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# Evaluation Report of Brain Education in Monrovia, Liberia

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## **Introduction**

This report outlines findings from an evaluation of a 3-month pilot intervention designed to decrease the constant risk and countless emotional and social challenges that citizens of Monrovia, Liberia encounter. From March 12 to June 18 2012, IBREA carried out a 3 month-pilot project in two schools in Monrovia, Liberia. In each school, IBREA worked with three groups (1 group of teachers and 2 groups of students). During the first two months, IBREA was working with all the groups 2 days in Special Project School and 3 days in Paynesville Community School. During the third month of the project, the IBREA team divided in two teams and provided Brain Education every day to all 3 groups in each school.

In order to combat poverty and the effects of the many years of civil war, the UN Mission to Liberia set out to collaborate with the International Brain Education Association to bring a new way of learning. Building on the schools' effort to provide these groups with hope for a better future, Brain Education brought a new educational foundation to enhance its teachers' and students' learning and growth.

The Liberian government and UN Mission to Liberia has understood that the best way for these children to truly overcome trauma and prevent risks of marginalization is to develop their own creative capacity to manage themselves. In other words, they need to learn how not to be distracted by external circumstances but rather change them for the better.

The purpose of this research study is to measure and analyze the levels of improvement in both teachers and students through Brain Education by looking at their condition before and after training. It is our hope that the experience and results will serve as a foundation to create a long-term, comprehensive Brain Education plan across Liberia to prepare its younger generations to become healthy, active, leading change agents who are able to create a bright future for their country. The research questions for the study are as follows:

### *Research Questions*

1. Between Time 1 and Time 2, how do students who received the treatment differ on measurements of mental health, reaction to trauma, motivation, self-efficacy, self-esteem, academic self-esteem, peer relationships, and gender beliefs of student?
2. Between Time 1 and Time 2, how do teachers who received the treatment differ on measurements of mental health, reaction to trauma, collective self-efficacy, and gender beliefs of teachers?
3. To what extent are there significant differences between students and teachers in the control and treatment groups?

## **Method**

The experimental research design employed a pretest-posttest control group design where classrooms were randomly assigned to either the treatment or control group. This pilot study involved two phases: 1). the implementation of the Brain Education program from March through June 2012; and 2). data collection and analyses of survey data.

This pilot study utilized quantitative data to study the effects of the brain education program on students and teachers in Monrovia, Liberia. Participants included 190 students and 62 teachers. Participants were randomly selected to either be in the treatment or control group. There were 90 students in the treatment group and 90 students in the control group. There were 30 teachers in the treatment group and 32 teachers in the control group. Students and teachers in the treatment group received the brain education curriculum over 3 months four days a week and each session lasted in length for 70 minutes. Surveys were administered to control and treatment group participants before the brain education program was initiated (March 2012) and after it was completed (June 2012).

The Brain Education instructors were directed to conduct daily observations and take journalistic notes regarding students and teachers in the program that could offer information-rich details about their personal and school-related experiences in Monrovia.

## Results

### Research Question 1: Differences for students in the treatment group between Time 1 and Time 2

Analyses of survey data included descriptive statistics, paired samples t-test, and analysis of variance between treatment and control groups for teachers and students. For students, the brain education program had a significant effect on several study variables. These results are depicted in Exhibit 1 and Exhibit 2 below.

**Exhibit 1. Results of paired samples t-test for students in the treatment group.**

	Time 1 Average	Time 2 Average	P-value	Δ (change)
<b>Self-Esteem</b>	3.48	4.08	.00***	.60 (+)
<b>Gender Relations at School</b>	2.45	2.82	.00***	.37 (+)
<b>Intrinsic Value (Motivation)</b>	5.61	6.25	.00***	.64 (+)
<b>Negative Gender Experiences</b>	1.98	1.67	.00***	.31 (-)
<b>Peer Relationships</b>	2.77	3.23	.00***	.46 (+)
<b>Self-Regulation</b>	4.70	5.78	.00***	1.08 (+)
<b>Trauma Experiences</b>	1.89	1.61	.00***	.28 (-)
<b>Trauma Symptoms</b>	2.26	1.87	.00***	.39 (-)

Note: The \* symbol denotes that results are significant at the \*\*\* $p < .001$ ;

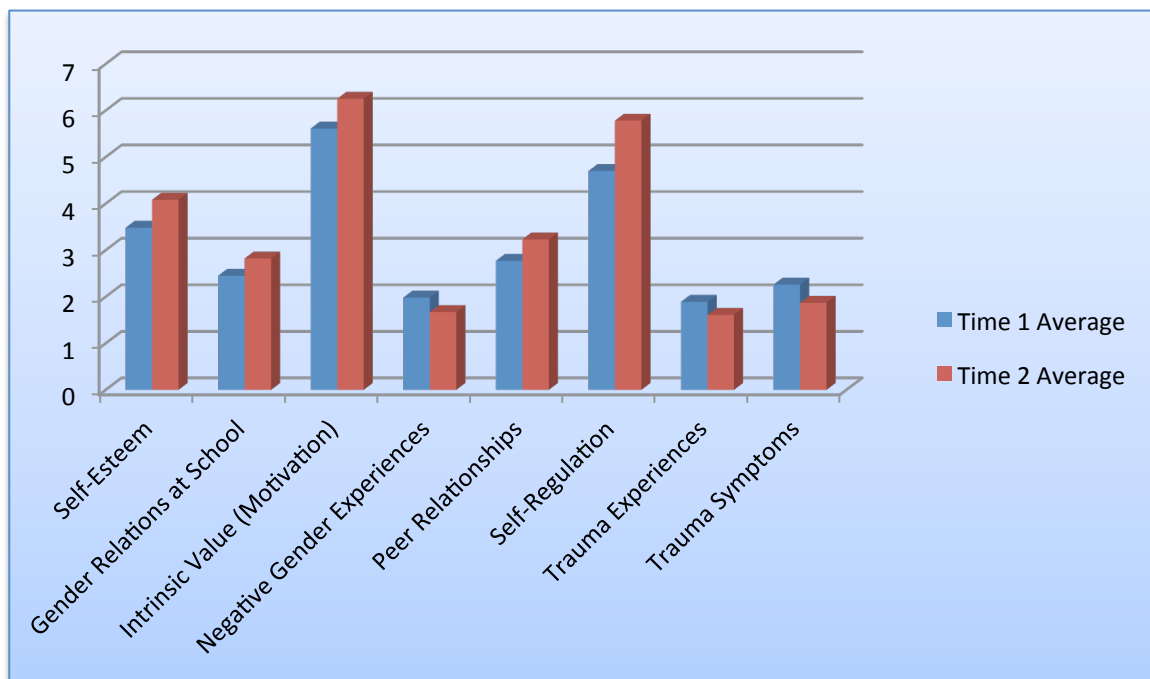
Results of the paired samples t-test indicate that brain education program had a significant effect on self-esteem (T1=3.48 and T2=4.08;  $p=.00$ ), gender relations at school (T1=2.45 and T2=2.82;  $p=.00$ ), intrinsic value (T1=5.61 and T2=6.25;  $p=.00$ ), negative gender experiences (T1=1.98 and T2=1.67;  $p=.00$ ), peer relationships (T1=2.77 and T2=3.23,  $p=.00$ ), self-regulation (T1=4.70 and

T2=5.78;  $p=.00$ ), trauma experiences (T1=1.89 and T2=1.61;  $p=.00$ ), and current trauma symptoms (T1=2.26 and T2=1.87,  $p=.00$ ) for students in the treatment group.

The intervention had the greatest effect on student self-regulation (1.08), intrinsic motivation (0.64), and self-esteem (0.60) (see Exhibit 1 change values above).

There were significant improvements in students' motivation, self-esteem, peer relationships, self-regulation, and stress after their involvement and participation in the Brain Education program. All results were in the expected direction (see Exhibit 2).

**Exhibit 2. Bar chart depicting significant differences in treatment group students between Time 1 and Time 2**



### Research Question 2: Differences for teachers in the treatment group between Time 1 and Time 2

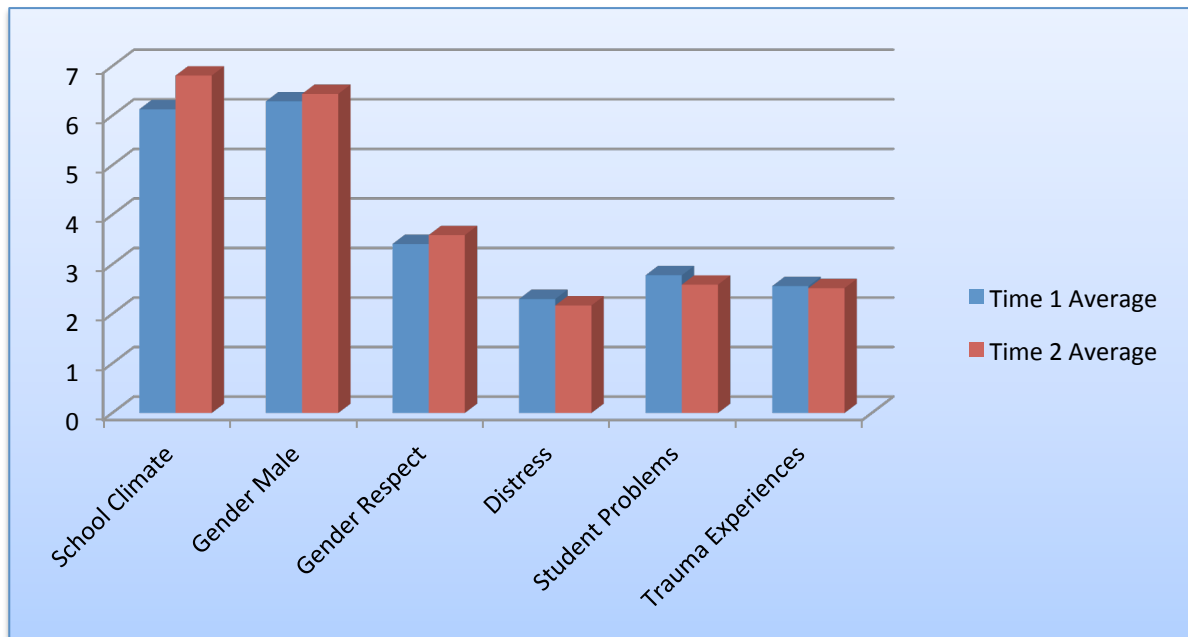
In addition to having an effect on students, the brain education program also had an effect on teachers who participated. Exhibit 2 shows results for teachers from Time 1 to Time 2.

**Exhibit 3. Results of paired samples t-test for teachers in the treatment group.**

	Time 1 Average	Time 2 Average	P value	Change in Time 1 and Time 2 for Treatment Group Teachers
<b>School Climate</b>	6.13	6.81	.00***	.68
<b>Gender Male</b>	6.29	6.44	.00***	.15
<b>Gender Respect</b>	3.41	3.59	.00***	.18
<b>Distress</b>	2.30	2.17	.00***	.13
<b>Student Problems</b>	2.78	2.59	.00***	.19
<b>Trauma Experiences</b>	2.56	2.52	.00***	.04

Note: The \* symbol denotes that results are significant at the following levels \*\*\*p<.001

**Exhibit 4. Bar chart depicting significant differences in treatment group teachers between Time 1 and Time 2**



### Research Question 3: To what extent are there significant differences between students and teachers in the control and treatment groups?

For teachers, there were significant differences between control group and treatment group participants at Time 2. The T-test analyses revealed that there are significant differences between teachers in the control group and treatment group on Student Problems and Teacher Attitude. See Exhibit 5 below.

**Exhibit 5. Significant differences between teachers in the Control and Treatment groups at Time 2.**

	Treatment Group Teachers	Control Group Teachers	P value
<b>Student Problems</b>	2.60	3.11	.02
<b>Teacher Attitude</b>	6.38	2.90	.03

For students, there were significant differences between control group and treatment group students at Time 2 on gender relationships at school ( $\bar{X}_c=2.66$  and  $\bar{X}_t=2.84$ ;  $p=.02$ ), intrinsic value or motivation ( $\bar{X}_c=5.53$  and  $\bar{X}_t=6.29$ ;  $p=.02$ ), and cognitive strategy use ( $\bar{X}_c=4.99$  and  $\bar{X}_t=5.98$ ;  $p=.00$ ). There were marginally significant differences between control and treatment group students at Time 2 on peer relationships ( $\bar{X}_c=2.97$  and  $\bar{X}_t=3.21$ ;  $p=.06$ ). See Exhibit 6 below.

**Exhibit 6. Differences at Time 2 for students in the treatment and control group**

	Treatment Group Students	Control Group Students	P value
<b>Gender Relations at School</b>	2.84	2.66	.02
<b>Intrinsic Value (Motivation)</b>	6.29	5.53	.02
<b>Peer Relationships</b>	3.21	2.97	.06
<b>Cognitive Strategy Use</b>	5.98	4.99	.00

### Discussion

Overall, this pilot intervention study shows that the Brain Education program positively impacted the students and teachers in Monrovia, Liberia. Even though certain findings were non-significant, the relationships between Time 1 and Time 2 for these findings were in the hypothesized direction. Students and teachers reported benefiting greatly from their involvement with Brain Education and the quantitative data also demonstrate this message. These results fully support the expansion of the Brain Education program to other districts in Liberia to make the program a part of the school curriculum in the country.