

LONGITUDINAL STUDY REPORT
for the
CHAR-EM GREAT START COLLABORATIVE

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By

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EXECUTIVE SUMMARY

This report presents findings on the kindergarten readiness, first year performance, and third grade MEAP scores of children that participated in the Be-4 Center, Be-4 Home Visiting, Northwest Michigan Even Start, and Head Start early education programs. These children are compared to students who did not participate in these programs.

The families served by these early education programs (EEP) tend to have more educationally at-risk factors than the general population. In order to obtain greater equivalence between the EEP and general population (control group), a subsample was formed of mothers and fathers who have a high school diploma/GED or less.

Analysis of **kindergarten readiness** for the mothers subsample found that EEP children are rated higher than the control group for 13 of 14 items. Combining all items, the mean average for “agree” responses is 82% for EEP children compared to 74% for the control group which is a statistical significant difference ($p=.008$). There is a 14% difference in completing work, and a 13% difference in class participation and thinking skills. A 12% difference was found for interest in work, and 10% for both getting along with other children and being imaginative and creative. This is a very positive finding and reflects well on the efficacy of the EEP programs when controlling for educational equivalence of mothers.

For fathers, 11 of 14 items have a higher “agree” percentage for the EEP group. The percentage of “agree” responses averages 83% for EEP compared to 78% for the control group which is a statistical significance difference ($p=.02$). There is a 13% difference in being imaginative and creative, 12% for interest in work, and 11% for both getting along with other children and completing work. A 10% difference was found in thinking skills. This is an excellent outcome that demonstrates the effectiveness of the EEP programs.

An analysis of first grade performance for the mother’s subsample found that EEP children are rated 8% higher for creative ability and 6% for managing behavior. Control group children have an 11% higher rating for writing and 7% for reading and problem solving. These findings raise issues that warrant further examination. For the father’s group, EEP children are rated higher than control group children for 7 out of 10 items including a 29% difference in creative ability, 16% in managing behavior, 14% in listening skills, and 12% in math. These findings merit discussion.

MEAP mean average scores are similar across groups. This is a positive finding in that it shows that students who participated in early education programs have caught up with the state average. This is particularly noteworthy when considering the educationally at-risk status of these students. When controlling for education, for those who are “proficient” or higher, the reading percentages are higher for the EEP group. For writing, the mother’s control group is higher than the EEP mother’s group; however, the EEP father’s group outscores the comparative control group. Math scores are very similar between groups. EEP ELA scores are higher for both the mother and father groups. These data indicate that the EEP programs have a positive effect on reading and ELA skills.

LONGITUDINAL STUDY REPORT

INTRODUCTION

It is customary to evaluate the immediate effects of early education programs. For example, did the child achieve developmental milestones, did parents demonstrate greater knowledge about child rearing, and did the quality of parent-child interaction increase? It is less common, but equally important, to assess long-term program effects, particularly how well the program prepared the child to succeed in school. This report presents findings on the kindergarten readiness, first year performance, and third grade MEAP scores of children that participated in the Char-Em Be-4 Center, Char-Em Be-4 Home Visiting, Northwest Michigan Even Start, and Head Start early education programs (*referred to as **EEP** in this report*). These children are compared to students who did not participate in these programs (control group).

This analysis sought to answer three questions:

1. How does the level of readiness of EEP kindergarten children compare to a control group?
2. How does the EEP students' first grade academic, social, and behavioral performance compare to a control group?
3. How does MEAP scores compare between EEP and control group students?

METHODOLOGY

Three instruments were used for collecting data. The Kindergarten Round-up form has the name of the child, the name of the parent completing the form, child's date of birth, the type of EEP program participation, and the last grade completed of parents or guardians. It was developed and administered by the Char-Em ISD in cooperation with administrators in local school districts in 2001 and continues to be distributed.

The School Readiness Rating Scale contains 14 items about the child's academic and social performance in Kindergarten. Teachers complete this instrument by selecting answers from a 7 point scale.

The Char-Em Teacher Assessment contains 10 academic and social-behavioral items and a 7 point rating scale completed by first grade teachers. Instruments are completed by first grade teachers at least half way through the school year.

Reading, writing, and mathematics MEAP scores were sought for all children in the sample. An English Language Arts (ELA) score is calculated by adding two-thirds of the reading and one-third of the writing scores.

Data were entered into a database and analyzed using the Statistical Package for the Social Sciences (SPSS, Version 16). All data and findings are presented in ways that makes it impossible to identify any individual student, parent, teacher, school, or early education program.

LEVEL OF READINESS OF KINDERGARTEN CHILDREN

Teachers are asked how well the student compared to what they consider typical for a kindergarten level child. Fourteen items are rated using the following seven point scale:

Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree	Not Sure
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School Readiness Rating Scale Items

1. Has a good attendance record.
2. Shows interest in school work.
3. Gets along with other children.
4. Gets along with teachers and adults.
5. Retains what he or she learns.
6. Completes assignments.
7. Is imaginative and creative in using materials.
8. Tries out several approaches and solutions when problem solving with materials.
9. Shows grade-level development in collaborative, participation skills (e.g., contributes to class discussions, asks, and answers questions).
10. Demonstrates grade-level development in literacy skills (e.g., reading).
11. Demonstrates grade-level development in math skills.
12. Demonstrates grade-level social development.
13. Demonstrates grade-level emotional development.
14. Demonstrates grade-level development in thinking skills.

School Readiness Comparison

A total of 465 kindergarten children were assessed by teachers. Of this group, 118 (25%) participated in EEP programs and 347 (75%) did not. A comparative analysis of kindergarten readiness was performed between children that participated in the early education programs (labeled as “E” for experimental) and all other children in the sample (labeled as “C” for control group). Table 1 has 7 columns. The first column contains the name of the item followed by 6 columns of percentages. Columns 2 and 3 has “Strongly Agree” and “Agree” responses, columns 4 and 5 contains “Somewhat Agree” and columns 6 and 7 combines all three “Agree” responses.

Table 1: Kindergarten Readiness of E and C Group (%)

	Strongly Agree and Agree		Somewhat Agree		Strongly Agree, Agree and Somewhat Agree	
	E	C	E	C	E	C
Attendance	75	83	12	8	87	91
Interest in work	65	79	24	13	89	92
Along with children	62	77	30	15	92	92
Along with teachers	77	84	18	11	95	95
Retains learning	53	71	28	18	81	89
Completes Work	64	76	27	13	91	89
Imaginative/Creative	47	67	39	21	86	88
Problem-solving	41	63	36	23	77	86
Class participation	52	70	30	16	82	86
Literacy skills	50	69	24	17	74	86
Math skills	52	72	27	16	79	88
Social development	53	68	26	18	79	86
Emotional development	48	67	31	20	79	87
Thinking skills	52	72	30	18	82	90

A higher percentage of control group kindergarten children are rated “Strongly Agree” or “Agree” for every item. The differences range from 8% to 22% with an average difference of 16% percent. When “Strongly Agree,” “Agree” and “Somewhat Agree” are combined, the average difference drops to 5% with 7 items having a difference of 4% or less.

The above results have significant limitations because the groups are not equivalent. For example, since 1994, data have been analyzed on risk factors of families participating in the Char-Em ISD early education programs. Using the 26 educationally at risk factors set forth by the Michigan Department of Education, the average family served had 5 risk factors. Highest among these are rural isolation, low income, parents with low educational attainment, substance

abuse problems, a history of nutritional deficiency, single and teenage parenthood, and unemployment. Head Start children also meet educationally at-risk factors as a condition of enrollment.

Although it is not known how the control group compares to the EEP group across these risk factors, it is expected that the control group would not have the same number or severity of “at-risk” factors. Two factors are considered to assess the equivalence of the groups: the number of children receiving free or reduced lunch and the last grade completed of parents.

There is a plethora of evidence establishing a correlation between socioeconomic status (SES) and school success. These studies show that children from low SES families do not fare as well in school as those from middle to high SES families. One indicator of SES is free or reduced lunch. Although data were not available for children in this longitudinal study, there was an analysis completed for the 2002 and 2004 studies. It was found that about twice the percentage of children in Char-Em early education programs received free or reduced lunch compared to the control group. These differences are assumed to be true of the cohort in this study.

A strong correlation has also been found between parental educational level and child’s school success. Fortunately, these data are available for some parents in this study database. There are significant differences in the educational level of mothers and fathers in the EEP versus the control group. For mothers in the EEP group, 44% have completed some college courses or have a four year degree. This compares to 67% for the control group. Only 11% percent of the EEP group completed college compared to 33% of the control group.

For fathers in the EEP group, 38% completed some college courses or have a four year degree. This compares to 58% for the control group. Only 6% of the EEP group completed college compared to 32% of the control group.

These data demonstrate the nonequivalence of the EEP and control group regarding the educational level of parents. It is further evidence of the larger proportion of at-risk children in the EEP group.

The table below has combined ratings for the EEP and control group for those with a high school diploma/GED or less. There were 57 EEP and 59 control group mothers in this subsample. For fathers, EEP had 56 and the control group 75 parents. The difference column has

the results of subtracting the C% from the E%. Positive differences for the E group are highlighted in yellow.

Looking at the “mothers” groups, the **EEP children are rated higher than the control group for 13 of the 14 items**. Combining all items, the mean average for “agree” responses is **82% for EEP compared to 74% for the control group** which is a statistical significance difference ($p=.008$). There is a 14% difference in completing work, and a 13% difference in class participation and thinking skills. A 12% difference was found for interest in work, and 10% for getting along with other children and being imaginative and creative. This is a very positive finding and reflects well on the efficacy of the EEP programs when controlling for educational equivalence of mothers.

For fathers, **eleven of 14 items have a higher “agree” percentage for the EEP group**. The percentage of “agree” responses averages **83% for EEP compared to 78% for the control group** which is a statistical significance difference ($p=.02$). There is a 13% difference in being imaginative and creative, 12% for interest in work, and 11% for getting along with other children and completing work. A 10% difference was found in thinking skills. This positive finding demonstrates the effectiveness of EEP programs.

In conclusion, for non-college level mothers and fathers, the EEP group is rated higher in school readiness by kindergarten teachers.

Table 2: Kindergarten Readiness of E and C Group Controlling for Education (%)

	Mothers			Fathers		
	Strongly Agree, Agree and Somewhat Agree		Diff.	Strongly Agree, Agree and Somewhat Agree		Diff.
	E	C		E	C	
Attendance	83	82	1	86	88	-2
Interest in work	88	76	12	89	77	12
Along with children	91	81	10	91	80	11
Along with teachers	93	93	0	95	92	3
Retains learning	80	76	4	82	80	2
Completes Work	90	76	14	91	80	11
Imaginative/Creative	80	70	10	86	73	13
Problem-solving	73	64	9	75	69	6
Class participation	79	66	13	80	73	7
Literacy skills	75	73	2	75	76	-1
Math skills	79	70	9	80	75	5
Social development	77	71	6	78	77	1
Emotional development	77	75	2	76	81	-5
Thinking skills	81	68	13	84	74	10

FIRST GRADE PERFORMANCE ASSESSMENT

A total of 298 first grade children were assessed by teachers. Of this group, 47 (16%) participated in CEISD and Head Start early education programs and 251 (84%) did not. Teachers are asked to rate the student compared to what they expect for a student in first grade. Ten items are rated using the following seven point scale:

Way Above Average	Moderately Above Average	Slightly Above Average	Average	Slightly Below Average	Moderately Below Average	Way Below Average
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First Grade Rating Scale Items

1. Writing skills.
2. Reading skills.
3. Mathematical thinking and concepts.
4. Problem-solving and thinking skills.
5. Creative ability.
6. Listening skills.
7. Getting along with peers.
8. Managing personal behavior.
9. Attendance.
10. Self-esteem.

First Grade Comparative Analysis

The table below has data for both groups with the EEP columns marked with an “E” and the control group columns identified with a “C.” This table has 7 columns. The first column contains the name of the item followed by 6 columns of percentages. Columns 2 and 3 has

“Moderately Above Average” and “Way Above Average” responses, columns 4 and 5 contains “Slightly Above Average” and “Average” and columns 6 and 7 has “Average or Above.”

A higher percentage of control group first grade children are rated “average” or above for all items. Of particular note is 14% or more ratings of “average” or above for the control group writing, reading, mathematics, and problem solving.

Table 3: Teacher Assessment of EEP and Control Group First Graders (%)

	Moderately and Way Above Average		Slightly Above Average and Average		Average or Above	
	E	C	E	C	E	C
Writing Skills	2	18	41	41	43	59
Reading Skills	6	27	45	38	51	65
Mathematical Thinking	4	21	58	56	62	77
Problem Solving	4	22	55	52	59	74
Creative Ability	4	21	68	60	72	81
Listening Skills	9	22	53	50	62	72
Get Along With Peers	11	25	62	56	73	81
Manage Behavior	6	20	55	54	61	74
Attendance	15	20	68	69	83	89
Self-esteem	4	18	74	66	78	84

Table 4 has combined ratings for the EEP and control group for those with a high school diploma/GED or less. There were 13 EEP mothers, 28 control group mothers, 16 EEP fathers, and 32 control group fathers. The difference column has the results of subtracting the C% from the E%. Positive differences for the E group are highlighted in yellow.

The results when controlling for education are dramatically different than when EEP children are compared to the general population. Control group differences for mothers are much less than the general population comparison. **EEP children are rated 8% higher for creative ability and 6% for managing behavior.** Control group children have an 11% higher rating for writing and 7% for reading and problem solving. These findings warrant further examination.

For the fathers group, **EEP children are rated higher than control group children for 7 of 10 items** including a 29% difference in creative ability, 16% in managing behavior, 14% in listening skills, and 12% in math. These findings merit discussion.

**Table 4: Teacher Assessment of EEP and Control Group First Graders
Controlling for Education (%)**

	Mothers			Fathers		
	Average or Above		Diff.	Average or Above		Diff.
	E	C		E	C	
Writing Skills	39	50	-11	44	44	--
Reading Skills	39	46	-7	44	44	--
Mathematical Thinking	62	61	1	75	63	12
Problem Solving	54	61	-7	69	63	6
Creative Ability	77	71	6	88	59	29
Listening Skills	54	54	--	69	56	14
Get Along With Peers	69	75	-6	81	75	6
Manage Behavior	62	54	8	75	59	16
Attendance	85	93	-8	88	91	-3
Self-esteem	77	71	6	81	75	6

MEAP SCORES ASSESSMENT

Michigan Educational Assessment Program (MEAP) third grade test scores were sought for students in the sample. There were 352 MEAP reading scores obtained including 104 (30%) for the EEP and 248 (70%) for the control group children. For writing, there were 350 scores with 105 (70%) for EEP and 245 (30%) for control group children. Math was obtained for 354 children including 105 EEP (70%) and 249 (30%) control group. When controlling for educational level, both the EEP and control groups had from 41 to 50 children.

The third grade MEAP measures what Michigan educators believe all students should know in reading, writing, and mathematics. Scores are divided into four levels. An English language arts score is formulated by adding two-thirds of the reading and one-third of the writing scores. The table below has MEAP levels.

Table 5: MEAP Levels

Statewide	Level 4 Not Proficient	Level 3 Partially Proficient	Level 2 Proficient	Level 1 Advanced
Reading	196-279	280-299	300-337	338-419
Writing	254-273	274-299	300-356	357-409
Math	198-278	279-299	300-326	327-416
ELA	215-276	277-299	300-341	342-416

Table 6 below has mean averages. The columns are as follows:

State: All students tested in the state.

Sample: All students in the sample.

E: Students who participated in the Early Education programs.

C: Students who did not participate in Early Education programs.

E-Mo: Students who participated in the Early Education programs whose mother had a high school diploma/GED or less.

C-Mo: Students who did not participate in Early Education programs whose mother had a high school diploma/GED or less.

E-Fa: Students who participated in the Early Education programs whose father had a high school diploma/GED or less.

C-Fa: Students who did not participate in Early Education programs whose father had a high school diploma/GED or less.

As is seen in Table 6, the **mean average scores are similar across groups**. This is a positive finding in that it shows that students who participated in early education programs have caught up with the state average. This is particularly noteworthy when considering the educationally at-risk status of these students. On the down side, when controlling for education, there was very little difference between EEP and control group students.

Table 6: MEAP Mean Averages for Michigan, the Sample, CE, and Control Group

	State	Sample	E	C	E-Mo	C-Mo	E-Fa	C-Fa
Read	331	333	331	337	333	328	331	332
Write	303	303	301	305	299	301	301	300
Math	331	333	331	339	329	330	331	335

Table 7 has the percentage of students controlled by level of education who are “proficient” or higher. **The reading percentages are higher for the EEP group. For writing, the mother’s control group is higher than the EEP mother’s group; however, the EEP father’s group outscores the comparative control group.** The math scores are very similar between groups. **EEP ELA scores are higher for both mother and father groups.** These data indicate that the EEP programs have a positive effect on reading and ELA skills.

**Table 7: MEAP Mean Averages
Controlling for Education**

	Proficient or Advanced	
	E	C
Mothers		
Read	92	87
Write	50	55
Math	96	95
ELA	89	80
Fathers		
Read	100	94
Write	54	49
Math	98	98
ELA	92	86

MAJOR FINDINGS

Kindergarten Readiness

Students with mothers who have a high school diploma/GED or less:

- EEP children are rated higher than the control group for 13 of 14 items. Combining all items, the mean average for “agree” responses is 82% for CE compared to 74% for the control group which is a statistical significant difference (p=.008).
- There is a 14% difference in completing work, and a 13% difference in class participation and thinking skills. A 12% difference was found for interest in work, and 10% for getting along with other children and being imaginative and creative. This is a very positive finding and reflects well on the efficacy of the EEP programs when controlling for educational equivalence of mothers.

Students with fathers who have a high school diploma/GED or less:

- Eleven of 14 items have a higher “agree” percentage for the EEP group. The percentage of “agree” responses averages 83% for EEP compared to 78% for the control group which is a statistical significance difference (p=.02).
- There is a 13% difference in being imaginative and creative, 12% for interest in work, and 11% for getting along with other children and completing work. A 10% difference was found in thinking skills. This is a very positive finding.

First Grade Performance

Students with mothers who have a high school diploma/GED or less:

- EEP children are rated 8% higher for creative ability and 6% for managing behavior. Control group children have an 11% higher rating for writing and 7% for reading and problem solving. These findings warrant further examination.

Students with fathers who have a high school diploma/GED or less:

- EEP children are rated higher than control group children for seven items including a 29% difference in creative ability, 16% in managing behavior, 14% in listening skills, and 12% in math. These findings merit discussion.

MEAP Scores

- Mean average scores are similar across groups. This is a positive finding in that it shows that students who participated in early education programs have caught up with the state average. This is particularly noteworthy when considering the educationally at-risk status of these students.
- When controlling for education, there was very little difference between EEP and control group students.

When controlling for education for those who are “proficient” or higher:

- The reading percentages are higher for the EEP group.
- For writing, the mother’s control group is higher than the EEP mother’s group; however, the EEP father’s group outscores the comparative control group.
- Math scores are very similar between groups.
- EEP ELA scores are higher for both mother and father groups. These data indicate that the EEP programs have a positive effect on reading and ELA skills.

DISCUSSION AND RECOMMENDATIONS

All studies have limitations. In this study, the database had significant gaps that affected the usefulness of the findings. This does not negate the importance of what was found, but it does suggest that the results be considered tentative.

A major concern is the inability to obtain greater equivalence between the experimental and control groups. The single variable available for stratification was the last grade completed

by parents. However, these data were only available for 57% of mothers and 55% of fathers. Furthermore, selecting parents with a high school diploma/GED or less greatly reduced the available sample for both the EEP and control group.

A second concern was the number of assessments available. Seventy percent of the sample had a kindergarten assessment, 45% a first grade assessment, and 53% a MEAP score. Only 16% of the sample had all three assessments, with these percentages greatly reduced when selecting a subsample of parents with a high school diploma/GED or less.

Accepting these study limitations, there are several outcomes that have significance and merit discussion. When controlling for educational level, children that participated in the CEISD early education programs and/or Head Start were rated significantly higher in achieving school readiness than their counterparts in the control group. Perhaps the Great Start collaborative can generate additional hypotheses for testing. The ultimate value of these efforts is to target subgroups served by early education programs that would profit from specialized programming or customized curriculums.

The most positive outcome of the MEAP analysis is that educationally at-risk children tended to perform at the third grade statewide average. It was noteworthy to find that EEP programs had a positive effect on reading and English language arts skills.

These findings serve as a springboard for constructive dialogues between early education program staff, teachers, administrators, parents, and community groups. It is recommended that the Great Start Collaborative organize and facilitate these discussions.