DOCUMENT RESUME

ED 360 432 UD 029 367

TITLE	Correlational Study into the Relationship between Grade Point Averages, Michigan Educational Assessment Program (MEAP) Scores and Student Absences for Tenth Grade Arthur Hill and Saginaw High School Students, 1992-1993. Evaluation Report.
INSTITUTION	Saginaw Public Schools, Mich.
PUB DATE	Jun 93
NOTE	39p.
PUB TYPE	Reports - Descriptive (141) -- Reports - Research/Technical (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Attendance; Correlation; Data Collection; Educational Assessment; *Ethnic Groups; Grade 10; *Grade Point Average; High Schools; *High School Students; Public Schools; *Racial Differences; School Statistics; Scores; Sex Differences; State Programs; Test Results; *Urban Schools
IDENTIFIERS	High School Sophomores; Michigan Educational Assessment Program; Pearson Product Moment Correlation; *Saginaw City School System MI

ABSTRACT

As part of the baseline studies necessary for a new strategic plan for the Saginaw (Michigan) public schools, the relationship of grade point averages (GPAs), student absence, and Michigan Educational Assessment Program (MEAP) results were studied relative to the amount of shared variation common to each. All possible correlations were studied at the district's two high schools. Data represent all available 10th-grade first semester information for each school. Results are also aggregated by racial/ethnic and gender groups to see if the same relationships hold. Pearson product moment correlation coefficients were reviewed. Although exact correlation coefficients vary by school, there does seem to be a great consistency in terms of the general strength of relationships by variable pairs across schools, gender, and racial/ethnic groups. GPA versus absence correlations are the strongest set. For MEAP versus GPA, the bulk of the correlations fall within the 0.350 to 0.649 crude prediction range. For MEAP versus absences, 66.7 percent of the correlations fall within the "very little use" range. One MEAP area versus another MEAP area correlates well. For the new baseline figures it is recommended that absence data be captured by total school, gender, and racial/ethnic group. GPA and MEAP data should be collected in the same categories. (SLD)

EVALUATION REPORT

CORRELATIONAL STUDY INTO THE
RELATIONSHIP BETWEEN GRADE POINT AVERAGES,
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM (MEAP)
SCORES AND STUDENT ABSENCES FOR TENTH GRADE
ARTHUR HILL AND SAGINAW HIGH SCHOOL STUDENTS

1992-1993

DEPARTMENT OF EVALUATION SERVICES

- PROVIDING ASSESSMENT, PROGRAM EVALUATION AND RESEARCH SERVICES -

SCHOOL DISTRICT OF THE CITY OF SAGINAW

Saginaw, Michigan

CORRELATIONAL STUDY INTO THE RELATIONSHIP BETWEEN GRADE POINT AVERAGES, MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM (MEAP) SCORES AND STUDENT ABSENCES FOR TENTH GRADE ARTHUR HILL AND SAGINAW HIGH SCHOOL STUDENTS

1992-1993

An Approved Report of the

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School District of the City of Saginaw

June, 1993

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INTRODUCTION

The School District of the City of Saginaw is poised to start the implementation of a new strategic plan starting the 1993-94 school year. Prior to this implementation, a new set of variables have been under study to establish a new baseline data set.

As part of these discussions and investigations, the relationship of grade point averages (GPA's), student absences, and Michigan Educational Assessment Program (MEAP) results were questioned relative to the amount of shared variation in common to each. It was decided to study all the possible correlational relationships at the two high schools. Further, the results were also aggregated by racial/ethnic and gender groups to see if the same type and strength of relationships held when the larger high school groups were subdivided.

RESEARCH PROCEDURES

The tenth graders at the two high schools (Arthur Hill and Saginaw High) served as the two populations under study. The first semester student absences by hour, overall grade point averages (GPA's) on a 4.3-point scale and 1992-93 Michigan Educational Assessment Program (MEAP) results in mathematics (total) and reading (story and informational) selection scores, served as the correlational variables. The MEAP results were expressed in scale score units. The MEAP results were accessed using a computer tape purchased from the Michigan Department of Education. The student absence data and overall GPA was obtained from the Unisys K-CAST system maintained by the school district.

The Pearson Product Moment Correlation Coefficient was the measure of association employed in the study. A one-tailed t-test for a correlation coefficient was calculated to determine if the observed correlation was significantly different than a zero correlation (an alpha =.05 or less was chosen to be sufficient to reject the null hypothesis of no difference). The correlation coefficients were also squared (r^2) to determine the percentage of shared variance between the two variables.

The results to this study follow in the next section.

PRESENTATION AND ANALYSIS OF DATA

The data that follow represent all the available tenth grade first semester information from each school. The resulting summary statistics will be presented below by school.

Arthur Hill High School - Total Group

The mean and standard deviation for the Arthur Hill students on the selected variables are contained in Table 1 below.

TABLE 1

MEAN AND STANDARD DEVIATION ON VARIABLES CORRELATED FOR ARTHUR HILL TENTH GRADERS, FIRST SEMESTER, 1992-1993

VARIABLE*	N	M	SD
MEAP Math	342	498.86	21.05
MEAP Story Selection	343	303.84	17.87
MEAP Informational Selection	343	295.28	17.47
GPA	344	2.20	1.08
Absences	344	25.21	26.12

*Variable scaling: MEAP scores are expressed as scale scores. Grade Point Averages (GPA's) are expressed on a 4.3-point scale. Attendance is expressed as the number of hours absent in a 90-day period.

Analysis of the data contained in the above table reveals the following:

- The number of Arthur Hill students represented by variable ranged from 342 to 344.
- MEAP scale scores were greatest in math ($\underline{M}$ = 498.86) followed by reading story selection ($\underline{M}$ = 303.84) and reading informational selection ($\underline{M}$ = 295.28).
- The overall GPA ($\underline{M}$ = 2.20) on a 4.3-point scale represented a C+ letter grade (see Appendix A for point to letter grade conversion table).

- The mean number of hours absent in a 90-day period of first semester was approximately 5 days ($\underline{M}$ = 25.21 hours assuming a five-hour day).

The resulting correlations for all possible paired comparisons of the variables are given in Table 2 below.

TABLE 2

PEARSON PRODUCT MOMENT CORRELATIONS FOR ARTHUR HILL TENTH GRADERS, FIRST SEMESTER, 1992-1993

VARIABLES*	N	r	PERCENT OF SHARED VARIANCE	ALPHA
Math vs. GPA	342	.551	30.36	.000
Story Selection vs. GPA	343	.365	13.32	.000
Informational Selection vs. GPA	343	.495	24.50	.000
Math vs. Absences	342	-.213	4.53	.000
Story Selection vs. Absences	343	-.091	0.82	.046
Informational Selection vs. Absences	343	-.160	2.56	.001
Math vs. Story Selection	341	.464	21.52	.000
Math vs. Informational Selection	341	.655	42.90	.000
Story Selection vs. Informational Selection	343	.545	29.70	.000
GPA vs. Absences	344	-.582	33.87	.000

*Variables scaling: MEAP scores are expressed as scale scores. Grade Point Averages (GPA's) are expressed on a 4.3-point scale. Attendance is expressed as the number of hours absent in a 90-day period.

An analysis of the above data reveals the following points.

- Positive correlations existed for MEAP areas versus GPA and MEAP area versus another MEAP area, while negative correlations existed for MEAP areas versus absences and GPA versus absences.
- The largest positive correlation for MEAP versus GPA existed specially for math versus GPA ($\underline{r}$ = .551) followed by reading informational selections versus GPA ($\underline{r}$ = .495) and reading story selections versus GPA ($\underline{r}$ = .365).

- The largest negative correlation for MEAP versus student absences occurred for math versus absences (r = -.213).

- As might be expected, each MEAP area correlated well with another MEAP area (r = .655 for math versus information selection, r = .545 for story selection versus information selection, and r = .464 for math versus story selection).

- The largest negative correlation was observed for GPA versus absences (r = -.582).

Arthur Hill - Gender Groups

Table 3 below presents the mean and standard deviation for male and female students at Arthur Hill on the study variables.

TABLE 3

MEAN AND STANDARD DEVIATION BY GENDER GROUP ON VARIABLES CORRELATED FOR ARTHUR HILL TENTH GRADERS, FIRST SEMESTER, 1992-1993

GENDER GROUP	VARIABLE*	n	M	SD
Males	MEAP Math	167	500.94	21.95
	MEAP Story Selection	168	302.28	17.96
	MEAP Informational Selection	168	295.72	17.93
	GPA	168	2.10	1.02
	Absences	168	23.11	23.49
Females	MEAP Math	175	496.88	20.01
	MEAP Story Selection	175	305.34	17.70
	MEAP Informational Selection	175	294.86	17.06
	GPA	176	2.29	1.12
	Absences	176	27.22	28.32

*Variable scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.

An analysis of the data in the above table reveals the following:

- A count of students by variable range from 167 to 168 for males and from 175 to 176 for females.
- Males, on average, outperformed females on MEAP math ($\underline{M}$ = 500.94 versus 496.88 respectively) and MEAP reading informational selection ($\underline{M}$ = 295.72 versus 294.86 respectively).
- Females, on average, outperformed males on MEAP reading story selection ($\underline{M}$ = 305.34 versus $\underline{M}$ = 302.28 respectively) and on GPA ($\underline{M}$ = 2.29 versus $\underline{M}$ = 2.10 respectively).
- Females, on average, were absent more than males ($\underline{M}$ = 27.22 hours versus $\underline{M}$ = 23.11 hours per semester respectively).

The calculated correlations for all possible paired comparisons of the above variables are given in Table 4 below.

TABLE 4

PEARSON PRODUCT MOMENT CORRELATIONS BY GENDER GROUP FOR ARTHUR HILL TENTH GRADERS, FIRST SEMESTER, 1992-1993

GENDER GROUP	VARIABLES*	n	r	PERCENT OF SHARED VARIANCE	ALPHA
Males	Math vs. GPA	167	.526	27.66	.000
	Story Selection vs. GPA	168	.232	5.38	.001
	Informational Selection vs. GPA	168	.437	19.09	.000
	Math vs. Absences	167	-.086	0.73	.133
	Story Selection vs. Absences	168	.119	1.41	.061
	Informational Selection vs. Absences	168	-.048	0.23	.265
	Math vs. Story Selection	167	.466	21.71	.000
	Math vs. Informational Selection	167	.646	41.73	.000
	Story Selection vs. Informational Selection	168	.527	27.77	.000
	GPA vs. Absences	168	-.518	26.83	.000
Females	Math vs. GPA	175	.605	36.60	.000
	Story Selection vs. GPA	175	.474	22.46	.000
	Informational Selection vs. GPA	175	.560	31.36	.000
	Math vs. Absences	175	-.315	9.92	.000
	Story Selection vs. Absences	175	-.292	8.52	.000
	Informational Selection vs. Absences	175	-.262	6.86	.000
	Math vs. Story Selection	174	.488	23.81	.000
	Math vs. Informational Selection	174	.667	44.48	.000
	Story Selection vs. Informational Selection	175	.572	32.71	.000
	GPA vs. Absences	176	-.649	42.21	.000

*Variables scaling: MEAP scores are expressed as scale scores. Grade Point Averages (GPA's) are expressed on a 4.3-point scale. Attendance is expressed as the number of hours absent in a 90-day period.

A study of the above data in Table 4 reveals the following.

- Positive correlation by gender existed for MEAP areas versus GPA and MEAP areas versus other MEAP areas while negative correlations existed for MEAP areas versus absences (with the exception of story selection versus absences for males) versus absences and GPA absences.

- All relationships showed significant correlations in excess of zero at alpha = .05 or less except for MEAP areas versus absences for males.

- Female related correlations were stronger than male correlations in MEAP areas versus GPA (math versus GPA with $\underline{r}$ = .605 and $\underline{r}$ = .560 respectively; story selection versus GPA with $\underline{r}$ = .474 and $\underline{r}$ = .232 respectively; and informational selection versus GPA $\underline{r}$ = .527 and $\underline{r}$ = .437 respectively), MEAP areas versus absences (math versus absences with $\underline{r}$ = -.315 and $\underline{r}$ = -.086 respectively; story selection versus absences with $\underline{r}$ = -.262 and $\underline{r}$ = .119 respectively; and informational selection versus absences with $\underline{r}$ = -.262 and $\underline{r}$ = -.048 respectively); MEAP area versus other MEAP areas (math versus story selection $\underline{r}$ = .488 and $\underline{r}$ = .466 respectively; math versus informational selection $\underline{r}$ = .667 and $\underline{r}$ = .646 respectively; and story selection versus informational selection $\underline{r}$ = .572 and $\underline{r}$ = .527 respectively), and GPA versus absences ($\underline{r}$ = -.649 and $\underline{r}$ = -.518 respectively).

Arthur Hill - Racial/Ethnic Group

Table 5 below displays the mean and standard deviation for the White, Black, and Hispanic racial/ethnic group students at Arthur Hill on the study variables.

TABLE 5

MEAN AND STANDARD DEVIATION BY RACIAL/ETHNIC GROUP ON VARIABLES CORRELATED FOR ARTHUR HILL TENTH GRADERS, FIRST SEMESTER, 1992-1993

RACIAL/ ETHNIC GROUP	VARIABLE*	n	M	SD
White	MEAP Math	220	503.05	22.00
	MEAP Story Selection	220	306.04	17.58
	MEAP Informational Selection	220	297.76	18.15
	GPA	221	2.35	1.10
	Absences	221	23.49	25.82
Black	MEAP Math	67	488.88	18.20
	MEAP Story Selection	67	299.19	18.38
	MEAP Informational Selection	67	290.32	15.37
	GPA	67	1.86	0.92
	Absences	67	25.04	21.33
Hispanic	MEAP Math	45	491.73	14.31
	MEAP Story Selection	46	299.32	16.55
	MEAP Informational Selection	46	289.45	15.45
	GPA	46	1.79	0.99
	Absences	46	35.54	32.56

*Variable scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.

An in-depth study of the data in Table 5 above reveals the following:

- A count of students by variable ranged from 220 to 221 for Whites, 67 f Blacks, and 45 to 46 for Hispanics.
- In terms of averages on MEAP, White students outperformed Black and Hispanic students in math ($\underline{M}$ = 503.05, $\underline{M}$ = 488.88, and $\underline{M}$ = 491.73 respectively), story selection ($\underline{M}$ = 306.04, $\underline{M}$ = 299.19, and $\underline{M}$ = 299.32 respectively), and information selection ($\underline{M}$ = 297.76, $\underline{M}$ = 290.32, and $\underline{M}$ = 289.45 respectively).
- Again, on average, White students obtained higher GPA's than Black or Hispanic students ($\underline{M}$ = 2.35, $\underline{M}$ = 1.86, and $\underline{M}$ = 1.79 respectively).

- In terms of mean number of days absent, White students missed fewer days than Black or Hispanic classmates ($\underline{M}$ = 23.49, $\underline{M}$ = 25.04, and $\underline{M}$ = 35.54 respectively).

The paired comparisons for all possible correlations for each racial/ethnic group are displayed in Table 6 below.

TABLE 6

PEARSON PRODUCT MOMENT CORRELATIONS AGGREGATED BY RACIAL/ETHNIC GROUP FOR ARTHUR HILL TENTH GRADERS, FIRST SEMESTER, 1992-1993

RACIAL/ ETHNIC GROUP	VARIABLES*	n	r	PERCENT OF SHARED VARIANCE	ALPHA
White	Math vs. GPA	220	.535	28.62	.001
	Story Selection vs. GPA	220	.320	10.27	.000
	Informational Selection vs. GPA	220	.492	24.20	.000
	Math vs. Absences	220	-.212	4.49	.000
	Story Selection vs. Absences	220	-.073	0.53	.140
	Informational Selection vs. Absences	220	-.138	1.90	.020
	Math vs. Story Selection	219	.439	19.27	.000
	Math vs. Informational Selection	219	.634	40.19	.000
	Story Selection vs. Informational Selection	220	.529	27.98	.000
	GPA vs. Absences	221	-.590	34.81	.000
Black	Math vs. GPA	67	.553	30.58	.000
	Story Selection vs. GPA	67	.408	16.64	.000
	Informational Selection vs. GPA	67	.463	21.43	.000
	Math vs. Absences	67	-.020	0.04	.436
	Story Selection vs. Absences	67	-.041	0.16	.369
	Informational Selection vs. Absences	67	-.009	0.00	.471
	Math vs. Story Selection	67	.564	31.80	.000
	Math vs. Informational Selection	67	.691	47.74	.000
	Story Selection vs. Informational Selection	67	.599	35.88	.000
	GPA vs. Absences	67	-.442	19.53	.000
Hispanic	Math vs. GPA	45	.377	14.21	.005
	Story Selection vs. GPA	46	.422	17.80	.002
	Informational Selection vs. GPA	46	.315	9.92	.016
	Math vs. Absences	45	-.328	10.75	.014
	Story Selection vs. Absences	46	-.185	3.42	.109
	Informational Selection vs. Absences	46	-.237	5.61	.056
	Math vs. Story Selection	45	.322	10.36	.015
	Math vs. Informational Selection	45	.582	33.87	.000
	Story Selection vs. Informational Selection	46	.461	21.25	.001
	GPA vs. Absences	46	-.672	45.15	.000

*Variables scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.

An analysis of the information given in Table 6 above reveals the following:

- Positive correlations by racial/ethnic group existed for MEAP areas versus GPA and MEAP area versus another MEAP area, while negative correlations were displayed for MEAP areas versus absences and GPA versus absences.

- All relationships between variable pairs showed correlations in excess of zero at alpha = .05 or less except for the following variables by group: Story selection versus absences for Whites, MEAP areas versus absences for Blacks, and story selection versus absences plus informational selection versus absences for Hispanics.

- Generally, GPA versus MEAP areas were more strongly correlated for White and Black students than Hispanics students (Math versus GPA with $\underline{r}$ = .535, $\underline{r}$ = .553, and $\underline{r}$ = .377 respectively; and informational selection versus GPA with $\underline{r}$ = .492, $\underline{r}$ = .463, and $\underline{r}$ = .315 respectively). Hispanics did show a stronger correlation of the story selection versus GPA than Whites and Blacks ($\underline{r}$ = .422, $\underline{r}$ = .320, and $\underline{r}$ = .408 respectively).

- Absences and MEAP areas were more strongly negatively correlated for Hispanics than Whites or Blacks (math versus absences $\underline{r}$ = -.328, $\underline{r}$ = -.212, and $\underline{r}$ = -.020 respectively; story selection versus absences $\underline{r}$ = -.185, $\underline{r}$ = -.073, and $\underline{r}$ = -.041 respectively; and informational selection versus absences $\underline{r}$ = -.237, $\underline{r}$ = -.138, and $\underline{r}$ = -.009 respectively).

- Stronger positive correlations were shown for Blacks than White or Hispanic students for MEAP area versus another MEAP area (math versus story selection with $\underline{r}$ = .564, $\underline{r}$ = .439, and $\underline{r}$ = .322 respectively; math versus informational selection with $\underline{r}$ = .691, $\underline{r}$ = .634, and $\underline{r}$ = .582 respectively; and story selection versus informational selection $\underline{r}$ = .599, $\underline{r}$ = .529, and $\underline{r}$ = .461 respectively).

- Hispanic students showed the strongest negative correlation between GPA versus absences when compared to Whites and Black classmates ($\underline{r}$ = -.672, $\underline{r}$ = -.590, and $\underline{r}$ = -.442 respectively).

The results for the Saginaw High students follow in the second half of this report. Again, the total group results will be presented and then gender and racial/ethnic group statistics and correlations will be explored.

Saginaw High School - Total Group

The mean and standard deviation for the Saginaw High students on the variables involved in this study are presented in Table 7 below.

TABLE 7

MEAN AND STANDARD DEVIATION ON VARIABLES CORRELATED FOR SAGINAW HIGH TENTH GRADERS, FIRST SEMESTER, 1992-1993

VARIABLE*	N	M	SD
MEAP Math	236	485.40	14.81
MEAP Story Selection	235	297.85	19.17
MEAP Informational Selection	235	285.91	16.57
GPA	236	1.80	1.00
Absences	236	58.54	51.36

*Variable scaling: MEAP scores are expressed as scale scores. Grade Point Averages (GPA's) are expressed on a 4.3-point scale. Attendance is expressed as the number of hours absent in a 90-day period.

Analysis of the data contained in Table 7 above reveals the following:

- The number of Saginaw High students represented by variable ranged from 235 to 236 students.
- MEAP mean scores were greatest in math ($\underline{M}$ = 485.40) followed by reading story selection ($\underline{M}$ = 297.85) and reading information selection ($\underline{M}$ = 285.91).
- The mean overall GPA ($\underline{M}$ = 1.80) on a 4.3-point scale represented a C- letter grade (see Appendix A for point to letter grade conversion table).
- The mean number of hours absent in a 90-day period (first semester) was approximately 11.7 days ($\underline{M}$ = 58.54 hours assuming a five hour day).

The resulting correlations for the entire group of Saginaw High students for all possible paired comparisons of variables are given in Table 8 below.

TABLE 8

PEARSON PRODUCT MOMENT CORRELATIONS FOR SAGINAW HIGH TENTH GRADERS, FIRST SEMESTER, 1992-1993

VARIABLES*	N	r	PERCENT OF SHARED VARIANCE	ALPHA
Math vs. GPA	236	.493	24.30	.000
Story Selection vs. GPA	235	.435	18.92	.000
Informational Selection vs. GPA	235	.450	20.25	.000
Math vs. Absences	236	-.224	5.01	.000
Story Selection vs. Absences	235	-.261	6.81	.046
Informational Selection vs. Absences	235	-.212	4.49	.001
Math vs. Story Selection	235	.495	24.50	.000
Math vs. Informational Selection	235	.602	36.24	.000
Story Selection vs. Informational Selection	235	.594	35.28	.000
GPA vs. Absences	236	-.681	46.37	.000

*Variables scaling: MEAP scores are expressed as scale scores. Grade Point Averages (GPA's) are expressed on a 4.3-point scale. Attendance is expressed as the number of hours absent in a 90-day period.

An analysis of the above data from Table 8 resulted in the following points.

- Positive correlations were shown for MEAP areas versus GPA and MEAP versus other MEAP areas, while negative correlations were showing for MEAP areas versus absences and GPA versus absences.
- All correlations showed correlations that are significantly greater than zero at alpha equal to or less than .05.
- The largest positive correlation for MEAP areas versus GPA was shown for math versus GPA (r = .493) followed by reading informational selection (r = .450) and reading story selection (r = .435).

- The largest negative correlation for MEAP versus student absences occurred for reading story selection versus absences (r = -.261).

- As might be expected, each MEAP area correlated well with another MEAP area (r = .602 for math versus informational selection, r = .594 for math versus story selection, and r = .495 for math versus story selection).

- The largest negative correlation for all paired comparisons occurred for GPA versus absences (r = -.681).

Saginaw High - Gender Groups

Table 9 below presents the mean and standard deviation for male and female students at Saginaw High on the study variables.

TABLE 9

MEAN AND STANDARD DEVIATION BY GENDER GROUP ON VARIABLES CORRELATED FOR SAGINAW HIGH TENTH GRADERS, FIRST SEMESTER, 1992-1993

GENDER GROUP	VARIABLE*	n	M	SD
Males	MEAP Math	114	486.88	15.09
	MEAP Story Selection	113	296.37	18.87
	MEAP Informational Selection	113	285.91	18.38
	GPA	114	1.70	0.98
	Absences	114	53.24	48.45
Females	MEAP Math	122	484.01	14.46
	MEAP Story Selection	122	299.22	19.42
	MEAP Informational Selection	122	285.92	14.76
	GPA	122	1.88	1.01
	Absences	122	63.49	53.67

*Variable scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.

An analysis of the above Saginaw High student information aggregated by gender reveals the following points.

- A count of students by variable ranged from 113 to 114 for males and 122 for females.
- Males, on average, outperformed females on MEAP math ($\underline{M}$ = 486.88 versus $\underline{M}$ = 484.01 respectively).
- Females, on average, outperformed males on the MEAP reading story selection ($\underline{M}$ = 299.22 versus $\underline{M}$ = 296.37 respectively) and the MEAP reading informational selection ($\underline{M}$ = 285.92 versus $\underline{M}$ = 285.91 respectively).
- Females, on average, were absent more than males ($\underline{M}$ = 63.49 hours versus $\underline{M}$ = 53.49 hours per semester respectively or $\underline{M}$ = 12.70 days versus $\underline{M}$ = 10.70 days per semester assuming a five-hour respectively).
- Females, as a group received a higher GPA ($\underline{M}$ = 1.88 or C on 4.3-point scale) than males ($\underline{M}$ = 1.70 or a C- on 4.3-point scale as converted from tables given in Appendix A).

The correlations for all possible paired comparisons of the above variable by gender are given in Table 10 below.

TABLE 10

PEARSON PRODUCT MOMENT CORRELATIONS BY GENDER GROUP FOR SAGINAW HIGH TENTH GRADERS, FIRST SEMESTER, 1992-1993

GENDER GROUP	VARIABLES*	n	r	PERCENT OF SHARED VARIANCE	ALPHA
Males	Math vs. GPA	114	.518	26.83	.000
	Story Selection vs. GPA	113	.403	16.24	.000
	Informational Selection vs. GPA	113	.490	24.01	.000
	Math vs. Absences	113	-.208	4.32	.013
	Story Selection vs. Absences	113	-.162	2.62	.043
	Informational Selection vs. Absences	113	-.157	2.46	.048
	Math vs. Story Selection	113	.502	25.20	.000
	Math vs. Informational Selection	113	.639	40.83	.000
	Story Selection vs. Informational Selection	113	.612	37.45	.000
	GPA vs. Absences	114	-.667	44.48	.000
Females	Math vs. GPA	122	.496	24.60	.000
	Story Selection vs. GPA	122	.457	20.88	.000
	Informational Selection vs. GPA	122	.415	17.22	.000
	Math vs. Absences	122	-.225	5.06	.006
	Story Selection vs. Absences	122	-.361	13.03	.000
	Informational Selection vs. Absences	122	-.278	7.72	.001
	Math vs. Story Selection	122	.510	26.01	.000
	Math vs. Informational Selection	122	.569	32.37	.000
	Story Selection vs. Informational Selection	122	.588	34.57	.000
	GPA vs. Absences	122	-.721	51.98	.000

*Variables scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.

An in-depth study of the data in Table 10 reveals the following points.

- Positive correlations by gender at Saginaw High existed for MEAP areas versus GPA and MEAP areas versus other MEAP areas, while negative correlations existed for MEAP areas versus absences and GPA versus absences.

- All relationships showed significant correlations in excess of zero at alpha = .05 or less.

- Male correlations in MEAP areas versus GPA were stronger than those for females in two of the three areas (math versus GPA with r = .518 and r = .496 respectively and informational selection versus GPA with r = .490 and r = .415 respectively) with the exception of story selection versus GPA (r = .403 and r = .457 respectively).

- Female correlations in MEAP areas versus absences were stronger negative correlations than for males (math versus absences with r = -.225 and r = -.208 respectively, story selections versus absences with r = -.361 and r = -.162 respectively, and informational selection versus absences with r = -.278 and r = -.157 respectively).

- Male correlations in a MEAP area versus other MEAP areas were stronger than those for females in two of the three comparisons (math versus informational selection with r = .639 and r = .569 respectively and story selection versus informational selection with r = .612 and r = .588 respectively) with the exception of math versus story selection (r = .502 and r = .510 respectively).

- The GPA versus absences correlation for females was stronger negatively related (r = -.7231) than the correlation for males (r = .667).

Saginaw High - Racial/Ethnic Group

Table 11 below displays the mean and standard deviation of the study variables for the White, Black, and Hispanic racial/ethnic group students. The reader should be cautioned in making any interpretations when the number in a group is 10 or less.

TABLE 11

MEAN AND STANDARD DEVIATION BY RACIAL/ETHNIC GROUP ON VARIABLES CORRELATED FOR SAGINAW HIGH TENTH GRADERS, FIRST SEMESTER, 1992-1993

RACIAL/ ETHNIC GROUP	VARIABLE*	n	M	SD
White	MEAP Math	1	498.00	NA**
	MEAP Story Selection	1	282.00	NA
	MEAP Informational Selection	1	280.00	NA
	GPA	1	3.16	NA
	Absences	1	8.00	NA
Black	MEAP Math	228	48.528	14.89
	MEAP Story Selection	227	297.61	19.32
	MEAP Informational Selection	227	285.72	16.64
	GPA	228	1.78	0.99
	Absences	228	59.20	51.85
Hispanic	MEAP Math	7	487.57	12.98
	MEAP Story Selection	7	307.71	10.61
	MEAP Informational Selection	7	293.14	14.42
	GPA	7	2.18	1.41
	Absences	7	44.28	30.82

*Variable scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.
**NA=Not Applicable

An in-depth study of the data in Table 11 above reveals the following:

- The count of Saginaw High students by variable ranged from 227 to 228 for Blacks, seven for Hispanics, and one for Whites.
- In terms of averages on MEAP for the two largest racial/ethnic groups, Hispanics, on average, outperformed Blacks in all MEAP area (math $\underline{M}$ = 487.57 and $\underline{M}$ = 485.28 respectively; story selection $\underline{M}$ = 307.71 and $\underline{M}$ = 297.61 respectively; and informational selection = 293.14 and $\underline{M}$ = 285.28 respectively).
- Hispanic GPA ($\underline{M}$ = 2.18 or C+ letter grade) was greater than Black GPA ($\underline{M}$ = 1.78 or C+).

- Black students, on average, were absent more hours ($\underline{M}$ = 59.20 hours or 11.84 days assuming a five-hour day) than Hispanic students ($\underline{M}$ = 44.28 hours or 8.85 days assuming a five-hour day).

The paired comparisons for all possible correlations for each racial/ethnic group are displayed in Table 12 below. As can be readily seen with the White group of one student, no correlations were possible for this group.

TABLE 12

PEARSON PRODUCT MOMENT CORRELATIONS AGGREGATED BY RACIAL/ETHNIC GROUP FOR SAGINAW HIGH TENTH GRADERS, FIRST SEMESTER, 1992-1993

RACIAL/ ETHNIC GROUP	VARIABLES*	n	r	PERCENT OF SHARED VARIANCE	ALPHA
White	Math vs. GPA	1	NA**	-	-
	Story Selection vs. GPA	1	NA	-	-
	Informational Selection vs. GPA	1	NA	-	-
	Math vs. Absences	1	NA	-	-
	Story Selection vs. Absences	1	NA	-	-
	Informational Selection vs. Absences	1	NA	-	-
	Math vs. Story Selection	1	NA	-	-
	Math vs. Informational Selection	1	NA	-	-
	Story Selection vs. Informational Selection	1	NA	-	-
	GPA vs. Absences	1	NA	-	-
Black	Math vs. GPA	228	.481	23.13	.000
	Story Selection vs. GPA	227	.447	19.98	.000
	Informational Selection vs. GPA	227	.451	20.34	.000
	Math vs. Absences	228	-.217	4.87	.000
	Story Selection vs. Absences	227	-.260	6.76	.000
	Informational Selection vs. Absences	227	-.217	4.70	.000
	Math vs. Story Selection	227	.499	24.90	.000
	Math vs. Informational Selection	227	.603	36.36	.000
	Story Selection vs. Informational Selection	227	.595	35.40	.000
	GPA vs. Absences	228	-.687	47.19	.000
Hispanic	Math vs. GPA	7	.850	72.25	.008
	Story Selection vs. GPA	7	.315	9.92	.245
	Informational Selection vs. GPA	7	.497	24.70	.128
	Math vs. Absences	7	-.469	21.99	.144
	Story Selection vs. Absences	7	-.602	36.24	.076
	Informational Selection vs. Absences	7	-.177	3.13	.351
	Math vs. Story Selection	7	.586	34.33	.083
	Math vs. Informational Selection	7	.695	48.30	.041
	Story Selection vs. Informational Selection	7	.357	12.74	.216
	GPA vs. Absences	7	-.572	32.71	.090

*Variables scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.
**NA=Not Applicable.

An analysis of the data in Table 12 for the two largest racial/ethnic groups (Blacks and Hispanics) netted the following findings.

- Positive correlation by racial/ethnic group exists for MEAP areas versus GPA and MEAP area versus another MEAP area, while negative correlations were displayed for MEAP areas versus absences (only exception was for the Hispanic group that showed a correlation not significantly different than zero for informational selection absences) and GPA versus absences.

- All correlations for Blacks were significantly different than zero (alpha = .05 or less) while for Hispanics only math versus GPA (r = .850) and math versus informational selection (r = .695) were significantly different than a zero correlation at again alpha = .05 or less.

- The remaining points will focus on correlations for the Black group since they all are significantly greater than a zero correlation.

  - MEAP areas versus GPA were positive correlated with math versus GPA (r = .481) showing the largest correlation with informational selection versus GPA (r = .451) showing the second largest correlation followed by story selection versus GPA (r = .447).

  - MEAP areas versus absences were negatively correlated for Black Saginaw High students with story selection versus absences (r = -.260) being the largest negative correlation in this group of three followed by math versus absences (r = .217) and informational selection versus absences (r = -.217) being tied for the second largest negative correlation.

  - GPA versus absences was the largest observed negative correlation (r = -.687).

  - The largest positive correlations occurred for one MEAP area versus another MEAP area with math versus informational selection (r = .603) showing the largest correlation followed in order by story selection versus informational selection (r = .595) and math versus story selection (r = .499).

Arthur Hill And Saginaw High - Total, Gender, And Racial/Ethnic Groups

Borg and Gall (1971, pp. 359-360) gives some general guidelines about the usefulness of correlations (when $N \geq 100$) in terms of making group decisions. The chart below portrays these guidelines.

Magnitude Range Of Correlations	Utility For Group Predictions
.000 - .199	Almost none
.200 - .349	Very little
.350 - .649	Crude prediction, but useful if a number of them can be combined in a proper ratio/combination
.650 - .849	Useful
.850 - 1.000	Very useful, but seldom observed

A study of the chart above reveals that for the purpose of group predictions a correlation of .650 or above is desired (a correlation of this magnitude explains 42.25% or more of the shared variance between the two variables being correlated). Correlations between .350 and .649 have some crude prediction capability singly, but their ability is enhanced if they can be combined together (considered together). Any correlation between .850 to 1.00 is very useful to predicting group performance, however, correlations of this magnitude (either in positive or negative direction) are seldom observed.

Given this context, the correlation coefficient for Saginaw High and Arthur Hill students were reviewed for any group size in excess of 99. Table 13 below presents these correlations of paired study variables for both schools for the total, gender, and racial/ethnic groups when the group size exceeded 99.

TABLE 13

PEARSON PRODUCT MOMENT CORRELATIONS FOR ARTHUR HILL AND SAGINAW HIGH TENTH GRADERS, FIRST SEMESTER, 1992-93

	CORRELATION COEFFICIENTS							
	Total Group		Arthur Hill		Saginaw High		Arthur Hill	Saginaw High
VARIABLES*	AHHS	SHS	Males	Females	Males	Females	White	Black
Math vs. GPA	.551	.493	.526	.605	.518	.496	.535	.481
Story Selection vs. GPA	.365	.435	.232	.474	.403	.457	.320	.447
Informational Selection vs. GPA	.495	.450	.437	.560	.490	.415	.492	.451
Math vs. Absences	-.213	-.224	-.086	-.315	-.208	-.225	-.212	-.217
Story Selection vs. Absences	-.091	-.261	.119	-.292	-.162	-.361	-.073	-.260
Informational Selection vs. Absences	-.160	-.212	-.048	-.262	-.157	-.278	-.138	-.217
Math vs. Story Selection	.464	.495	.466	.488	.502	.510	.439	.499
Math vs. Informational Selection	.655	.602	.646	.667	.639	.569	.634	.603
Story Selection vs. Informational Selection	.545	.594	.527	.572	.612	.588	.529	.595
GPA vs. Absences	-.582	-.681	-.518	-.649	-.667	-.721	-.590	-.687

*Variables scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.

A perusal of Table 13 reveals that of the 80 correlation coefficients there were only six (or 7.5%) in the .560 to .849 range of "useful", 48 (or 60.0%) in the .350 to .649 range of "crude prediction", 18 (or 22.5%) in the .200 to .349 range of "very little usefulness", and 8 (or 10.0%) in the .000 to .199 range of "almost no usefulness".

These tabulations can more readily be seen if a frequency distribution by correlation coefficient size is created. Table 14 below presents this frequency distribution of the data presented in Table 13.

TABLE 14

FREQUENCY DISTRIBUTION OF PEARSON PRODUCT MOMENT CORRELATIONS FOR TENTH GRADERS, FIRST SEMESTER, 1992-93 BY CORRELATION RANGES OF USEFULNESS

	COUNT OF CORRELATIONS BY RANGE				
	"Almost None"	"Very Little"	"Crude Prediction"	"Useful"	"Very Useful"
VARIABLES*	.000 - .199	.200 - .349	.350 - .649	.650 - .849	.850 - 1.000
Math vs. GPA			8		
Story Selection vs. GPA		2	6		
Informational Selection vs. GPA			8		
Math vs. Absences		8			
Story Selection vs. Absences	4	4			
Informational Selection vs. Absences	4	4			
Math vs. Story Selection			8		
Math vs. Informational Selection			6	2	
Story Selection vs. Informational Selection			8		
GPA vs. Absences			4	4	
TOTAL	8	18	48	6	

*Variables scaling: MEAP scores are expressed as scale scores.
Grade Point Averages (GPA's) are expressed on a 4.3-point scale.
Attendance is expressed as the number of hours absent in a 90-day period.

An analysis of the data contained in Table 14 above reveals the following:

- The strongest set of correlations as a group was yielded by GPA versus absences with four of eight (50.0%) in the "useful" range and the remaining four (50.0%) in the "crude prediction" range.
- The next strongest set of correlations was netted by math versus information selection with two of eight (25.0%) in the "useful" range and six of eight (75.0%) in the "crude prediction" range.
- The third strongest set of correlations was yielded by math versus GPA, informational selection versus GPA, math versus story selection, and story versus informational selection with all these correlations showing eight of eight (100.0%) in the "crude prediction" range.
- The fourth strongest set of correlations was shown by story selection versus GPA with six of eight (75.0%) in the "crude prediction" range and two of eight (25.0%) in the "very little" range.
- The fifth strongest set of correlations group was evidenced by math versus absences with eight of eight (100.0%) in the "crude prediction" range.
- The least strongest set of correlations was shown by story selection versus absences and informational selection versus absences with four each of eight (50.0%) in the "crude prediction" range and the remaining four (50.0%) in the "almost none" range.

SUMMARY AND CONCLUSIONS

The Pearson Product Moment Correlation Coefficients for Saginaw High and Arthur Hill Schools' tenth graders have been reviewed. Crossed pairs of MEAP subtest areas (math, story, and informational selections), GPA, and absences have been presented for the total school and aggregated by gender and racial/ethnic groups. From a review of these type of comparisons, the following conclusions seem evident.

- Though the exact correlation coefficients vary by school, there does seem to be a great consistency in terms of general strength of relationships by variable pairs across schools, gender, and racial/ethnic groups.

- The GPA versus absence correlations are the strongest set with these coefficients being their very strongest for Saginaw High total group (r = -.681), Saginaw High males (r = -.667), Saginaw High females (r = -.721) and Saginaw High Blacks (r = -.687). The Arthur Hill comparisons in this same area range in size from largest for females (r = -.649) to smallest for males (r = -.518).

- For MEAP areas versus GPA, 22 of 24 (91.7%) of the correlations fall within the .350 to .649 "crude prediction" range with the remaining two to 24 (8.3%) falling on the "very little" range.

- For MEAP areas versus absences, 16 of 24 (66.7%) of the correlations fall within the "very little use" range of .200 to .349 with the remaining 8 of 24 (33.3%) falling in the "almost no use" range.

- As might be expected, a MEAP area versus another MEAP area correlated very well with two of 24 (8.3%) of the correlations falling in the .650 to .849 or "useful" range and the remaining 22 of 24 (91.7%) falling in the "crude prediction" range of .350 to .649.

RECOMMENDATIONS

After a review of the above data, a number of recommendations relative to establishing a new baseline for strategic planning purposes seem evident. These recommendations include the following:

- Since absences share approximately 27% to 52% of the variance in common with GPA, absence data by total school, gender, and racial/ethnic group seem important to capture for the new baseline.

- GPA versus MEAP areas have in common a variance of approximately 5% to 37% with each other, GPA by total school, gender, and racial/ethnic group seem worthwhile to collect for the proposed new baseline.

- Due to the importance of the Michigan Educational Assessment Program (MEAP) this element of the new baseline is more or less a given with aggregations by gender and racial/ethnic groups as additional essential elements.

APPENDICES

APPENDIX A

SCHOOL DISTRICT OF THE CITY OF SAGINAW

OFFICE OF SECONDARY EDUCATION

TO: Secondary Principals

FROM: Gene P. Nuckolls, Assistant Superintendent

DATE: August 24, 1979

RE: Optional Grading Practices and Procedures

During the 1979-80 school year, each secondary school staff is to choose to use one of two optional grading plans that were approved by the Professional Study Committee. The choice of plans should be by a simple majority vote of the staff. After the choice has been made, students and parents are to be informed of the grading practices.

The two plans are as follows:

Grading Practices — Option I

Each grade is given a number value:

Grading System	Grading Range	Computerized Grade Point Allocation
A+ = 4.3	A+ = 4.11 - 4.30	A+ = 4.3
A = 4.0	A = 3.81 - 4.10	A = 4.0
A- = 3.7	A- = 3.41 - 3.80	A- = 3.7
B+ = 3.3	B+ = 3.11 - 3.40	B+ = 3.3
B = 3.0	B = 2.81 - 3.10	B = 3.0
B- = 2.7	B- = 2.41 - 2.80	B- = 2.7
C+ = 2.3	C+ = 2.11 - 2.40	C+ = 2.3
C = 2.0	C = 1.81 - 2.10	C = 2.0
C- = 1.7	C- = 1.41 - 1.80	C- = 1.7
D+ = 1.3	D+ = 1.11 - 1.40	D+ = 1.3
D = 1.0	D = .81 - 1.10	D = 1.0
D- = .7	D- = .41 - .80	D- = .7
E = .0	E = .00 - .40	E = .0

BIBLIOGRAPHY

Borg, W. R. & Gall, M. D. (1971). Educational research: An introduction (2nd ed.). New York: David McKay Company, Inc.