TRUE or TRUE, suggesting they attribute their success to an external cause -- the teacher.

The examination of the individual items within the Working With Other Students setting reveals that 50% of the students responded to statement 49 in a way to contribute to the CRT-type score, an indicator for possible follow-up activities. This Internal Stable Controllable statement, "If I cannot solve a word problem working with other students, it is because we were careless," is scored such that a response of NOT VERY TRUE or NOT AT ALL TRUE indicates need. These students are not attributing their failure to something which is controllable, such as their lack of effort or carelessness.

In the Homework activity setting item 29, "I would do challenging math word problems for homework if I could get a better grade," had the greatest number of students with a dichotomized score which contributes to the CRT-type need indicator. Forty-nine percent of the students responded VERY TRUE or TRUE to this External Performance Goal statement. This suggests that they are motivated by external factors such as getting a better grade.

Appendix II also presents the number and percentage of students indicating need on each individual item for follow-up work for grades seven, eight, and nine separately. As Tables 2 to 4 in Appendix II indicate, the patterns are similar across all three grades.

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[3] Both items were dropped when the Mathematics Assessment Questionnaire was revised because of the low reliability of the External Performance Goals - During Class three item cluster. (See section, Revision of Mathematics Assessment Questionnaire).

Average Number of Dichotomized Statements for Each Three-Item Cluster

Table 2 presents the average number of items within each three-item cluster to which students responded in a way indicating a possible need for follow-up instruction. For example, students responded to approximately one out of the three Interest statements in the During Class setting (mean = .94) in a way to indicate need for further instructional work. In Table 2, need is indicated on the Interest statements across all three settings, and to the greatest degree in the Homework setting (mean = 1.2). The area where students reported least need across all three settings is that of Confidence (mean = .4 in all settings).

Reliabilities of CRT-Type Scores

Table 3 presents two coefficient alpha reliability estimates for the three-item clusters for the affective beliefs, motivations and attributions. Alpha 1 is based on the original 1 to 5 ratings for each statement. Alpha 2 is the reliability estimate for the CRT-type score, based upon the dichotomized indicators - Need versus NO Need used to calculate the CRT-type scores. The CRT-type score reliabilities range from .18 to .70, the original summed score reliabilities range from .20 to .74. Overall, the reliability estimates based upon the dichotomized statement level scores tend to be somewhat lower than the reliability estimates based upon the raw, original scores.

Correlations Among CRT-Type scores

The CRT-type scores are calculated by summing the dichotomized statement-level scores. These values can range from 0 to 3. Spearman's Rho was used to calculate the correlations among the CRT-type scores. These are presented in Tables 4, 5 and 6 for the During Class, Working With Other Students and Homework activity settings, respectively. All significance levels are based upon a one-tailed test.

In the During Class setting the strongest correlation, .37, is between Interest (e.g., I enjoy trying to answer the math word problems my teacher asks in class) and Internal Learning Goals (I volunteer to answer questions about word problems in math class because it helps me understand math). This correlation indicates a modest relationship between student responses suggesting a need for follow-up in Interest (lack of interest) and Internal Learning Goals (lack of internal motivations). Other correlations greater than or equal to .30 are .34 between Internal Learning Goals (lack of internal motivations) and Internal Stable Controllable (attributions for success not attributed to controllable causes); .33 between Anxiety and Unknown

Table 2

Mean Number of Items to Which Students Responded in a Way to Indicate Need For Follow-up Instructional Work

(N=1737)

Psychological Construct	Activity Setting: During Class	Working With Others	Doing Homework
Value			
M	.622	.880	.634
SD	.781	.884	.791
Missing[a]	51	71	66
Interest			
M	.943	.740	1.216
SD	.890	.857	1..21
Missing	49	76	47
Confidence			
M	.459	.466	.406
SD	.692	.683	.693
Missing	49	64	42
Anxiety			
M	.826	.567	.623
SD	.927	.793	.790
Missing	54	70	48
Internal Learning Goals			
M	.639	.575	.830[b]
SD	.856	.869	1.184
Missing	32	72	37
External Performance Goals			
M	1.323	.708	1.266
SD	.784	.855	1.022
Missing	81	63	62
Internal Stable Controllable			
M	.474	1.304	.460
SD	.758	1.078	.757
Missing	44	78	69

Table 2 (Continued)

Psychological Construct	Activity Setting: During Class	Working With Others	Doing Homework
External Stable Uncontrollable			
M	.841	.595	.665
SD	.865	.824	.873
Missing	59	61	63
Unknown Control			
M	.464	.523	.533
SD	.771	.791	.839
Missing	83	103	57

[a] Missing indicates number of students who left at least one of the three items blank.
[b] Two item cluster

Table 3

Coefficient Alpha Reliabilities of Responses to Three Item Clusters of Affective Beliefs, Motivations and Attributions Based on Original Scores (Alpha1) and CRT-type Scores (Alpha2)

Psychological Construct	Activity Setting: During Class (N=1432)	Working with Other Students (N=1382)	Doing Homework (N=1430)
Value[a]			
Items	(26) 28 34	32 44 (46)	(12) 20 (39)[a]
Alpha1 (Raw)	.500	.394	.483
Alpha2 (CRT)	.363	.310	.317
Interest			
Items	24 (44) 49	30 36 (40)	18 (34) 28
Alpha1 (Raw)	.335	.487	.725
Alpha2 (CRT)	.272	.401	.657
Confidence			
Items	20 (31) (48)	24 (27) 48	(13) 22 (35)
Alpha1 (Raw)	.548	.412	.611
Alpha2 (CRT)	.300	.249	.411
Anxiety			
Items	(27) 35 (39)	(25) 31 (51)	(19) 26 36
Alpha1 (Raw)	.576	.520	.451
Alpha2 (CRT)	.480	.413	.330
Internal Learning Goals			
Items	30 32 43	29 33 39	31 23[b]
Alpha1 (Raw)	.710	.698	.737
Alpha2 (CRT)	.527	.593	.695
External Performance Goals			
Items	25 36 40	37 43 53	14 33 29
Alpha1 (Raw)	.203	.532	.543
Alpha2 (CRT)	.175	.472	.477
Internal Stable Controllable			
Items	43 45 47	34 41 49	17 25 37
Alpha1 (Raw)	.620	.610	.605
Alpha2 (CRT)	.474	.575	.505

Table 3 (continued)

Psychological Construct	Activity Setting: During Class (N=1432)	Working With Other Students (N=1382)	Doing Homework (N=1430)
External Stable Uncontrollable			
Items	23 29 46	35 50 45	21 32 27
Alpha1 (Raw)	.418	.613	.603
Alpha2 (CRT)	.365	.482	.513
Unknown Control			
Items	21 33 38	28 42 47	11 30 24
Alpha1 (Raw)	.683	.588	.661
Alpha2 (CRT)	.522	.472	.571

Note. Alpha1= raw scores. Alpha2= CRT Version.
The alphas differ slightly from those reported in the Technical Report due to a slightly larger sample size used for these calculations. N for Technical Report = 1358, 1270, and 1405 respectively.

[a] Coding of items in parentheses is reversed.
[b] Item 15 was dropped from the analyses due to inconsistent results. Inclusion of item 15 with logical keying for Raw (Alpha1) r_{tt} = .386, with statistical keying r_{tt} = .446.

Table [illegible]

Spearman's Rho Correlations Among the [illegible] Scores
For All Students [illegible]

[illegible]

	VALUE	INTEREST	CONF	ANXIETY	ILG	EPG	ISC	ESU
INTEREST	[illegible] N([illegible]) SIG [illegible]							
CONF	.[illegible] N(1659) SIG .000	.[illegible] N(1662) SIG .000						
[illegible]	[illegible] N(1655) SIG .000	[illegible] N(1650) SIG .000	[illegible] N(1652) SIG .000					
ILG	.3029 N(1668) SIG .000	.2635 N(1673) SIG .000	.1369 N(1674) SIG .000	.2057 N(1664) SIG .000				
EPG	.1525 N(1626) SIG .017	-.1194 N(1626) SIG .136	-.0462 N(1626) SIG .031	.0091 N(1626) SIG .356	-.1133 N(1639) SIG .000			
ISC	.2601 N(1663) SIG .000	.0090 N(1656) SIG .000	.1260 N(1656) SIG .000	.2607 N(1649) SIG .001	.3275 N(1671) SIG .000	-.1336 N(1624) SIG .000		
ESU	-.1571 N(1646) SIG .000	-.1610 N(1650) SIG .007	.1152 N(1652) SIG .000	.1913 N(1640) SIG .000	-.0936 N(1664) SIG .000	.1339 N(1620) SIG .000	-.1476 N(1650) SIG .000	
UR	.1675 N(1624) SIG .000	.1307 N(1621) SIG .000	.3343 N(1627) SIG .000	.3151 N(1621) SIG .000	.0757 N(1637) SIG .001	.0685 N(1595) SIG .000	.0116 N(1623) SIG .300	.2411 N(1617) SIG .000

Note. Psychological Constructs

VALUE	Value
INTEREST	Interest
CONF	Confidence
ANXIETY	Anxiety
ILG	Internal Learning Goals
EPG	External Performance Goals
ISC	Internal Stable Controllable
ESU	External Stable Uncontrollable

[illegible]

[illegible]

INTEREST	[illegible] N [illegible] SIG [illegible]							
CONF	.2591 N 1619 SIG .000	.3914 N 1620 SIG .000						
ANXIETY	.1449 N 1619 SIG .000	.3466 N 1617 SIG .000	.3505 N 1622 SIG .000					
ILG	.4034 N 1624 SIG .000	.4670 N 1623 SIG .000	.2006 N 1625 SIG .000	.2917 N 1622 SIG .000				
EPG	.1175 N 1622 SIG .000	.2214 N 1624 SIG .000	.1688 N 1621 SIG .000	.3425 N 1627 SIG .000	.1500 N 1628 SIG .000			
ISC	.1157 N 1621 SIG .000	.1761 N 1620 SIG .000	.1151 N 1621 SIG .129	-.0979 N 1617 SIG .000	.1619 N 1615 SIG .000	-.1145 N 1623 SIG .000		
ESU	-.1257 N 1622 SIG .079	-.1135 N 1623 SIG .094	.0444 N 1626 SIG .036	.1189 N 1620 SIG .000	-.0250 N 1629 SIG .077	.3091 N 1625 SIG .000	-.1199 N 1620 SIG .000	
IR	-.0026 N 1599 SIG .461	.0417 N 1587 SIG .049	.1510 N 1600 SIG .000	.2460 N 1594 SIG .000	.0076 N 1596 SIG .381	.3157 N 1600 SIG .000	-.2437 N 1590 SIG .000	.3614 N 1601 SIG .000

Note. Psychological Constructs

VALUE	Value
INTEREST	Interest
CONF	Confidence
ANXIETY	Anxiety
ILG	Internal Learning Goals
EPG	External Performance Goals
ISC	Internal Stable Controllable
ESU	External Stable Uncontrollable

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Note. Psychological Constructs

VALUE	Value
INTEREST	Interest
CONF	Confidence
ANXIETY	Anxiety
ILG	Internal Learning Goals
EPG	External Performance Goals
ISC	Internal Stable Controllable
ISU	External Stable Uncontrollable

Control (a feeling of not having control over one's success or failure at problem solving); .33 between Confidence (lack of) and Unknown Control (lack of attributions for success or failure); and .30 between Value (lack of) and Internal Learning Goals (lack of internal motivations).

Within the Working With Other Students setting, 10 correlations in Table 5 are greater than .30. The strongest correlation, .47, is between need in the area of Internal Learning Goals (e.g., I would work hard on a word problem with other students if I could learn more math that way) and as with the During Class setting, need in the area of Interest (e.g., I think it would be interesting to work on a math word problem with other students). The other correlations greater than .35 are between Value and Interest (.43), Internal Learning Goals and Value (.42), Anxiety and Confidence (.38) and the attributions External Stable Uncontrollable and Unknown Control (.36).

In the Homework setting, seven correlations are greater than .30, and five are greater than .35. The strongest, .51, is between the construct Internal Learning Goals (e.g., I do not like to do word problems for homework unless I can learn something new by doing them) and Interest (I like working on math homework word problems). This is consistent with the During Class and Working With Other Students correlations. The four additional correlations greater than .35 are between External Stable Uncontrollable and Unknown Control (.42), Confidence and External Stable Uncontrollable (.38), Interest and Value (.36), and Confidence and Unknown Control (.36).

ANALYSES OF CLASS LEVEL RESPONSES: CRT-TYPE SCORES

The Mathematics Assessment Questionnaire was developed for use with either individual students or with an entire class. Based upon interviews with teachers, variability is found concerning which type of information would be most useful. Some teachers prefer to focus upon the individual student responses, and others prefer to examine the responses aggregated across an entire class. By examining the class responses a teacher is able to identify possible areas in which a number of students may need further work.

To help examine possible differences among classes, the CRT-type scores were aggregated to the class level. However, many classes included only a few students who responded to all three items within a three-item cluster. Therefore, a selection process was used to restrict the sample to only those classes with sufficient numbers of students to be meaningful for analyses.

Forming the Class-level Responses

For the 107 classes in the fall 1988 sample, the number of students in a class who responded to all three items within each cluster ranged from 0 to 41, with an average of 16.23, and a standard deviation of 9.10. Including classes with at least 15 students who answered the three items within each cluster resulted in a total of 60 classes. The Internal Learning Goals in the Homework setting was excluded since it only had two items. It was decided to use this sample size for several reasons:

1. It was felt that a minimum class size of 15 permitted inclusion of enough students to reflect a classroom environment.

2. A sample of 60 classes was sufficient to permit most analyses.

3. The 60 classes included 1379 or 79% of the students, although only 58% (60 out of 107) of the classes.

The sample of 60 classes included seven out of the eight schools which participated in data collection. Table 7 presents demographic information for the 60 classes by grade. Approximately equal numbers of seventh (21), eighth (19) and ninth-grade (20) classes were included. Eight classes were in Intermediate schools, 46 classes in Junior High schools and three classes in High schools. Schools were located in Brooklyn, Bronx and Staten Island. The students ranged in age from 11 to 1 years old. Within the classes, there were on average two Asian children, five Black children, five Hispanic children, and 11 White children. Ethnicity was self-reported.

The average MAT national percentile within the 60 classes was 69%. As Table 7 indicates, the ninth grader classes had the lowest average national percentiles. The average national percentile on the DRP was 73%. As with the complete sample, the classes with the lowest national percentiles tended to be the ninth-grade classes. The percentage of students within a class who were below the 50 percentile on either test was also examined. These percentages are also presented in Table 7.

Distribution Statistics for the Class-Level Responses

Table 8 presents statistics for the distributions of percentage of students within each class who were identified as needing additional work for each of the psychological constructs and settings (N=60 classes). For example, for the construct Value -- During Class, an average of 12.5% (SD=9.02) of the students in each class endorsed the items

Table 7

Demographic Information by Grade for the 60 Classes Included in Class-Level Analyses

	Grade 7	Grade 8	Grade 9	Total
Number of Schools	5	6	6	8
Number of Classes	21	19	20	60
Number of Students per Class who Completed the MAQ				
Mean	21.24	24.84	23.05	22.98
Range	16-26	15-41	15-36	15-41
Number of Boys per Class				
Mean	9.57	10.95	10.30	10.25
Range	4-14	5-19	4-16	4-19
Number of Girls per Class				
Mean	11.52	13.84	12.65	12.63
Range	6-15	6-23	5-22	5-23
Mean Age of Students in Class	12.03	12.99	14.03	13.00
Mean Number of Students by Ethnicity				
Asian	1.9	2.7	1.7	2.1
Black	4.0	5.1	4.6	4.5
Hispanic	3.7	5.1	4.9	4.6
White	10.7	10.7	11.3	10.9
Others	.6	.6	.4	.6

Table 7 (Continued)

	Grade 7	Grade 8	Grade 9	Total
Metropolitan Achievement Test National Percentile				
Mean	72.12	73.56	61.77	69.24
Range	35.8-95.1	43.9-97.2	30.5-91.4	30.5-97.2
Metropolitan Achievement Test Percentage of Students Below 50%				
Mean	16.60	18.72	32.93	22.54
Range	.0-72.2	.0-66.7	.0-90.9	.0-90.9
Degrees of Reading Power National Percentile				
Mean	73.66	75.80	70.54	73.35
Range	44.0-89.4	63.0-89.1	56.2-87.1	44-89.4
Degrees of Reading Power Percentage of Students Below 50%				
Mean	13.84	4.80	10.28	9.78
Range	.0-66.6	.0-25.0	.0-40.0	.0-66.6

Table 8

Distribution Statistics for the Percentage of Students Within Classes Identified as Needing Additional Work by Psychological Construct and Setting (N=60 Classes)

Psychological Construct	Activity Setting: During Class	Working With Other Students	Homework
Value			
Mean	12.51	24.35	14.55
SD	9.02	11.91	9.20
Median	11.51	25.00	14.29
Mode	.00	28.00	.00
Range:			
low (N classes)	.00 (9)	.00 (2)	.00 (6)
high(N classes)	36.36 (1)	55.26 (1)	37.50 (1)
Number of classes with >20% need	12	20	17
Interest			
Mean	25.64	17.41	39.06
SD	10.54	8.82	12.91
Median	24.57	18.47	38.61
Mode	25.00	20.00	22.73
Range:			
low (N classes)	9.09 (1)	.00 (1)	13.33 (1)
high(N classes)	54.55 (1)	36.00 (1)	79.17 (1)
Number of classes with >20% need	42	28	56
Confidence			
Mean	7.71	8.22	8.62
SD	6.74	5.94	6.58
Median	5.88	7.85	7.36
Mode	.00	.00	.00
Range:			
low (N classes)	.00 (12)	.00 (10)	.00 (9)
high(N classes)	29.17 (1)	22.73 (2)	25.00 (1)
Number of classes with >20% need	4	3	5

Table 8 (Continued)

Psychological Construct	Activity Setting: During Class	Working With Other Students	Homework
Anxiety			
Mean	20.37	12.94	12.48
SD	10.92	7.81	8.78
Median	20.00	12.10	12.40
Mode	25.00	5.00	.00
Range:			
low (N classes)	.00 (1)	.00 (2)	.00 (6)
high(N classes)	45.45 (1)	37.50 (1)	31.82 (2)
Number of classes with >20% need	31	[illegible]	11
Internal Learning Goals			
Mean	17.22	15.33	21.40[a]
SD	8.36	9.43	10.84
Median	16.67	15.19	20.00
Mode	5.88	.00	11.76
Range:			
low (N classes)	.00 (1)	.00 (4)	4.55 (1)
high(N classes)	40.74 (1)	42.11 (1)	46.15 (1)
Number of classes with >20% need	22	21	31
External Performance Goals			
Mean	41.02	18.15	40.67
SD	13.53	11.57	11.10
Median	41.18	16.93	42.79
Mode	25.00	20.00	33.33
Range:			
low (N classes)	11.54 (1)	3.45 (1)	11.76 (1)
high(N classes)	73.91 (1)	52.63 (1)	62.50 (1)
Number of classes with >20% need	57	26	56

Table 8 (Continued)

Psychological Construct	Activity Setting: During Class	Working With Other Students	Homework
Internal Stable Controllable			
Mean	9.60	41.31	10.68
SD	6.66	13.10	7.39
Median	9.76	40.59	10.62
Mode	.00	40.00	.00
Range:			
low (N classes)	.00 (1)	9.52 (1)	.00 (9)
high(N classes)	27.27 (1)	75.00 (1)	31.58 (1)
Number of classes with >20% need	5	57	6
External Stable Uncontrollable			
Mean	19.48	13.73	17.19
SD	10.68	8.73	10.11
Median	17.91	12.50	15.19
Mode	25.00	.00	.00
Range:			
low (N classes)	.00 (1)	.00 (5)	.00 (2)
high(N classes)	52.63 (1)	33.33 (1)	56.25 (1)
Number of classes with >20% need	25	14	18
Unknown Control			
Mean	9.06	11.22	13.10
SD	7.52	10.09	8.97
Median	8.71	8.17	12.25
Mode	.00	.00	.00
Range:			
low (N classes)	.00 (12)	.00 (8)	.00 (5)
high(N classes)	29.17 (1)	50.00 (1)	42.11 (1)
Number of classes with >20% need	7	10	9

[a] Based upon a two-item cluster.

in a way indicating the need for follow-up work. The percentage of students within a class needing follow-up work in the area of Value -- During Class ranged from 0%, for nine classes, to 36% for one class (noted in the row "range low" and "high"). Table 8 also reports the number of classes with more than 20% of the students' responses indicating a need for follow-up work. For Value--During Class, 12 out of the 60 classes were in this category. For Value, Working With Others, 20 of the 60 classes were in this category and 17 were for Homework.

Examination of the data reveals that differences in the need for follow-up work within classes are found both across settings and across constructs. The lowest percentage of students responding in a way to indicate need for follow-up work was in the area of Confidence. Student responses to the motivation construct External Performance Goals, the attribution constructs Internal Stable Controllable and External Stable Uncontrollable suggest the possible areas of greatest need. Appendix III presents the frequency distributions for each construct in the class level analyses for each of the three settings. These tables include the frequencies, percentages and cumulative percentages of students in a class who responded in a way to indicate the need for teacher follow-up.

Factor Analyses

Separate principal axis factor analyses were performed within each activity setting. The percentages of students within a class with CRT-type scores indicating a possible need for follow-up instructional work were calculated for each construct within each setting. Distribution statistics for these variables are presented (above) in Table 8. Two factors adequately characterized the data within each setting for these class level analyses.

In the <u>During Class</u> activity setting, 40% of the variance was accounted for by the two factor solution. Table 9 presents the factor loadings following an orthogonal rotation. (Based upon an oblique rotation, the two factors had a low correlation, .13.) Examination of the factor loadings greater than .30 suggests that the first dimension is characterized by classes along a dimension of engagement within the classroom activity or lesson. At one end of this bipolar factor are classes characterized by a large percent of students who indicate low Value for mathematics word problems, are not motivated by Internal Learning Goals, and express low Interest. These classes also include higher percentages of student who do not attribute success to Internal Stable Controllable causes such as understand the

Table 9

Factor Loadings (Orthogonal Rotation) of the Percentage of Students in a Class With a CRT-type Score Indicating Need for Additional Instructional Work in the During Class Setting

(N=60)

Psychological Construct	Factor 1	Factor 2
Value	**.757**	.031
Internal Learning Goals	**.662**	.021
Interest	**.651**	**.448**
Internal Stable Controllable	**.615**	.089
External Stable Uncontrollable	**-.489**	.182
Confidence	.196	**.720**
Unknown Control	.062	**.632**
Anxiety	-.081	**.496**
External Performance Goals	-.228	-.067

Note. Factor loadings > .30 are printed in bold.

math teachers explanation for a word problem because they always listen carefully. The other end of the factor is defined by the construct External Stable Uncontrollable in which success is attributed to external factors such as the teacher picks good math problems, the teacher is good or the problem was easy.

The second factor can be characterized as a dimension of confusion and anxiety. It is defined by classes with a higher percentage of students who are not confident, report uncertainty about why they succeed or fail (Unknown Control), report Anxiety about participating in the math class, and report a lack of Interest.

In summary, the factor analysis of MAQ CRT-type scores within the During Class setting revealed two factors. The first factor is defined by classes which include larger percentages of students who are not engaged in learning mathematical word problems. The second factor is defined by classes which include higher percentages of students who are confused and anxious about learning to do word problems.

In the Working With Other Students setting, the two factor solution accounted for 48% of the variance. Although an oblique rotation of the factors was also examined, it was similar to the orthogonal rotation and indicated the factors were essentially not correlated (r=.002). Table 10 presents the factor loadings following the orthogonal rotation. The first factor is characterized by a large percentage of classes with students who are confused and uncertain about working word problems in a group, suggested by the high loading of the construct Unknown Control on the first factor. The classes include higher percentages of students who work the problems because of external motivators, (External Performance Goals), for example, to please the teacher. The classes also tend to have higher percentages of students who are anxious, not confident and more likely to attribute their failure to external causes, such as the problem being too hard. The other end of the factor is defined by attributions for failure due to Internal Stable Controllable causes such as "If I cannot solve a word problem with other students, it is because we did not try as hard as we could."

The second factor is defined by classes with a larger percent of students who report low interest, who are NOT motivated by internal factors (Internal Learning Goals), and who report low value for working mathematics word problems with other students. The negative loading on the attribution variable External Stable Uncontrollable defines the opposite end of the dimension. These are classes with higher percentages of students who attribute their failure to external factors, such as a difficult problem. This

Table 10

Factor Loadings (Orthogonal Rotation) of the Percentage of Students in a Class With a CRT-type Score Indicating Need for Additional Instructional Work in the Working With Other Students Setting

(N=60)

Psychological Construct	Factor 1	Factor 2
Unknown Control	**.799**	-.219
External Performance Goals	**.706**	.051
Internal Stable Controllable	**-.582**	.082
Anxiety	**.547**	.164
External Stable Uncontrollable	**.526**	**-.468**
Confidence	**.482**	.217
Interest	.073	**.852**
Internal Learning Goals	.255	**.758**
Value	-.111	**.518**

Note. Factor loadings > .30 are printed in bold.

factor may thus be characterized as a value low value and disinterest dimension for math word problems.

In summary, two factors are identified based upon student CRT-type scores for the Working With Other Students statements. In one dimension classes includes larger percentages of students who are confused, anxious and require external motivation for group work. The second factor includes classes with higher percentages of students who are not personally interested in and do not value working word problems in a group.

Within the Homework setting, the two factor solution accounted for 48% of the variance. The two factors were correlated only .18. Table 11 presents the factor loadings following the orthogonal rotation. The first factor can be characterized by classes with a larger percentage of students attributing their failure to external causes and uncertainty about why they succeed or fail at working word problems for homework. They report lower confidence and lower value for doing homework word problems. This dimension can be described as identifying classes with larger percentages of students who do not believe they can succeed in Homework and are not taking responsibility for their lack of success.

The second factor has the highest loadings on the motivation Internal Learning Goals and on the Interest variable. The dimension can be characterized as low caring about working homework word problems. In addition to not being motivated by internal causes and not reporting an interest in working word problems for homework, students do not attribute their success to their effort, and they report low value for homework word problems. Factor 2 appears to characterize classes with higher percentages of students who do not believe they derived any learning benefit from doing their homework word problems.

The factor analysis of the Homework statements suggests there are two dimensions. The first identifies classes with higher percentages of students who are not confident about doing homework word problems. The second factor identifies classes with higher percentages of students who believed they learn little from doing their math homework word problems.

REVISION OF THE MATHEMATICS ASSESSMENT QUESTIONNAIRE

The Mathematics Assessment Questionnaire was developed for use by teachers and students. It was administered to 1737 students in grades seven, eight and nine in the fall of 1988. Based upon a review of analyses of these data, four items were identified for revision. The alpha reliability

Table 11

Factor Loadings (Orthogonal Rotation) of the Percentage of Students in a Class With a CRT-type Score Indicating Need for Additional Instructional Work in the Homework Setting

(N=60)

Psychological Construct	Factor 1	Factor 2
External Stable Uncontrollable	**.823**	-.049
Unknown Control	**.821**	.010
Confidence	**.691**	.203
Internal Learning Goals	-.123	**.918**
Interest	-.205	**.713**
Internal Stable Controllable	.265	**.557**
Value	**.415**	**.502**
External Performance Goals	.201	.287
Anxiety	.282	.024

Note. Factor loadings > .30 are printed in bold.

coefficients of the three-item clusters, presented in Table 3, indicate a lack of internal consistency within two clusters: Interest - During Class, and External Performance Goals - During Class.

In addition, the three-item cluster Internal Learning Goals for Homework needed revision (one item was dropped from scoring in all earlier analyses). Examiration of the frequency distributions, change in the reliability estimate when items were dropped, and the content of the individual statements helped guide the decision about which items should be rewritten. To help in rewriting the statements, the statements assessing the same construct were examined across all three activity settings.

In the During Class setting three items were rewritten:

INTEREST

Original MAQ I get bored when other students are working word problems on the board in math class.

Revised MAQ I get bored when working word problems in math class.

EXTERNAL PERFORMANCE GOALS

Original MAQ I volunteer to do a word problem on the board if I think it will help my grade.

Revised MAQ I only volunteer to answer word problems in math class if it will help my grade.

EXTERNAL PERFORMANCE GOALS

Original MAQ I pay attention when my teacher explains word problems if I know I will have a test on them.

Revised MAQ I only ask my math teacher questions about math word problems to help my grade.

The construct Internal Learning Goal within the Homework setting included only two items which statistically functioned in the expected way. Therefore, a third item was written for this construct in the Homework setting.

INTERNAL LEARNING GOALS

Revised MAQ I like to do word problems for homework because I can learn something by doing them.

Table 12

Alpha Reliability Coefficients for MAQ and MAQ With Revised Statements

Psychological Construct	Revised MAQ (n=43)	MAQ (n=1737)
	DURING CLASS	
Value	.537	.500
*Interest	.529	.335
Confidence	.731	.548
Anxiety	.601	.576
Internal Learning Goals	.579	.710
*External Performance Goals	.553	.203
Internal Stable Controllable	.499	.620
*Internal Stable Uncontrollable	.662	.593
External Stable Uncontrollable	.267	.418
Unknown Control	.659	.683

Table 12 (continued)

Psychological Construct	Revised MAQ (n=43)	MAQ (n=1737)
	HOMEWORK	
Value	-.183	.483
Interest	.831	.725
Confidence	.638	.611
Anxiety	.510	.451
* Internal Learning Goals	.715	.386
External Performance Goals	.266	.543
Internal Stable Controllable	.420	.605
Internal Stable Uncontrollable	.685	.730
External Stable Uncontrollable	.643	.603
Unknown	.736	.661

Note: Constructs with an asterisk indicate the three-item cluster includes revised items.

The affective belief, motivation and attribution MAQ statements in the During Class and Homework setting, with the revised statements included, were administered to 52 seventh grade students in two classes in the fall 1990. Items were presented in the same format and order as they appear in the MAQ. Although the school which these students attended participated in the larger study, none of the students had previously completed the MAQ. Table 12 presents the alpha reliability coefficients for the MAQ with the revised statements as well as the estimates based upon the original MAQ. The coefficients based upon administration of the revised statements increased sufficiently to warrant their inclusion in the MAQ. It is unclear why the estimate for Value in the Homework setting decreased since the statements were not changed. The difference can be accounted for by random error in the data. In addition to examining student responses to the revised statements, an alternative wording for the attribution Internal Stable Uncontrollable in the During Class setting was examined. This is discussed in Appendix I.

Need indicators for the four revised items are established using the same criteria as the originally worded items. Need indicators for the revised items for the Mathematics Assessment Questionnaire are determined as follows:

INTEREST - DURING CLASS (Statement number 44)

I get bored when working word problems in math class.

A response of VERY TRUE or TRUE indicates possible need for follow-up work -- the student is NOT interested.

EXTERNAL PERFORMANCE GOALS - DURING CLASS
(Statement number 40)

I only volunteer to answer questions about word problems in math class if it will help my grade.

A response of VERY TRUE or TRUE indicates possible need for follow-up work -- the student is motivated to answer questions by external factors, helping my grade.

EXTERNAL PERFORMANCE GOALS - DURING CLASS
(Statement number 36)

I only ask my math teacher questions about math word problems to help my grade.

A response of VERY TRUE or TRUE indicates possible need for

follow-up work -- the student is motivated to ask questions by external factors, helping my grade.

INTERNAL LEARNING GOALS - HOMEWORK (Statement number 15)

> I like to do word problems for homework because I can learn something by doing them.

A response of NOT AT ALL TRUE or NOT VERY TRUE indicates possible need for follow-up work -- the student is NOT motivated to do homework word problems by internal factors, learning something.

For further use of the MAQ, the revised items are replaced for the original statements. Since the direction of the wording (and scoring of need indicators) did not change from the original version, the scoring of the need indicators also did not change. Thus, Table 1, which presents the revised a list of item numbers for each category and the direction in which they are counted to determine if they meet the criteria of need, is also appropriate for the revised MAQ.

REFERENCE LIST

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APPENDIX I

A Comparison of Two Data Sets With the Internal Stable Uncontrollable Statements Differing for an Attribution of Success or Failure Within the During Class Activity Setting

In the Mathematics Assessment Questionnaire, statements written to assess the attribution Internal Stable Uncontrollable focused upon either success or failure at problem solving. Successful problem solving was examined in two settings:

During class (i.e., If I can follow my teacher's explanation for word problems, it is because I am smart), and

Working With Other Students (i.e., If I solve a word problem working with other students, it is because we think mathematically.)

Failure at problem solving is examined in the third setting:

Homework (i.e., If I am not able to do my next math homework word problems, it is because I am not clever in math.)

Regardless of whether the item focuses upon success or failure a student would be identified as possibly needing additional instructional work if student responds VERY TRUE or TRUE. For example, if success or failure is attributed to ability -- something which is uncontrollable, the student is identified. Thus, a response of VERY TRUE or TRUE would indicate the need for follow-up work. Students could respond to 0, 1, 2 or 3 statements for each psychological construct within each setting in a way to indicate the need for additional instructional work. Examination of student responses suggests that differences are found depending upon whether success or failure is examined. Responses of 1737 students revealed greater differences between settings than would be expected, with greatest consistency between the During Class and Working With Other Students settings - both of which assess attributions for success.

In the During Class setting (success) students responded to an average of 1.4 items, and in the working with others 1.2 items. However, in the Homework setting, in which failure at problem solving was the focus, students responded in a way to indicate need to an average of .36 items.

The percentage of students in 60 classes identified as needing additional work also varied by setting. An average

of 45% of the class was identified based upon responses to the During Class statements, 39% of the class based upon the Working With Others, but only 9% based upon the Homework statements. Even more striking are the number of classes with more than 20% of the students responding in a way to indicate the need for follow-up work. In the During Class setting 59 out of 60 classes included over 20% of the students. In the Working With Others setting, the number was 58 out of 60 classes. However, in the Homework setting only 3 out of the 60 classes were identified.

Coefficient alpha reliabilities of responses to three attributions items in the cluster based on the dichotomized statement scores revealed acceptable coefficients .515 During Class, .556 (Working With Others) and .639 (Homework). Therefore, the differences could not be attributed to responses being more consistent within one setting than in another.

The results of the analyses discussed above suggested that different results are found when success is assessed in contrast to failure. Thus, a small-scale study was conducted in the fall 1990 to help identify differences. The ISU statements in the During Classroom were rewritten to assess failure rather than success. The new and revised items are presented below.

ORIGINAL WORDING	REVISED WORDING
DURING CLASS	
If I correctly answer a question my teacher asks about word problems, it is because I have the ability to do math.	If I cannot answer a question my teacher asks about word problems, it is because I do not have the ability to do math.
If I can follow my teacher's explanation for word problems, it is because I am smart.	If I cannot follow my teacher's explanation for word problems, it is because I am not smart.
If I can solve a word problem the teacher puts on the board, it is because I think mathematically.	If I cannot solve a word problem the teacher puts on the board, it is because I cannot think mathematically.

These revised statements, along with the other

affective beliefs, motivation and attribution statements in the During Class and Homework setting were administered om fall 1990 to 52 seventh grade students in two classes. Although the school which these students attended participated in the larger study, none of the students had previously completed the MAQ.

Based upon the revised MAQ statements, the mean number of items which students responded to in a way to contribute to the need indicator was .54 for the During Class setting and .40 for the Homework setting. Thus, the means for the Homework setting, with items which were not changed, did not differ greatly from the results based upon the 1737 students. However, when success at problem solving was replaced with failure in the During Class setting, the average number of items decreased greatly. The results were similar to those for the Homework setting. This suggests that identifying statements which attribute success to ability and statements which attribute failure to ability are assessing different constructs for adolescents.

APPENDIX II

Affective, Motivational and Attributional Statements: Dichotomized Statement Scores

Appendix II presents the number and percentage of students with a dichotomized statement score which is keyed in the direction to contribute to the CRT-type scores. The numbers and percentages of missing responses to each statement are also indicated. The numbers and percentages of students with scores of 1 are based upon the total number of students receiving a score on the item and does not include students with missing responses. Data are from the fall 1988 sample of 1737 students in grades seven through nine.

Table 1

Number and Percentage of 1737 Students in Grades 7 - 9 With a Dichotomized Statement Score of 1 (Contributing to CRT-type Need Indicator) by Activity Setting

	Score of 1		Missing			Score of 1		Missing	
Statement Number	N	%	N	%	Statement Number	N	%	N	%
DURING CLASS:									
During20	251	15	14	.8	During35	557	32	29	2.0
During21	346	20	40	2.0	During36	1269	73	36	2.0
During22[a]					During37[a]				
During23	770	44	30	2.0	During38	237	14	39	2.0
During24	504	29	26	2.0	During39	435	25	25	1.0
During25	189	11	43	3.0	During40	793	46	26	2.0
During26	479	28	22	1.0	During41[a]				
During27	419	24	24	1.0	During42	331	19	12	.7
During28	146	8	26	2.0	During43	283	16	18	1.0
During29	344	20	19	1.0	During44	470	27	20	1.0
During30	576	33	14	.8	During45	289	17	20	1.0
During31	361	21	28	2.0	During46	326	19	29	2.0
During32	191	11	20	1.0	During47	238	14	23	1.0
During33	211	12	26	2.0	During48	178	10	17	1.0
During34	444	26	27	2.0	During49	650	37	14	.8
WORKING WITH OTHER STUDENTS:									
WithO24	336	19	15	1.0	WithO39	408	24	38	2.0
WithO25	297	17	27	2.0	WithO40	321	19	40	2.0
WithO26[a]					WithO41	767	44	48	3.0
WithO27	225	13	31	2.0	WithO42	233	13	46	3.0
WithO28	374	22	48	3.0	WithO43	454	26	44	3.0
WithO29	270	16	30	2.0	WithO44	680	39	33	2.0
WithO30	344	20	27	2.0	WithO45	368	21	29	2.0
WithO31	401	23	25	1.0	WithO46	232	13	24	1.0
WithO32	585	34	36	2.0	WithO47	283	16	35	2.0
WithO33	310	18	25	1.0	WithO48	242	14	36	2.0
WithO34	567	33	24	1.0	WithO49	877	50	42	2.0
WithO35	209	12	27	2.0	WithO50	446	26	36	2.0
WithO36	603	35	33	2.0	WithO51	276	16	35	2.0
WithO37	169	10	28	2.0	WithO52[a]				
WithO38[a]					WithO53	590	34	20	1.0

TABLE 1 (Continued)

Statement Number	Score of 1 N	Score of 1 %	Missing N	Missing %	Statement Number	Score of 1 N	Score of 1 %	Missing N	Missing %
HOMEWORK:									
HomeWk10[a]					HomeWk25	315	18	23	1.0
HomeWk11	300	17	21	1.0	HomeWk26	391	23	17	1.0
HomeWk12	347	20	40	2.0	HomeWk27	359	21	31	2.0
HomeWk13	263	15	30	2.0	HomeWk28	694	40	22	1.0
HomeWk14	771	44	21	1.0	HomeWk29	797	46	36	2.0
HomeWk15[b]					HomeWk30	349	20	27	2.0
HomeWk16[a]					HomeWk31	505	29	31	2.0
HomeWk17	212	12	18	1.0	HomeWk32	551	32	28	2.0
HomeWk18	746	43	26	2.0	HomeWk33	587	34	19	1.0
HomeWk19	339	20	25	1.0	HomeWk34	640	35	18	1.0
HomeWk20	382	22	23	1.0	HomeWk35	241	14	8	.5
HomeWk21	229	13	19	1.0	HomeWk36	340	20	10	.6
HomeWk22	197	11	10	.6	HomeWk37	258	15	32	2.0
HomeWk23	564	33	17	1.0	HomeWk38[1]				
HomeWk24	264	15	25	1.0	HomeWk39	359	21	16	.9

[a] Items which assess the attribution Internal Stable Uncontrollable are not assigned a dichotomized statement score.

Table 2

Number and Percentage of Students by Grade With a Dichotomized Statement Score of 1 (Contributing to CRT-type Need Indicator) by Grade During Class Activity Setting

	Grade 7 (N=600)		Grade 8 (N=602)		Grade 9 (N=535)		Total (N=1737)	
	N	%	N	%	N	%	N	%
During20	71	12	87	15	93	17	251	15
During21	162	27	86	14	98	18	346	20
During22[a]								
During23	306	51	263	44	201	37	770	44
During24	161	27	166	28	177	33	504	29
During25	81	14	58	10	50	9	189	11
During26	163	27	148	25	168	31	479	28
During27	158	26	133	22	128	24	419	24
During28	50	8	44	7	52	10	146	8
During29	127	21	117	19	100	19	344	20
During30	176	29	203	34	197	37	576	33
During31	149	25	111	18	101	19	361	21
During32	60	10	67	11	64	12	191	11
During33	74	12	60	10	77	14	211	12
During34	108	18	164	27	172	32	444	26
During35	168	28	189	31	200	37	557	32
During36	432	72	443	74	394	74	1269	73
During37[a]								
During38	68	11	82	14	87	16	237	14
During39	160	27	150	25	125	23	435	25
During40	254	42	260	43	279	52	793	46
During41[a]								
During42	99	17	132	22	100	19	331	19
During43	96	16	109	18	78	15	283	16
During44	178	30	144	24	148	28	470	27
During45	83	14	105	17	101	19	289	17
During46	135	23	105	17	86	16	326	19
During47	72	12	91	15	75	14	238	14
During48	85	14	40	7	53	10	178	10
During49	192	32	225	37	233	44	650	37

[a] Items which assess the attribution Internal Stable Uncontrollable are not assigned a dichotomized statement score.

Table 3

Number and Percentage of Students by Grade With a Dichotomized Statement Score of 1 (Contributing to CRT-type Need Indicator) Working With Other Students Activity Setting

	Grade 7 (N=600)		Grade 8 (N=602)		Grade 9 (N=535)		Total (N=1737)	
	N	%	N	%	N	%	N	%
With024	119	20	114	19	103	19	336	19
With025	125	21	94	16	78	15	297	17
With026[a]								
With027	86	14	74	12	65	12	225	13
With028	145	24	121	20	108	20	374	22
With029	107	18	84	14	79	15	270	16
With030	116	19	116	19	112	21	344	20
With031	150	25	134	22	117	22	401	23
With032	168	28	215	36	202	38	585	34
With033	109	18	106	18	95	18	310	18
With034	179	30	216	36	172	32	567	33
With035	86	14	59	10	64	12	209	12
With036	201	34	204	34	198	37	603	35
With037	73	12	54	9	42	8	169	10
With038[a]								
With039	138	23	139	23	131	25	408	24
With040	117	20	111	18	93	17	321	19
With041	269	45	273	45	225	42	767	44
With042	98	17	69	12	66	12	233	13
With043	181	30	141	23	132	25	454	26
With044	219	37	231	38	230	43	680	39
With045	135	23	136	23	97	18	368	21
With046	89	15	64	11	79	15	232	13
With047	106	18	89	15	88	16	283	16
With048	104	18	66	11	72	14	242	14
With049	305	51	302	50	270	50	877	50
With050	154	26	144	24	148	28	446	26
With051	100	17	101	17	75	14	276	16
With052[a]								
With053	208	35	194	32	188	35	590	34

[a] Items which assess the attribution Internal Stable Uncontrollable are not assigned a dichotomized statement score.

Table 4

Number and Percentage of Students by Grade With a Dichotomized Statement Score of 1 (Contributing to CRT-type Need Indicator) Homework Activity Setting

	Grade 7 (N=600)		Grade 8 (N=602)		Grade 9 (N=535)		Total (N=1737)	
	N	%	N	%	N	%	N	%
HomeWk10[a]								
HomeWk11	122	20	96	16	82	15	300	17
HomeWk12	126	21	115	19	106	20	347	20
HomeWk13	99	17	91	15	73	14	263	15
HomeWk14	247	41	270	45	254	48	771	44
HomeWk15[b]								
HomeWk16[a]								
HomeWk17	80	13	72	12	60	11	212	12
HomeWk18	226	38	256	43	264	49	746	43
HomeWk19	132	22	103	17	104	19	339	20
HomeWk20	126	21	129	21	127	24	382	22
HomeWk21	79	13	88	15	62	12	229	13
HomeWk22	61	10	66	11	70	13	197	11
HomeWk23	182	30	194	32	188	35	564	33
HomeWk24	118	20	80	13	66	12	264	15
HomeWk25	104	17	114	19	97	18	315	18
HomeWk26	134	22	118	20	139	26	391	23
HomeWk27	130	22	119	20	110	21	359	21
HomeWk28	229	38	232	39	233	44	694	40
HomeWk29	280	47	271	45	246	46	797	46
HomeWk30	142	24	106	18	101	19	349	20
HomeWk31	165	28	166	28	174	33	505	29
HomeWk32	196	33	184	31	171	32	551	32
HomeWk33	205	34	209	35	173	32	587	34
HomeWk34	215	36	222	37	203	38	640	35
HomeWk35	87	15	86	14	68	13	241	14
HomeWk36	133	22	119	20	88	16	340	20
HomeWk37	86	14	80	13	92	17	258	15
HomeWk38[a]								
HomeWk39	146	24	113	19	100	19	359	21

[a] Items which assess the attribution Internal Stable Uncontrollable are not assigned a dichotomized statement score.

APPENDIX III

Appendix III presents the distributions for the number and percent of students within 60 classes needing follow-up for each construct within each setting. Sixty classes (of 107) had at least 15 students who completed all statements of the Mathematics Assessment Questionnaire. The variable of "percentage of students needing follow-up" is based on students in these 60 classes. For example, in the first distribution, VALUE- DURING CLASS, there were nine classes (15% of all classes) that did not have any student with a CRT-type score of 2 or 3, suggesting a need for teacher follow-up. There was one class where 36% of the students meet this criteria.

VALUE -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	9	15.0	15.0
2.44	1	1.7	16.7
4.00	1	1.7	18.3
4.55	1	1.7	20.0
5.00	1	1.7	21.7
5.26	1	1.7	23.3
5.88	3	5.0	28.3
7.14	1	1.7	30.0
7.41	1	1.7	31.7
8.00	2	3.3	35.0
8.33	1	1.7	36.7
9.09	2	3.3	40.0
9.52	2	3.3	43.3
10.00	3	5.0	48.3
10.53	1	1.7	50.0
12.50	2	3.3	53.3
13.04	1	1.7	55.0
13.33	1	1.7	56.7
14.29	1	1.7	58.3
14.81	1	1.7	60.0
15.38	1	1.7	61.7
15.79	4	6.7	68.3
16.67	1	1.7	70.0
17.39	2	3.3	73.3
17.86	1	1.7	75.0
18.18	1	1.7	76.7
18.75	1	1.7	78.3
19.23	1	1.7	80.0
20.00	1	1.7	81.7
20.83	2	3.3	85.0
22.22	1	1.7	86.7
23.81	1	1.7	88.3
24.00	1	1.7	90.0
24.14	1	1.7	91.7
25.00	1	1.7	93.3
28.57	1	1.7	95.0
31.58	1	1.7	96.7
33.33	1	1.7	98.3
36.36	1	1.7	100.0
TOTAL	60	100.0	

MEAN	12.512	STD ERR	1.164	MEDIAN	11.513
MODE	.000	STD DEV	9.018	VARIANCE	81.324
KURTOSIS	-.121	S E KURT	.608	SKEWNESS	.522
S E SKEW	.309	RANGE	36.364	MINIMUM	.000
MAXIMUM	36.364	SUM	750.707		

INTEREST -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
9.09	1	1.7	1.7
10.00	1	1.7	3.3
10.53	2	3.3	6.7
11.76	1	1.7	8.3
12.00	2	3.3	11.7
12.50	1	1.7	13.3
13.33	1	1.7	15.0
14.63	1	1.7	16.7
14.81	1	1.7	18.3
15.00	1	1.7	20.0
16.00	1	1.7	21.7
16.67	1	1.7	23.3
17.65	1	1.7	25.0
18.18	1	1.7	26.7
19.05	1	1.7	28.3
20.00	2	3.3	31.7
20.83	1	1.7	33.3
21.74	1	1.7	35.0
22	1	1.7	36.7
22.73	3	5.0	41.7
23.53	2	3.3	45.0
23.81	2	3.3	48.3
24.14	1	1.7	50.0
25.00	5	8.3	58.3
26.32	1	1.7	60.0
27.27	1	1.7	61.7
28.57	2	3.3	65.0
29.41	1	1.7	66.7
29.63	1	1.7	68.3
30.00	1	1.7	70.0
30.43	2	3.3	73.3
31.25	1	1.7	75.0
31.58	2	3.3	78.3
33.33	1	1.7	80.0
34.62	1	1.7	81.7
36.00	2	3.3	85.0
37.50	1	1.7	86.7
38.46	1	1.7	88.3
39.13	1	1.7	90.0
39.29	1	1.7	91.7
40.00	1	1.7	93.3
42.11	1	1.7	95.0
47.37	1	1.7	96.7
54.17	1	1.7	98.3
54.55	1	1.7	100.0
TOTAL	60	100.0	

MEAN	25.635	STD ERR	1.361	MEDIAN	24.569
MODE	25.000	STD DEV	10.540	VARIANCE	111.099
KURTOSIS	.368	S E KURT	.608	SKEWNESS	.658
S E SKEW	.309	RANGE	45.455	MINIMUM	9.091
MAXIMUM	54.545	SUM	1538.088		

CONFIDENCE - DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	12	20.0	20.0
2.44	1	1.7	21.7
3.33	1	1.7	23.3
4.00	2	3.3	26.7
4.17	1	1.7	28.3
4.35	3	5.0	33.3
4.55	3	5.0	38.3
5.00	2	3.3	41.7
5.26	2	3.3	45.0
5.56	1	1.7	46.7
5.88	3	5.0	51.7
6.25	1	1.7	53.3
6.67	1	1.7	55.0
7.14	2	3.3	58.3
7.69	1	1.7	60.0
8.00	2	3.3	63.3
8.33	3	5.0	68.3
9.09	2	3.3	71.7
10.34	1	1.7	73.3
10.53	2	3.3	76.7
11.11	1	1.7	78.3
12.00	1	1.7	80.0
12.50	1	1.7	81.7
14.29	1	1.7	83.3
15.00	1	1.7	85.0
15.79	1	1.7	86.7
17.39	1	1.7	88.3
17.86	1	1.7	90.0
18.18	1	1.7	91.7
18.75	1	1.7	93.3
20.00	1	1.7	95.0
23.08	1	1.7	96.7
23.53	1	1.7	98.3
29.17	1	1.7	100.0
TOTAL	60	100.0	

MEAN	7.708	STD ERR	.870	MEDIAN	5.882
MODE	.000	STD DEV	6.737	VARIANCE	45.391
KURTOSIS	.983	S E KURT	.608	SKEWNESS	1.095
S E SKEW	.309	RANGE	29.167	MINIMUM	.000
MAXIMUM	29.167	SUM	462.461		

ANXIETY -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	1	1.7	1.7
3.57	1	1.7	3.3
3.70	1	1.7	5.0
5.26	1	1.7	6.7
5.88	3	5.0	11.7
9.09	1	1.7	13.3
9.52	2	3.3	16.7
10.00	1	1.7	18.3
10.71	1	1.7	20.0
11.11	1	1.7	21.7
11.54	1	1.7	23.3
12.00	2	3.3	26.7
12.50	1	1.7	28.3
13.33	1	1.7	30.0
13.64	2	3.3	33.3
14.29	1	1.7	35.0
15.00	1	1.7	36.7
15.79	1	1.7	38.3
16.00	1	1.7	40.0
16.67	2	3.3	43.3
18.42	1	1.7	45.0
18.52	1	1.7	46.7
19.05	1	1.7	48.3
20.00	3	5.0	53.3
20.83	1	1.7	55.0
21.05	1	1.7	56.7
22.73	2	3.3	60.0
23.53	1	1.7	61.7
25.00	5	8.3	70.0
26.09	4	6.7	76.7
26.32	2	3.3	80.0
26.83	1	1.7	81.7
29.17	1	1.7	83.3
31.25	1	1.7	85.0
31.58	1	1.7	86.7
31.82	1	1.7	88.3
35.29	1	1.7	90.0
38.46	1	1.7	91.7
40.00	1	1.7	93.3
41.38	1	1.7	95.0
44.00	1	1.7	96.7
45.00	1	1.7	98.3
45.45	1	1.7	100.0
TOTAL	60	100.0	

MEAN	20.371	STD ERR	1.410	MEDIAN	20.000
MODE	25.000	STD DEV	10.924	VARIANCE	119.328
KURTOSIS	-.189	S E KURT	.608	SKEWNESS	.480
S E SKEW	.309	RANGE	45.455	MINIMUM	.000
MAXIMUM	45.455	SUM	1222.271		

INTERNAL LEARNING GOALS -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	1	1.7	1.7
4.00	1	1.7	3.3
4.17	1	1.7	5.0
5.88	3	5.0	10.0
6.67	1	1.7	11.7
7.41	1	1.7	13.3
9.09	1	1.7	15.0
9.52	1	1.7	16.7
9.76	1	1.7	18.3
10.00	3	5.0	23.3
10.71	2	3.3	26.7
12.50	2	3.3	30.0
13.04	1	1.7	31.7
13.33	1	1.7	33.3
13.64	1	1.7	35.0
13.89	1	1.7	36.7
14.29	3	5.0	41.7
15.00	1	1.7	43.3
15.79	2	3.3	46.7
16.00	1	1.7	48.3
16.67	3	5.0	53.3
17.39	2	3.3	56.7
17.65	2	3.3	60.0
18.18	2	3.3	63.3
20.00	2	3.3	66.7
20.83	1	1.7	68.3
21.05	1	1.7	70.0
21.74	1	1.7	71.7
22.73	3	5.0	76.7
24.00	2	3.3	80.0
24.14	1	1.7	81.7
25.00	2	3.3	85.0
26.32	2	3.3	88.3
26.92	1	1.7	90.0
28.57	1	1.7	91.7
28.95	1	1.7	93.3
30.77	1	1.7	95.0
33.33	1	1.7	96.7
36.84	1	1.7	98.3
40.74	1	1.7	100.0
TOTAL	60	100.0	

MEAN	17.219	STD ERR	1.079	MEDIAN	16.667
MODE	5.882	STD DEV	8.357	VARIANCE	69.840
KURTOSIS	.206	S E KURT	.608	SKEWNESS	.470
S E SKEW	.309	RANGE	40.741	MINIMUM	.000
MAXIMUM	40.741	SUM	1033.169		

EXTERNAL PERFORMANCE GOALS -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
11.54	1	1.7	1.7
15.79	2	3.3	5.0
20.00	1	1.7	6.7
20.83	1	1.7	8.3
24.00	2	3.3	11.7
25.00	4	6.7	18.3
26.32	1	1.7	20.0
29.17	1	1.7	21.7
30.43	1	1.7	23.3
33.33	2	3.3	26.7
34.48	1	1.7	28.3
34.78	1	1.7	30.0
35.29	1	1.7	31.7
35.71	2	3.3	35.0
36.00	1	1.7	36.7
36.36	1	1.7	38.3
38.46	1	1.7	40.0
40.00	4	6.7	46.7
40.74	1	1.7	48.3
41.18	2	3.3	51.7
41.67	1	1.7	53.3
42.11	2	3.3	56.7
42.86	1	1.7	58.3
43.75	1	1.7	60.0
45.45	1	1.7	61.7
46.43	1	1.7	63.3
46.67	2	3.3	66.7
47.06	1	1.7	68.3
47.22	1	1.7	70.0
47.37	1	1.7	71.7
48.00	1	1.7	73.3
50.00	3	5.0	78.3
51.85	1	1.7	80.0
52.00	1	1.7	81.7
52.38	1	1.7	83.3
52.63	1	1.7	85.0
56.25	1	1.7	86.7
56.52	1	1.7	88.3
57.14	1	1.7	90.0
59.09	1	1.7	91.7
60.98	1	1.7	93.3
63.64	1	1.7	95.0
64.71	1	1.7	96.7
68.18	1	1.7	98.3
73.91	1	1.7	100.0
TOTAL	60	100.0	

MEAN	41.018	STD ERR	1.746	MEDIAN	41.176
MODE	25.000	STD DEV	13.527	VARIANCE	182.985
KURTOSIS	-.200	S E KURT	.608	SKEWNESS	.039
S E SKEW	.309	RANGE	62.375	MINIMUM	11.538
MAXIMUM	73.913	SUM	2461.074		

INTERNAL STABLE CONTROLLABLE -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	10	16.7	16.7
4.17	2	3.3	20.0
4.35	2	3.3	23.3
4.55	1	1.7	25.0
5.00	1	1.7	26.7
5.26	1	1.7	28.3
5.56	1	1.7	30.0
5.88	2	3.3	33.3
6.25	1	1.7	35.0
6.67	1	1.7	36.7
7.41	1	1.7	38.3
8.00	1	1.7	40.0
8.33	1	1.7	41.7
9.09	3	5.0	46.7
9.52	2	3.3	50.0
10.00	1	1.7	51.7
10.53	2	3.3	55.0
10.71	4	6.7	61.7
11.11	1	1.7	63.3
12.00	2	3.3	66.7
12.50	4	6.7	73.3
13.04	1	1.7	75.0
13.16	1	1.7	76.7
13.64	2	3.3	80.0
13.79	1	1.7	81.7
15.00	1	1.7	83.3
15.38	1	1.7	85.0
15.79	1	1.7	86.7
16.00	1	1.7	88.3
19.05	1	1.7	90.0
19.23	1	1.7	91.7
20.00	1	1.7	93.3
21.05	1	1.7	95.0
22.22	1	1.7	96.7
26.32	1	1.7	98.3
27.27	1	1.7	100.0
TOTAL	60	100.0	

MEAN	9.596	STD ERR	.860	MEDIAN	9.762
MODE	.000	STD DEV	6.662	VARIANCE	44.376
KURTOSIS	.117	S E KURT	.608	SKEWNESS	.466
S E SKEW	.309	RANGE	27.273	MINIMUM	.000
MAXIMUM	27.273	SUM	575.740		

EXTERNAL STABLE UNCONTROLLABLE -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	1	1.7	1.7
3.70	1	1.7	3.3
4.00	1	1.7	5.0
5.26	1	1.7	6.7
7.14	1	1.7	8.3
8.00	1	1.7	10.0
8.33	2	3.3	13.3
8.70	1	1.7	15.0
9.52	1	1.7	16.7
10.00	1	1.7	18.3
10.53	1	1.7	20.0
11.76	1	1.7	21.7
12.00	1	1.7	23.3
12.50	1	1.7	25.0
13.04	1	1.7	26.7
13.33	2	3.3	30.0
13.64	1	1.7	31.7
14.29	1	1.7	33.3
14.81	1	1.7	35.0
15.38	1	1.7	36.7
15.79	1	1.7	38.3
16.00	2	3.3	41.7
16.67	2	3.3	45.0
17.07	1	1.7	46.7
17.65	2	3.3	50.0
18.18	2	3.3	53.3
18.52	1	1.7	55.0
19.05	1	1.7	56.7
19.23	1	1.7	58.3
20.00	4	6.7	65.0
20.69	1	1.7	66.7
21.05	1	1.7	68.3
21.74	1	1.7	70.0
23.53	1	1.7	71.7
25.00	6	10.0	81.7
27.27	2	3.3	85.0
31.25	1	1.7	86.7
33.33	1	1.7	88.3
34.78	1	1.7	90.0
35.29	1	1.7	91.7
36.84	1	1.7	93.3
38.10	1	1.7	95.0
40.91	1	1.7	96.7
50.00	1	1.7	98.3
52.63	1	1.7	100.0
TOTAL	60	100.0	

MEAN	19.483	STD ERR	1.378	MEDIAN	17.914
MODE	25.000	STD DEV	10.675	VARIANCE	113.946
KURTOSIS	1.341	S E KURT	.608	SKEWNESS	1.004
S E SKEW	.309	RANGE	52.632	MINIMUM	.000
MAXIMUM	52.632	SUM	1168.964		

UNKNOWN CONTROL -- DURING CLASS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	12	20.0	20.0
2.63	1	1.7	21.7
3.33	1	1.7	23.3
3.45	1	1.7	25.0
3.57	1	1.7	26.7
3.85	1	1.7	28.3
4.00	2	3.3	31.7
4.55	3	5.0	36.7
4.76	2	3.3	40.0
5.00	1	1.7	41.7
5.88	1	1.7	43.3
6.25	1	1.7	45.0
7.41	1	1.7	46.7
8.00	1	1.7	48.3
8.33	1	1.7	50.0
9.09	3	5.0	55.0
9.52	1	1.7	56.7
9.76	1	1.7	58.3
10.00	1	1.7	60.0
10.53	3	5.0	65.0
10.71	1	1.7	66.7
11.76	2	3.3	70.0
12.50	1	1.7	71.7
13.04	1	1.7	73.3
13.64	1	1.7	75.0
14.29	2	3.3	78.3
14.81	1	1.7	80.0
15.79	1	1.7	81.7
16.00	1	1.7	83.3
16.67	1	1.7	85.0
18.75	2	3.3	88.3
20.00	1	1.7	90.0
21.74	3	5.0	95.0
23.08	1	1.7	96.7
26.32	1	1.7	98.3
29.17	1	1.7	100.0
TOTAL	60	100.0	

MEAN	9.059	STD ERR	.971	MEDIAN	8.712
MODE	.000	STD DEV	7.521	VARIANCE	56.567
KURTOSIS	-.218	S E KURT	.608	SKEWNESS	.676
S E SKEW	.309	RANGE	29.167	MINIMUM	.000
MAXIMUM	29.167	SUM	543.538		

VALUE -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	2	3.3	3.3
4.55	1	1.7	5.0
4.76	1	1.7	6.7
6.25	2	3.3	10.0
11.76	2	3.3	13.3
12.00	1	1.7	15.0
13.64	2	3.3	18.3
14.29	2	3.3	21.7
14.81	1	1.7	23.3
15.00	1	1.7	25.0
15.79	1	1.7	26.7
17.24	1	1.7	28.3
17.65	2	3.3	31.7
19.51	1	1.7	33.3
20.00	1	1.7	35.0
20.83	1	1.7	36.7
21.05	1	1.7	38.3
21.43	1	1.7	40.0
21.74	2	3.3	43.3
23.33	1	1.7	45.0
24.00	2	3.3	48.3
25.00	2	3.3	51.7
26.09	1	1.7	53.3
26.32	1	1.7	55.0
26.67	1	1.7	56.7
27.27	2	3.3	60.0
27.78	1	1.7	61.7
28.00	3	5.0	66.7
28.57	2	3.3	70.0
29.17	1	1.7	71.7
29.63	1	1.7	73.3
30.77	1	1.7	75.0
31.58	1	1.7	76.7
31.82	1	1.7	78.3
33.33	2	3.3	81.7
34.62	1	1.7	83.3
34.78	1	1.7	85.0
35.00	1	1.7	86.7
36.84	1	1.7	88.3
37.50	2	3.3	91.7
44.44	1	1.7	93.3
45.45	1	1.7	95.0
45.83	1	1.7	96.7
52.63	1	1.7	98.3
55.26	1	1.7	100.0
TOTAL	60	100.0	

MEAN	24.350	STD ERR	1.538	MEDIAN	25.000
MODE	28.000	STD DEV	11.914	VARIANCE	141.940
KURTOSIS	.231	S E KURT	.608	SKEWNESS	.235
S E SKEW	.309	RANGE	55.263	MINIMUM	.000
MAXIMUM	55.263	SUM	1460.991		

INTEREST -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	1	1.7	1.7
4.00	1	1.7	3.3
4.17	1	1.7	5.0
4.35	1	1.7	6.7
4.55	1	1.7	8.3
4.76	1	1.7	10.0
5.00	1	1.7	11.7
5.26	1	1.7	13.3
5.88	3	5.0	18.3
6.25	1	1.7	20.0
7.32	1	1.7	21.7
8.00	1	1.7	23.3
9.09	1	1.7	25.0
9.52	1	1.7	26.7
10.00	1	1.7	28.3
11.54	1	1.7	30.0
11.76	1	1.7	31.7
14.29	1	1.7	33.3
14.81	1	1.7	35.0
15.38	1	1.7	36.7
15.79	2	3.3	40.0
17.24	1	1.7	41.7
17.39	1	1.7	43.3
17.65	1	1.7	45.0
17.86	1	1.7	46.7
18.18	2	3.3	50.0
18.75	1	1.7	51.7
19.44	1	1.7	53.3
20.00	4	6.7	60.0
20.83	2	3.3	63.3
21.05	2	3.3	66.7
21.43	1	1.7	68.3
22.22	1	1.7	70.0
22.73	2	3.3	73.3
24.00	2	3.3	76.7
25.00	2	3.3	80.0
26.09	1	1.7	81.7
26.32	2	3.3	85.0
26.67	1	1.7	86.7
27.27	1	1.7	88.3
28.57	2	3.3	91.7
29.17	1	1.7	93.3
30.43	1	1.7	95.0
31.25	1	1.7	96.7
33.33	1	1.7	98.3
36.00	1	1.7	100.0
TOTAL	60	100.0	

MEAN	17.414	STD ERR	1.139	MEDIAN	18.466
MODE	20.000	STD DEV	8.825	VARIANCE	77.878
KURTOSIS	-.896	S E KURT	.608	SKEWNESS	-.107
S E SKEW	.309	RANGE	36.000	MINIMUM	.000
MAXIMUM	36.000	SUM	1044.839		

CONFIDENCE -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	10	16.7	16.7
2.78	1	1.7	18.3
3.57	1	1.7	20.0
3.70	1	1.7	21.7
4.00	1	1.7	23.3
4.17	1	1.7	25.0
4.35	2	3.3	28.3
4.88	1	1.7	30.0
5.00	2	3.3	33.3
5.26	2	3.3	36.7
5.88	1	1.7	38.3
6.25	1	1.7	40.0
6.67	2	3.3	43.3
7.14	2	3.3	46.7
7.41	1	1.7	48.3
7.69	1	1.7	50.0
8.00	2	3.3	53.3
8.33	3	5.0	58.3
8.70	2	3.3	61.7
9.09	1	1.7	63.3
9.52	1	1.7	65.0
10.00	1	1.7	66.7
10.34	1	1.7	68.3
10.53	3	5.0	73.3
11.54	1	1.7	75.0
11.76	1	1.7	76.7
12.50	2	3.3	80.0
13.64	3	5.0	85.0
15.79	1	1.7	86.7
16.00	1	1.7	88.3
16.67	1	1.7	90.0
17.65	1	1.7	91.7
17.86	1	1.7	93.3
18.18	1	1.7	95.0
20.00	1	1.7	96.7
22.73	2	3.3	100.0
TOTAL	60	100.0	

MEAN	8.215	STD ERR	.767	MEDIAN	7.846
MODE	.000	STD DEV	5.942	VARIANCE	35.307
KURTOSIS	-.163	S E KURT	.608	SKEWNESS	.536
S E SKEW	.309	RANGE	22.727	MINIMUM	.000
MAXIMUM	22.727	SUM	492.909		

ANXIETY -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	2	3.3	3.3
2.63	1	1.7	5.0
3.57	1	1.7	6.7
4.00	1	1.7	8.3
4.17	2	3.3	11.7
4.55	1	1.7	13.3
4.76	1	1.7	15.0
5.00	3	5.0	20.0
5.56	1	1.7	21.7
5.88	1	1.7	23.3
7.69	1	1.7	25.0
8.70	1	1.7	26.7
9.09	3	5.0	31.7
10.00	2	3.3	35.0
10.53	2	3.3	38.3
10.71	2	3.3	41.7
11.11	1	1.7	43.3
11.76	2	3.3	46.7
12.00	2	3.3	50.0
12.20	1	1.7	51.7
12.50	2	3.3	55.0
13.04	2	3.3	58.3
13.64	2	3.3	61.7
13.79	1	1.7	63.3
14.29	3	5.0	68.3
14.81	1	1.7	70.0
15.38	1	1.7	71.7
15.79	2	3.3	75.0
16.00	2	3.3	78.3
16.67	1	1.7	80.0
17.39	1	1.7	81.7
17.65	1	1.7	83.3
18.52	1	1.7	85.0
20.00	1	1.7	86.7
22.73	1	1.7	88.3
25.00	3	5.0	93.3
26.32	1	1.7	95.0
31.58	1	1.7	96.7
33.33	1	1.7	98.3
37.50	1	1.7	100.0
TOTAL	60	100.0	

MEAN	12.945	STD ERR	1.008	MEDIAN	12.098
MODE	5.000	STD DEV	7.808	VARIANCE	60.970
KURTOSIS	1.327	S E KURT	.608	SKEWNESS	.994
S E SKEW	.309	RANGE	37.500	MINIMUM	.000
MAXIMUM	37.500	SUM	776.726		

INTERNAL LEARNING GOALS -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	4	6.7	6.7
2.44	1	1.7	8.3
4.00	1	1.7	10.0
4.35	1	1.7	11.7
4.55	1	1.7	13.3
4.76	1	1.7	15.0
5.00	2	3.3	18.3
5.26	2	3.3	21.7
5.88	1	1.7	23.3
7.69	1	1.7	25.0
8.70	1	1.7	26.7
9.09	2	3.3	30.0
10.00	2	3.3	33.3
10.34	1	1.7	35.0
11.11	2	3.3	38.3
11.76	1	1.7	40.0
12.00	2	3.3	43.3
13.04	1	1.7	45.0
14.29	2	3.3	48.3
15.00	1	1.7	50.0
15.38	1	1.7	51.7
15.79	2	3.3	55.0
16.00	1	1.7	56.7
17.65	1	1.7	58.3
17.86	1	1.7	60.0
18.18	2	3.3	63.3
19.05	1	1.7	65.0
20.00	1	1.7	66.7
20.83	1	1.7	68.3
21.05	1	1.7	70.0
21.43	2	3.3	73.3
21.74	1	1.7	75.0
22.73	1	1.7	76.7
23.53	1	1.7	78.3
24.00	1	1.7	80.0
25.00	4	6.7	86.7
25.93	1	1.7	88.3
26.32	1	1.7	90.0
27.27	1	1.7	91.7
29.17	2	3.3	95.0
29.63	1	1.7	96.7
33.33	1	1.7	98.3
42.11	1	1.7	100.0
TOTAL	60	100.0	

MEAN	15.326	STD ERR	1.217	MEDIAN	15.192
MODE	.000	STD DEV	9.430	VARIANCE	88.925
KURTOSIS	-.297	S E KURT	.608	SKEWNESS	.319
S E SKEW	.309	RANGE	42.105	MINIMUM	.000
MAXIMUM	42.105	SUM	919.553		

EXTERNAL PERFORMANCE GOALS -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
3.45	1	1.7	1.7
3.57	1	1.7	3.3
4.00	1	1.7	5.0
4.17	1	1.7	6.7
4.76	1	1.7	8.3
5.00	2	3.3	11.7
5.26	1	1.7	13.3
5.88	2	3.3	16.7
6.67	2	3.3	20.0
7.89	1	1.7	21.7
8.00	3	5.0	26.7
8.70	1	1.7	28.3
9.09	1	1.7	30.0
10.53	1	1.7	31.7
10.71	1	1.7	33.3
11.11	1	1.7	35.0
11.54	1	1.7	36.7
12.20	1	1.7	38.3
12.50	2	3.3	41.7
13.64	1	1.7	43.3
14.29	1	1.7	45.0
14.81	1	1.7	46.7
15.79	1	1.7	48.3
16.00	1	1.7	50.0
17.86	2	3.3	53.3
18.18	1	1.7	55.0
19.23	1	1.7	56.7
20.00	4	6.7	63.3
20.83	1	1.7	65.0
21.74	1	1.7	66.7
22.73	1	1.7	68.3
23.53	2	3.3	71.7
23.81	1	1.7	73.3
25.00	2	3.3	76.7
25.93	2	3.3	80.0
29.17	1	1.7	81.7
29.41	1	1.7	83.3
30.43	1	1.7	85.0
31.58	2	3.3	88.3
31.82	1	1.7	90.0
33.33	1	1.7	91.7
34.78	1	1.7	93.3
36.36	1	1.7	95.0
40.91	1	1.7	96.7
50.00	1	1.7	98.3
52.63	1	1.7	100.0
TOTAL	60	100.0	

MEAN	18.146	STD ERR	1.494	MEDIAN	16.929
MODE	20.000	STD DEV	11.569	VARIANCE	133.835
KURTOSIS	.574	S E KURT	.608	SKEWNESS	.882
S E SKEW	.309	RANGE	49.183	MINIMUM	3.448
MAXIMUM	52.632	SUM	1088.759		

INTERNAL STABLE CONTROLLABLE -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
9.52	1	1.7	1.7
10.53	1	1.7	3.3
18.75	1	1.7	5.0
20.83	1	1.7	6.7
21.05	1	1.7	8.3
22.73	1	1.7	10.0
26.32	1	1.7	11.7
29.17	2	3.3	15.0
29.41	1	1.7	16.7
29.63	1	1.7	18.3
30.77	1	1.7	20.0
31.82	2	3.3	23.3
33.33	1	1.7	25.0
34.15	1	1.7	26.7
34.78	2	3.3	30.0
35.00	1	1.7	31.7
36.00	1	1.7	33.3
36.36	1	1.7	35.0
36.84	1	1.7	36.7
37.50	1	1.7	38.3
38.89	1	1.7	40.0
39.13	1	1.7	41.7
39.29	1	1.7	43.3
39.47	1	1.7	45.0
40.00	3	5.0	50.0
41.18	1	1.7	51.7
42.11	1	1.7	53.3
42.86	2	3.3	56.7
43.75	1	1.7	58.3
44.00	1	1.7	60.0
45.45	2	3.3	63.3
46.15	1	1.7	65.0
46.43	1	1.7	66.7
46.67	2	3.3	70.0
47.06	2	3.3	73.3
47.83	1	1.7	75.0
48.28	1	1.7	76.7
50.00	1	1.7	78.3
52.00	2	3.3	81.7
52.63	1	1.7	83.3
52.94	1	1.7	85.0
55.56	1	1.7	86.7
57.14	1	1.7	88.3
58.33	1	1.7	90.0
59.09	1	1.7	91.7
60.00	2	3.3	95.0
65.00	1	1.7	96.7
67.86	1	1.7	98.3
75.00	1	1.7	100.0
TOTAL	60	100.0	

(Continued)

INTERNAL STABLE CONTROLLABLE -- WITH OTHER STUDENTS
(Continued)

MEAN	41.306	STD ERR	1.691	MEDIAN	40.588
MODE	40.000	STD DEV	13.100	VARIANCE	171.613
KURTOSIS	.361	S E KURT	.608	SKEWNESS	-.021
S E SKEW	.309	RANGE	65.476	MINIMUM	9.524
MAXIMUM	75.000	SUM	2478.382		

EXTERNAL STABLE UNCONTROLLABLE -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	5	8.3	8.3
3.57	2	3.3	11.7
3.70	1	1.7	13.3
3.85	1	1.7	15.0
4.00	1	1.7	16.7
4.76	1	1.7	18.3
7.14	1	1.7	20.0
7.41	1	1.7	21.7
8.00	2	3.3	25.0
8.33	3	5.0	30.0
9.09	2	3.3	33.3
10.34	1	1.7	35.0
10.53	2	3.3	38.3
10.71	1	1.7	40.0
11.76	1	1.7	41.7
12.00	2	3.3	45.0
12.50	5	8.3	53.3
13.04	2	3.3	56.7
13.16	1	1.7	58.3
13.64	2	3.3	61.7
14.81	1	1.7	63.3
15.00	2	3.3	66.7
17.39	2	3.3	70.0
17.65	1	1.7	71.7
19.05	1	1.7	73.3
19.23	1	1.7	75.0
19.51	1	1.7	76.7
20.00	3	5.0	81.7
21.05	3	5.0	86.7
25.00	1	1.7	88.3
29.17	1	1.7	90.0
29.41	2	3.3	93.3
31.58	1	1.7	95.0
31.82	2	3.3	98.3
33.33	1	1.7	100.0
TOTAL	60	100.0	

MEAN	13.730	STD ERR	1.127	MEDIAN	12.500
MODE	.000	STD DEV	8.727	VARIANCE	76.156
KURTOSIS	-.191	S E KURT	.608	SKEWNESS	.529
S E SKEW	.309	RANGE	33.333	MINIMUM	.000
MAXIMUM	33.333	SUM	823.813		

UNKNOWN CONTROL -- WITH OTHER STUDENTS

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	8	13.3	13.3
2.63	1	1.7	15.0
2.78	1	1.7	16.7
3.33	1	1.7	18.3
3.57	1	1.7	20.0
3.85	1	1.7	21.7
4.00	2	3.3	25.0
4.17	1	1.7	26.7
4.55	2	3.3	30.0
5.00	2	3.3	33.3
5.26	1	1.7	35.0
6.25	2	3.3	38.3
6.67	1	1.7	40.0
7.14	3	5.0	45.0
8.00	3	5.0	50.0
8.33	2	3.3	53.3
8.70	1	1.7	55.0
9.09	1	1.7	56.7
9.76	1	1.7	58.3
10.00	1	1.7	60.0
10.53	2	3.3	63.3
11.11	2	3.3	66.7
12.50	1	1.7	68.3
14.29	1	1.7	70.0
17.39	2	3.3	73.3
17.65	3	5.0	78.3
18.18	1	1.7	80.0
19.05	1	1.7	81.7
19.23	1	1.7	83.3
20.00	1	1.7	85.0
21.74	1	1.7	86.7
22.73	1	1.7	88.3
23.53	1	1.7	90.0
26.32	2	3.3	93.3
31.58	1	1.7	95.0
31.82	1	1.7	96.7
33.33	1	1.7	98.3
50.00	1	1.7	100.0
TOTAL	60	100.0	

MEAN	11.218	STD ERR	1.303	MEDIAN	8.167
MODE	.000	STD DEV	10.093	VARIANCE	101.875
KURTOSIS	2.628	S E KURT	.608	SKEWNESS	1.434
S E SKEW	.309	RANGE	50.000	MINIMUM	.000
MAXIMUM	50.000	SUM	673.088		

VALUE -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	6	10.0	10.0
3.70	1	1.7	11.7
4.00	1	1.7	13.3
4.55	1	1.7	15.0
4.88	1	1.7	16.7
5.26	2	3.3	20.0
5.88	1	1.7	21.7
6.67	2	3.3	25.0
6.90	1	1.7	26.7
7.14	1	1.7	28.3
8.00	1	1.7	30.0
8.70	1	1.7	31.7
9.52	1	1.7	33.3
10.71	2	3.3	36.7
11.54	1	1.7	38.3
12.00	2	3.3	41.7
12.50	2	3.3	45.0
13.64	1	1.7	46.7
13.89	1	1.7	48.3
14.29	2	3.3	51.7
15.00	1	1.7	53.3
16.00	1	1.7	55.0
16.67	1	1.7	56.7
17.39	2	3.3	60.0
17.65	1	1.7	61.7
18.18	3	5.0	66.7
18.42	1	1.7	68.3
18.75	1	1.7	70.0
19.05	1	1.7	71.7
20.00	1	1.7	73.3
20.83	2	3.3	76.7
21.05	1	1.7	78.3
22.22	1	1.7	80.0
22.73	2	3.3	83.3
23.08	1	1.7	85.0
23.53	1	1.7	86.7
25.00	2	3.3	90.0
29.41	1	1.7	91.7
29.63	1	1.7	93.3
30.43	1	1.7	95.0
31.58	2	3.3	98.3
37.50	1	1.7	100.0
TOTAL	60	100.0	

MEAN	14.553	STD ERR	1.187	MEDIAN	14.286
MODE	.000	STD DEV	9.196	VARIANCE	84.566
KURTOSIS	-.488	S E KURT	.608	SKEWNESS	.259
S E SKEW	.309	RANGE	37.500	MINIMUM	.000
MAXIMUM	37.500	SUM	873.189		

INTEREST -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
13.33	1	1.7	1.7
17.65	2	3.3	5.0
18.75	1	1.7	6.7
21.05	1	1.7	8.3
22.73	3	5.0	13.3
24.00	2	3.3	16.7
26.32	1	1.7	18.3
29.41	2	3.3	21.7
30.00	1	1.7	23.3
31.58	1	1.7	25.0
31.71	1	1.7	26.7
33.33	3	5.0	31.7
34.78	1	1.7	33.3
35.00	1	1.7	35.0
36.00	2	3.3	38.3
36.11	1	1.7	40.0
36.36	1	1.7	41.7
36.67	1	1.7	43.3
37.50	3	5.0	48.3
38.10	1	1.7	50.0
39.13	2	3.3	53.3
39.29	1	1.7	55.0
40.00	3	5.0	60.0
40.74	1	1.7	61.7
41.18	1	1.7	63.3
41.38	1	1.7	65.0
42.86	3	5.0	70.0
43.75	1	1.7	71.7
45.00	1	1.7	73.3
45.45	2	3.3	76.7
45.83	1	1.7	78.3
47.37	1	1.7	80.0
48.00	1	1.7	81.7
48.15	1	1.7	83.3
52.17	1	1.7	85.0
52.63	1	1.7	86.7
53.85	1	1.7	88.3
54.17	1	1.7	90.0
54.55	1	1.7	91.7
60.71	1	1.7	93.3
61.54	1	1.7	95.0
63.16	1	1.7	96.7
68.42	1	1.7	98.3
79.17	1	1.7	100.0
TOTAL	60	100.0	

MEAN	39.056	STD ERR	1.667	MEDIAN	38.613
MODE	22.727	STD DEV	12.911	VARIANCE	166.703
KURTOSIS	.826	S E KURT	.608	SKEWNESS	.545
S E SKEW	.309	RANGE	65.833	MINIMUM	13.333
MAXIMUM	79.167	SUM	2343.342		

CONFIDENCE -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	9	15.0	15.0
2.78	1	1.7	16.7
3.57	1	1.7	18.3
3.70	1	1.7	20.0
4.00	3	5.0	25.0
4.17	3	5.0	30.0
4.35	2	3.3	33.3
4.55	1	1.7	35.0
5.00	1	1.7	36.7
5.26	2	3.3	40.0
5.88	3	5.0	45.0
6.67	1	1.7	46.7
7.14	1	1.7	48.3
7.32	1	1.7	50.0
7.41	1	1.7	51.7
7.69	1	1.7	53.3
8.00	1	1.7	55.0
8.33	1	1.7	56.7
9.09	2	3.3	60.0
10.00	1	1.7	61.7
10.53	4	6.7	68.3
12.00	1	1.7	70.0
12.50	4	6.7	76.7
13.33	1	1.7	78.3
13.64	2	3.3	81.7
13.79	1	1.7	83.3
14.29	1	1.7	85.0
14.81	1	1.7	86.7
15.79	1	1.7	88.3
17.86	1	1.7	90.0
18.18	1	1.7	91.7
21.74	1	1.7	93.3
22.73	1	1.7	95.0
23.08	1	1.7	96.7
23.53	1	1.7	98.3
25.00	1	1.7	100.0
TOTAL	60	100.0	

MEAN	8.620	STD ERR	.850	MEDIAN	7.362
MODE	.000	STD DEV	6.581	VARIANCE	43.305
KURTOSIS	-.008	S E KURT	.608	SKEWNESS	.729
S E SKEW	.309	RANGE	25.000	MINIMUM	.000
MAXIMUM	25.000	SUM	517.215		

ANXIETY -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	6	10.0	10.0
3.33	1	1.7	11.7
3.57	1	1.7	13.3
3.70	1	1.7	15.0
3.85	1	1.7	16.7
4.00	1	1.7	18.3
4.17	4	6.7	25.0
4.35	1	1.7	26.7
4.76	2	3.3	30.0
5.00	1	1.7	31.7
5.26	1	1.7	33.3
6.25	1	1.7	35.0
7.41	1	1.7	36.7
8.70	1	1.7	38.3
9.09	1	1.7	40.0
9.52	1	1.7	41.7
10.53	2	3.3	45.0
10.71	1	1.7	46.7
11.76	2	3.3	50.0
13.04	1	1.7	51.7
13.33	2	3.3	55.0
13.64	1	1.7	56.7
14.29	1	1.7	58.3
15.00	2	3.3	61.7
15.79	3	5.0	66.7
16.00	1	1.7	68.3
16.67	2	3.3	71.7
18.18	2	3.3	75.0
18.52	1	1.7	76.7
18.75	2	3.3	80.0
19.51	1	1.7	81.7
20.00	1	1.7	83.3
21.43	1	1.7	85.0
21.74	1	1.7	86.7
24.00	1	1.7	88.3
24.14	1	1.7	90.0
26.32	1	1.7	91.7
26.92	1	1.7	93.3
29.41	2	3.3	96.7
31.82	2	3.3	100.0
TOTAL	60	100.0	

MEAN	12.479	STD ERR	1.133	MEDIAN	12.404
MODE	.000	STD DEV	8.775	VARIANCE	76.998
KURTOSIS	-.620	S E KURT	.608	SKEWNESS	.429
S E SKEW	.309	RANGE	31.818	MINIMUM	.000
MAXIMUM	31.818	SUM	748.753		

INTERNAL LEARNING GOALS -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
4.55	1	1.7	1.7
5.00	1	1.7	3.3
5.26	1	1.7	5.0
5.88	1	1.7	6.7
6.25	1	1.7	8.3
6.67	1	1.7	10.0
8.33	1	1.7	11.7
8.70	1	1.7	13.3
10.00	2	3.3	16.7
11.76	3	5.0	21.7
12.00	1	1.7	23.3
12.20	1	1.7	25.0
13.64	2	3.3	28.3
14.29	2	3.3	31.7
15.79	3	5.0	36.7
16.00	1	1.7	38.3
16.67	1	1.7	40.0
17.39	1	1.7	41.7
17.65	1	1.7	43.3
18.18	1	1.7	45.0
18.52	1	1.7	46.7
19.44	1	1.7	48.3
20.00	2	3.3	51.7
21.43	1	1.7	53.3
22.22	1	1.7	55.0
22.73	2	3.3	58.3
23.81	2	3.3	61.7
24.00	2	3.3	65.0
25.00	2	3.3	68.3
26.09	1	1.7	70.0
26.67	1	1.7	71.7
27.27	1	1.7	73.3
27.59	1	1.7	75.0
28.00	1	1.7	76.7
30.77	1	1.7	78.3
31.25	2	3.3	81.7
33.33	2	3.3	85.0
34.21	1	1.7	86.7
35.00	1	1.7	88.3
35.71	1	1.7	90.0
36.84	1	1.7	91.7
37.50	1	1.7	93.3
42.11	1	1.7	95.0
43.48	1	1.7	96.7
45.83	1	1.7	98.3
46.15	1	1.7	100.0
TOTAL	60	100.0	

MEAN	21.405	STD ERR	1.400	MEDIAN	20.000
MODE	11.765	STD DEV	10.841	VARIANCE	117.530
KURTOSIS	-.471	S E KURT	.608	SKEWNESS	.468
S E SKEW	.309	RANGE	41.608	MINIMUM	4.545
MAXIMUM	46.154	SUM	1284.299		

EXTERNAL PERFORMANCE GOALS -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
11.76	1	1.7	1.7
13.64	1	1.7	3.3
15.79	1	1.7	5.0
17.65	1	1.7	6.7
21.43	1	1.7	8.3
22.22	1	1.7	10.0
25.00	1	1.7	11.7
26.32	2	3.3	15.0
30.00	1	1.7	16.7
31.71	1	1.7	18.3
33.33	3	5.0	23.3
35.00	1	1.7	25.0
35.71	1	1.7	26.7
36.36	1	1.7	28.3
37.50	1	1.7	30.0
38.10	2	3.3	33.3
38.46	2	3.3	36.7
40.00	2	3.3	40.0
40.91	2	3.3	43.3
41.18	1	1.7	45.0
41.67	2	3.3	48.3
42.11	1	1.7	50.0
43.48	2	3.3	53.3
44.00	1	1.7	55.0
44.44	1	1.7	56.7
44.83	1	1.7	58.3
45.00	1	1.7	60.0
45.45	1	1.7	61.7
45.83	3	5.0	66.7
46.43	1	1.7	68.3
47.37	2	3.3	71.7
47.62	1	1.7	73.3
47.83	2	3.3	76.7
48.00	2	3.3	80.0
50.00	3	5.0	85.0
52.00	1	1.7	86.7
52.63	1	1.7	88.3
52.94	2	3.3	91.7
54.17	1	1.7	93.3
54.55	1	1.7	95.0
55.56	1	1.7	96.7
56.25	1	1.7	98.3
62.50	1	1.7	100.0
TOTAL	60	100.0	

MEAN	40.668	STD ERR	1.432	MEDIAN	42.792
MODE	33.333	STD DEV	11.095	VARIANCE	123.107
KURTOSIS	.379	S E KURT	.608	SKEWNESS	-.807
S E SKEW	.309	RANGE	50.735	MINIMUM	11.765
MAXIMUM	62.500	SUM	2440.103		

INTERNAL STABLE CONTROLLABLE - HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	9	15.0	15.0
2.44	1	1.7	16.7
3.70	1	1.7	18.3
4.00	1	1.7	20.0
4.35	2	3.3	23.3
5.00	1	1.7	25.0
5.26	1	1.7	26.7
5.56	1	1.7	28.3
5.88	2	3.3	31.7
6.67	2	3.3	35.0
7.69	1	1.7	36.7
8.00	1	1.7	38.3
8.33	2	3.3	41.7
8.70	1	1.7	43.3
9.09	2	3.3	46.7
9.52	1	1.7	48.3
10.53	1	1.7	50.0
10.71	1	1.7	51.7
11.76	1	1.7	53.3
12.50	4	6.7	60.0
13.04	1	1.7	61.7
13.64	3	5.0	66.7
14.29	2	3.3	70.0
15.00	1	1.7	71.7
15.38	1	1.7	73.3
15.79	4	6.7	80.0
16.00	1	1.7	81.7
17.24	1	1.7	83.3
17.65	1	1.7	85.0
17.86	1	1.7	86.7
18.18	1	1.7	88.3
18.75	1	1.7	90.0
20.00	1	1.7	91.7
22.22	1	1.7	93.3
22.73	1	1.7	95.0
25.00	1	1.7	96.7
25.93	1	1.7	98.3
31.58	1	1.7	100.0
TOTAL	60	100.0	

MEAN	10.679	STD ERR	.954	MEDIAN	10.620
MODE	.000	STD DEV	7.389	VARIANCE	54.598
KURTOSIS	-.098	S E KURT	.608	SKEWNESS	.398
S E SKEW	.309	RANGE	31.579	MINIMUM	.000
MAXIMUM	31.579	SUM	640.719		

EXTERNAL STABLE UNCONTROLLABLE -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	2	3.3	3.3
4.00	2	3.3	6.7
4.17	1	1.7	8.3
5.00	1	1.7	10.0
7.41	1	1.7	11.7
8.33	1	1.7	13.3
8.70	1	1.7	15.0
9.09	1	1.7	16.7
9.52	1	1.7	18.3
10.00	1	1.7	20.0
10.53	1	1.7	21.7
10.71	2	3.3	25.0
11.76	2	3.3	28.3
12.00	2	3.3	31.7
13.04	1	1.7	33.3
13.16	1	1.7	35.0
13.33	1	1.7	36.7
13.64	2	3.3	40.0
13.79	1	1.7	41.7
14.29	1	1.7	43.3
14.81	2	3.3	46.7
15.00	2	3.3	50.0
15.38	1	1.7	51.7
15.79	1	1.7	53.3
16.00	2	3.3	56.7
16.67	2	3.3	60.0
17.07	1	1.7	61.7
17.39	1	1.7	63.3
17.86	1	1.7	65.0
18.75	2	3.3	68.3
19.05	1	1.7	70.0
20.00	2	3.3	73.3
20.83	1	1.7	75.0
21.05	1	1.7	76.7
21.74	1	1.7	78.3
23.08	1	1.7	80.0
23.81	1	1.7	81.7
25.00	1	1.7	83.3
26.32	2	3.3	86.7
27.27	1	1.7	88.3
29.41	1	1.7	90.0
31.58	1	1.7	91.7
35.29	1	1.7	93.3
36.36	2	3.3	96.7
40.91	1	1.7	98.3
56.25	1	1.7	100.0
TOTAL	60	100.0	

MEAN	17.186	STD ERR	1.305	MEDIAN	15.192
MODE	.000	STD DEV	10.112	VARIANCE	102.245
KURTOSIS	3.029	S E KURT	.608	SKEWNESS	1.313
S E SKEW	.309	RANGE	56.250	MINIMUM	.000
MAXIMUM	56.250	SUM	1031.182		

UNKNOWN CONTROL -- HOMEWORK

% OF STUDENTS NEEDING FOLLOW UP	NUMBER OF CLASSES	% OF CLASSES	CUMULATIVE PERCENT
.00	5	8.3	8.3
2.63	1	1.7	10.0
4.76	2	3.3	13.3
5.00	1	1.7	15.0
5.26	1	1.7	16.7
5.56	1	1.7	18.3
6.67	3	5.0	23.3
7.14	4	6.7	30.0
7.41	2	3.3	33.3
8.00	2	3.3	36.7
8.33	1	1.7	38.3
10.00	2	3.3	41.7
10.34	1	1.7	43.3
10.53	1	1.7	45.0
11.54	1	1.7	46.7
11.76	1	1.7	48.3
12.00	1	1.7	50.0
12.50	4	6.7	56.7
13.64	1	1.7	58.3
14.63	1	1.7	60.0
14.81	1	1.7	61.7
15.38	1	1.7	63.3
15.79	1	1.7	65.0
16.00	1	1.7	66.7
16.67	2	3.3	70.0
17.39	3	5.0	75.0
17.65	2	3.3	78.3
18.18	3	5.0	83.3
19.05	1	1.7	85.0
21.05	1	1.7	86.7
21.74	1	1.7	88.3
22.73	2	3.3	91.7
23.53	1	1.7	93.3
31.58	1	1.7	95.0
36.36	1	1.7	96.7
37.50	1	1.7	98.3
42.11	1	1.7	100.0
TOTAL	60	100.0	

MEAN	13.097	STD ERR	1.158	MEDIAN	12.250
MODE	.000	STD DEV	8.972	VARIANCE	80.496
KURTOSIS	1.796	S E KURT	.608	SKEWNESS	1.108
S E SKEW	.309	RANGE	42.105	MINIMUM	.000
MAXIMUM	42.105	SUM	785.845		