Education levels among 8- and 9-year-olds in the Nuba Mountains

Results of a Rapid Assessment Survey

2019

To Move Mountains Projects
“providing education to communities affected by conflict”
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The study was planned and organized by Ryan Boyette (To Move Mountains director) and Sarah Bauler (To Move Mountains board member). It was carried out by the local Coordination Unit (for NGO coordination), and the data was input by Lindsay Floyd. The results were analyzed and presented by Anna Warren (To Move Mountains researcher).

We also express our appreciation to the children and families who participated in the study, as well as to the team of professors at Vanderbilt University, including Dr. Xiu Cravens, who, along with Lindsay Floyd, offered feedback on this final product.
Executive Summary

To Move Mountains Projects is a 501(c)(3) organization with a mission to provide quality education to communities affected by conflict, so that they are equipped with the knowledge and skills for improved livelihoods, accountable governance, and restored social capital.

The Nuba Mountains region of Sudan, where To Move Mountains is initiating its work, has been in an almost constant state of conflict since 1989. Even in dire conditions, the people of Nuba have expressed a strong desire for improved education. However, very little, if any, work has been done to assess the state of education in Nuba.

In order to gauge general education levels among children in Nuba, To Move Mountains conducted a rapid assessment survey in March 2019. The survey assessed several literacy and numeracy skills among 273 8- and 9-year-old children in randomly selected villages across 3 counties of Nuba. While surveyors were able to explain the assessment in participants’ native languages, the children were assessed in their literacy and mathematics abilities in English, the language of instruction in local schools.

The key findings are as follows:

- The 8- and 9-year-olds included in this study had completed an average of 1.5 years of education. Most children had at least completed Pre-Unit (comparable to Kindergarten in the United States) and some Grade 1, while 29% had received no education at all.
- Children were able to correctly identify a median of 4 of 10 letters. Only 16% of children were able to identify all 10 letters presented.
- No children in our sample were able to identify the sounds of 10 given letters. Even among children who were able to name all 10 of the letters, the median number of sounds produced was 0. These low levels of phonemic awareness indicate that children in Nuba are learning letters rote, without understanding the connection to reading.
- Only 1 of the 273 children assessed (0.4%) was able to read an adequate number of the simple words and sentences presented.
- 100% of the children in our sample who had completed Grade 2 failed to meet minimum proficiency for reading, according to global standards.
- Among all 8- and 9-year-old children surveyed, only 60% can count to 20.
- 32% of children who have completed Pre-Unit, and 20% of children who have completed Grade 1 cannot count to 20.
- 53% of children who could count to 20 could not identify 3 given numbers between 1 and 20, indicating that, as with letters, many children in Nuba have merely a rote understanding of numbers.
- Of the children in our sample who had completed Grade 2, at least 61% failed to meet minimum proficiency for math, according to global standards.
- Although grade level attainment is relatively equal between boys and girls, girls demonstrated lower learning outcomes across all education indicators.
• Each indicator for education shows a wide range of scores for each grade level and a substantial number of students testing below proficiency, suggesting that students are often passed along to the next grade level without acquiring the necessary skills.

In order to address these identified gaps in education, To Move Mountains has identified several specific steps for future action:

1. **Curriculum design**
   To Move Mountains will work with a team of education advisors to help develop an improved curriculum for the Nuba Mountains. It can utilize the results of this study to determine students’ current literacy and numeracy skills, develop a curriculum guide based on the needs for scaffolding, and ensure that literacy will be taught by integrating skills more holistically.

2. **Teacher training**
   To Move Mountains will work with its group of 25 future teachers and with Nuban Ministry of Education in order to create teacher training modules that encourage higher levels of student comprehension, introduce teaching methods that promote inductive reasoning and integration of skills, and provide teachers with methods for differentiated instruction within an academically diverse classroom.

3. **School operation**
   In partnership with the local community, To Move Mountains plans to open and operate private community schools throughout Nuba. Findings from the study suggest that school administration should facilitate regular teacher training, strive to increase student enrollment and attendance, implement minimum standards for grade promotion, and promote girls’ attendance engagement in the classroom.

4. **Future research**
   This survey has also revealed that further research should include classroom observations and community interviews to better understand teacher practice and curricular goals of the community. Future educational assessments should also include indicators for student attendance, additional educational skills, and additional questions for each skill. Follow-up studies should also be done after To Move Mountains has carried out its programming.

With the results of this rapid assessment survey, To Move Mountains will be able to carry out its activities in a more informed manner, and in doing so, help the people of Nuba improve the current state of education and offer children a better future.

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¹ Adequacy was determined to be the ability to read at least 15 of 21 basic words and 2 of 3 basic sentences.
Introduction

To Move Mountains Projects is a 501(c)(3) organization with a mission to provide quality education to communities affected by conflict, so that they are equipped with the knowledge and skills for improved livelihoods, accountable governance, and restored social capital.

The Nuba Mountains region of Sudan, where To Move Mountains is initiating its work, has been in an almost constant state of conflict since 1989. Due to instability, dire living conditions, and even direct attacks on schools, many children have not been able to receive an education. Even in the midst of conflict, the people of Nuba have expressed a strong desire for improved education. However, with the lack of engagement by the Sudanese government and the absence of international aid organizations since 2011, very little, if any, work has been done to assess the state of education in Nuba.

In order to gauge general education levels among children in Nuba, To Move Mountains conducted a rapid assessment survey in March 2019. Using questions adapted from the national assessment tests for Kenya and Uganda, this survey assessed a small quantity of basic education skills, notably for reading and mathematics. The purpose of the study is to inform the work of To Move Mountains to help develop a primary school curriculum, train teachers, and support school operation in the Nuba region.
Methods

The survey was carried out in March of 2019, by the local NGO Coordination Unit, whose surveyors have extensive training and experience conducting quantitative research.

Participants were selected using a cluster sampling method. Of the 5 counties in Nuba to which To Move Mountains has access, 3 were randomly selected\(^2\). Within each county, payams (or districts) were then randomly selected to be included in the sample, proportionately to the total number of payams each county contained. From approximately 3-8 villages within each payam, 1 village was randomly selected to be surveyed. Surveyors were instructed to then randomly select households within each village. (See a breakdown of participants in Table 1 on the following page.)

The survey was conducted with children who were 8 or 9 years old. Because people in Nuba do not often record birth dates or ages, but rather mark time in reference to events, asking households to identify children born the year in which the latest conflict broke out (2011) provided a way to sample children of all the same age. This age group also provided an opportunity to measure education levels of children who had only attended school during the conflict.

After determining a child’s eligibility, acquiring parental permission, and gathering basic information about the children and their levels of schooling, participants were asked to complete a series of tasks for reading, writing\(^3\), and mathematics. The test questions were adapted from assessments used among 8- and 9-year-old school children in Kenya, whose curriculum Nuba had been using. (See a copy of the questionnaire in the Appendix.) The interviewers were able to explain the assessment in the children’s local languages, but children were assessed in their academic ability in English, the language of instruction in schools across Nuba. It was specified that the only people present during the assessment should be the interviewer, child, and parent, and that parents should be discouraged from talking or assisting the child.

Figure 1. Ryan Boyette conducts a pre-test of the survey instrument.

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\(^{2}\) At the time of randomization, the county of Buram was selected. However, when the survey was carried out, the county had split into “Thobo A” and “Thobo B.” Both of the newly formed counties were included.

\(^{3}\) The section of the survey assessing children’s writing ability was determined not to be reliable. Children were asked to write 10 letters, 10 words, and 3 sentences, named at the surveyor’s discretion. However, the letters, words, and sentences that the surveyors asked were not recorded. Results showed that scores for writing were higher than scores for reading, which may indicate a flaw in the assessment. Therefore, results of the writing section were left out of analysis.
Findings

A. Participant Demographics

A total of 273 8- and 9-year-old children were assessed, thus offering results with a 95% confidence level and a 5.9% margin of error for the total population. Participants came from 74 villages, within 4 counties of Nuba, as shown in Table 1, and they spoke a total of 27 primary languages.

Table 1. Percentage of participants by county

<table>
<thead>
<tr>
<th>County</th>
<th>Number of payams/villages</th>
<th>Percentage of total participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delami</td>
<td>32</td>
<td>37%</td>
</tr>
<tr>
<td>Heiban</td>
<td>23</td>
<td>34%</td>
</tr>
<tr>
<td>Thobo “A” (formerly Buram)</td>
<td>10</td>
<td>11%</td>
</tr>
<tr>
<td>Thobo “B” (formerly Buram)</td>
<td>9</td>
<td>18%</td>
</tr>
</tbody>
</table>

The sample included 136 (50%) males, 136 (50%) females, and 1 child whose gender is unknown.
B. Overall Levels of Education in Nuba

The following results, related to total levels of grade completion, literacy, and numeracy among the 8- and 9-year-olds surveyed, give a picture of overall education access across Nuba.

1. Grade Completion

This survey asked parents of eligible children to state the highest grade level the child had completed in school. The 8- and 9-year-olds included in this study had an average of 1.5 years of education. As shown in Figure 2, most children had at least completed Pre-Unit (comparable to Kindergarten in the United States) and Grade 1, while 29% had received no education at all.

Figure 2. Highest grade level completed among surveyed 8- and 9-year-olds in Nuba
As shown in Figure 3, this study revealed a high level of gender equality for grade completion among children in Nuba. Girls were slightly more likely than boys to have ever attended school (72% of all girls had attended school, compared to 68% of all boys). Girls in this study had an average of 1.6 years of education, while boys in this study had an average of 1.5 years of education.

Note, however, that these figures do not include rates of attendance, only the highest grade levels completed.

**Figure 3. Highest grade level completed by gender**

![Bar chart showing gender distribution of grade levels completed](image)

2. Literacy

Using indicators for letter identification and reading, this study revealed extremely low early literacy rates among 8- and 9-year-old children in Nuba.

**Letter Identification and Letter-Sound Correspondence**

When asked to name 10 given letters (letter identification), children were able to correctly identify an average of 4.7 of 10 letters. Only 16% of children were able to identify all 10 letters presented.

When asked to give the sounds of 10 given letters (letter-sound correspondence), 0% of children in our sample could give all 10. The median number of sounds children were able to produce was 0.
**Reading**

Children in this study were asked to read the following words:

- cat
- hat
- dog
- sun
- fun
- sit
- pen
- kid
- box
- cry
- table
- frog
- rock
- down
- sheep
- mountains
- chalk
- through
- bellow
- traveling
- conflict

Overall, 73% of participants were unable to read any words, and only 3 children (1%) were able to read 75% of words.

Children were also asked to read the following sentences:

- The dog ran fast.
- Mary and her son went to the market.
- Even though Kuku wanted to go to the party, his mother would not let him go.

96% of children were unable to read any sentences. Among the surveyed children, 6 (2%) were able to read 2 of 3 sentences and 1 child (0.4%) was able to read all 3.

**3. Numeracy**

Using indicators for counting, number identification, addition, subtraction, and multiplication, this study also revealed low numeracy rates among 8- and 9-year-old children in Nuba.

**Counting**

Among all 8- and 9-year-old children surveyed, 60% can count to 20. 4

**Number Identification**

Children in this study were asked to identify a total of 10 numbers (two 1-digit numbers, three 2-digit numbers, three 3-digit numbers, and two 4-digit numbers). Overall, children correctly identified an average of 2.3 of all 10 numbers. 44% of all children were able to identify both 1-digit numbers, and 20% of children were able to identify all 2-digit numbers.

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4 Adequacy was determined to be the ability to read at least 15 of 21 basic words and 2 of 3 basic sentences.

5 Children were asked to count in English, the language of school instruction. It is unknown whether they could count in their native languages.
Addition
To gauge children’s abilities in addition, participants were asked to perform four operations. Participants correctly answered an average of 11% of problems, with a median of 0. The following table shows the percentage of correct responses for each problem.

Table 2. Overall correctness for addition problems

<table>
<thead>
<tr>
<th>Operation</th>
<th>% of children answering correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 + 5</td>
<td>28%</td>
</tr>
<tr>
<td>25 + 34</td>
<td>13%</td>
</tr>
<tr>
<td>154 + 28</td>
<td>3%</td>
</tr>
<tr>
<td>284 + 386</td>
<td>1%</td>
</tr>
</tbody>
</table>

Subtraction
Participants were also asked to perform four operations to gauge their abilities in subtraction. Overall, participants correctly answered an average of 9% of subtraction problems, with a median of 0. The following table shows the percentage of correct responses for each operation.

Table 3. Overall correctness for subtraction problems

<table>
<thead>
<tr>
<th>Operation</th>
<th>% of children answering correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 - 4</td>
<td>21%</td>
</tr>
<tr>
<td>89 - 11</td>
<td>8%</td>
</tr>
<tr>
<td>692 - 476</td>
<td>1%</td>
</tr>
<tr>
<td>2953 - 341</td>
<td>4%</td>
</tr>
</tbody>
</table>

Note that the problem “692 - 476” involves regrouping, which likely explains why fewer children were able to correctly solve it.

Multiplication
Children in this study were then asked to solve five multiplication problems. Overall, participants correctly answered an average of 7% of problems, also with a median of 0. The percentages of correct responses for each operation are shown below.

Table 4. Overall correctness for multiplication

<table>
<thead>
<tr>
<th>Operation</th>
<th>% of children answering correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 3</td>
<td>14%</td>
</tr>
<tr>
<td>8 x 1</td>
<td>12%</td>
</tr>
<tr>
<td>5 x 8</td>
<td>4%</td>
</tr>
<tr>
<td>4 x 7</td>
<td>2%</td>
</tr>
<tr>
<td>9 x 6</td>
<td>1%</td>
</tr>
</tbody>
</table>
C. Proficiency Levels by Grade

In order to evaluate the quality of education children are receiving in school, this section of the report presents the results of the rapid assessment survey, disaggregated by the highest level of schooling that participants have completed.

Many of these results are compared with the UNESCO (United Nations Educational, Scientific, and Cultural Organization) Global Proficiency Framework for Reading and Mathematics\(^6\). This framework was developed in collaboration with several international entities in order to determine global progress toward Sustainable Development Goal 4, which aims for universal access to quality education. Although our survey only assessed a small proportion of the constructs defined in the Global Proficiency Framework, the framework does set forth international standards with which the data from our survey can be compared.

While reviewing the following data, note that the sample sizes of 8- and 9-years olds in Nuba who have completed higher grades are rather small (44 for Grade 2, 8 for Grade 3, and 1 for Grade 4). Achievement rates for Grade 4 have therefore largely been excluded, while those for Grade 3 should be considered with the small sample size in mind.

When results of the Nuba educational assessment are analyzed by grade level, achievement rates remain low, especially when compared to global proficiency standards. While scores do increase for children who have completed more grades in school, progress remains far below proficient, therefore indicating a poor quality system of education as it currently exists in Nuba.

1. Literacy

**Letter Identification and Letter-Sound Correspondence**
Considering that the abilities to identify letters and their corresponding sounds are among the first steps of literacy, this survey asked participants to produce the names of 10 given letters (letter identification) and the sounds of 10 different given letters (letter-sound correspondence).

Because the Global Proficiency Framework standards begin with Grade 2, wherein students are expected to read common words, students would presumably be expected to name and identify the sounds of letters before that point. However, as shown in Figure 4, rates of letter recognition remain below 100% for students who have completed Grades 2 and 3. (The large discrepancy between letter identification and letter-sound correspondence is discussed on page 20.)

**Figure 4. Ability to identify letters and sounds by grade**

![Figure 4](image-url)
**Reading**

According to the Global Proficiency Framework, children in Grade 2 should be able to accurately read aloud and comprehend common words. Although our survey did not test reading comprehension, children’s ability to read words remained relatively low.

Of the 21 words presented to children in this study (see page 13), participants who had completed Grade 2 read a median of 2 words and an overall average of 13% of words. 0% of children who had completed Grade 2 could read an adequate number of the basic words presented. 41% could read no words at all. Figure 5 shows children’s reading ability by grade.

**Figure 5. Reading ability by grade**

\[\text{Adequacy was determined to be 15 of 21 (71%) of words.}\]
2. Numeracy

Counting
According to our study, 17% of all children who have attended school cannot count to 20. As shown in Table 5, 32% of children who have completed Pre-Unit and 20% of children who have completed Grade 1 cannot count to 20.

Table 5. Percentage of students unable to count to 20, by highest grade completed

<table>
<thead>
<tr>
<th>Highest grade completed</th>
<th>Percentage of children unable to count to 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>94%</td>
</tr>
<tr>
<td>Pre-Unit</td>
<td>32%</td>
</tr>
<tr>
<td>Grade 1</td>
<td>20%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>5%</td>
</tr>
<tr>
<td>Grade 3</td>
<td>0%</td>
</tr>
</tbody>
</table>

Number Identification
According to the Global Proficiency Framework, students in Grade 2 should be able to count, read, and write numbers up to 100, as well as compare and order those numbers. Although our study only assessed whether children could count to 20 and identify some numbers, it still revealed that children in Nuba were below grade-level proficiency. Only 59% of children who had completed Grade 2 could count to 20 and name 5 given numbers below 100.

The Global Proficiency Framework states that children in Grade 3 should be able to do the above, but with numbers up to 1,000. 5 of 8 children (63%) in Grade 3 were able to name 3 given 3-digit numbers.

Operations
To be in line with global standards, students in Grade 2 should be able to add and subtract whole numbers within 20. However, only 55% of the students in our sample who had completed Grade 2 could solve the operations 2+5 and 8-4.

Students in Grade 3 should be able to add and subtract numbers to 100 with regrouping, as well as multiply and divide within 100. Of the 8 children in our study who had completed 3rd grade, 2 were able to correctly complete 4 simple addition and subtraction problems and 4 out of 5 multiplication problems.

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8 Children were asked to count in English, the language of school instruction. It is unknown whether they could count in their native languages.
Tables 6, 7, and 8 show the percentages of students able to perform addition, subtraction, and multiplication operations, by the highest grade level they have completed.

Table 6. Percentage of students able to perform addition operations in each grade

<table>
<thead>
<tr>
<th></th>
<th>2+5</th>
<th>25+34</th>
<th>154+28</th>
<th>284+386</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Pre-Unit</td>
<td>12%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Grade 1</td>
<td>33%</td>
<td>8%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>68%</td>
<td>39%</td>
<td>7%</td>
<td>2%</td>
</tr>
<tr>
<td>Grade 3</td>
<td>100%</td>
<td>88%</td>
<td>50%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Table 7. Percentage of students able to perform subtraction operations in each grade

<table>
<thead>
<tr>
<th></th>
<th>8-4</th>
<th>89-11</th>
<th>892-476</th>
<th>2953-341</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Pre-Unit</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Grade 1</td>
<td>19%</td>
<td>3%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>57%</td>
<td>27%</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Grade 3</td>
<td>100%</td>
<td>88%</td>
<td>38%</td>
<td>63%</td>
</tr>
</tbody>
</table>

Table 8. Percentage of students able to perform multiplication operations in each grade

<table>
<thead>
<tr>
<th></th>
<th>2x3</th>
<th>5x8</th>
<th>4x7</th>
<th>9x6</th>
<th>8x1</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Pre-Unit</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>Grade 1</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>43%</td>
<td>14%</td>
<td>7%</td>
<td>5%</td>
<td>34%</td>
</tr>
<tr>
<td>Grade 3</td>
<td>88%</td>
<td>50%</td>
<td>13%</td>
<td>25%</td>
<td>75%</td>
</tr>
</tbody>
</table>
3. Total Proficiency Levels

Because our assessment only tested a very small proportion of the proficiency indicators included in the Global Proficiency Framework, it cannot tell us how many students in Nuba are grade-level proficient. However, considering the number of participants who did not meet the indicators tested does tell us how many students, at the very least, are not meeting requirements for minimum proficiency.

**Reading**
As it stands, **100%** of the children in our sample who had completed Grade 2 failed to meet minimum proficiency for reading.

At least **88% (7 of 8)** of children who had completed Grade 3 failed to meet minimum proficiency for reading.

**Mathematics**
At least **61%** of children who had completed Grade 2 failed to meet minimum proficiency for math.

At least **75% (6 of 8)** of children in our sample who had completed Grade 3 failed to meet minimum proficiency for math.
D. Gaps in Student Learning

The survey data has revealed the following learning gaps, which our curriculum design can help to address.

1. Phonemic Awareness

While 8- and 9-year-olds in Nuba were able to identify an average of 47% of letters, they were only able to produce the sounds of only 6% of letters overall. No children in our sample were able to produce the sounds of 10 given letters. Even children who were able to name all 10 of the letters presented were only able to give the sound of an average of 1.3 letters, with a median of 0.

These low levels of phonemic awareness indicate that children in Nuba are learning letters rote, without understanding the connection to reading.

Figure 6 below shows the differences between children’s ability to identify letters and their ability to identify corresponding sounds. Figure 7 on the following page shows the ability to produce sounds of given letters, of children who were able to name all 10 given letters.

Figure 6. Correct letter-sound correspondence, compared to letter identification per grade level
2. Letter Identification

Analysis of this study’s results showed that children in our sample were significantly more likely to identify letters toward the beginning of the alphabet than the end. This trend occurred both for letter identification (Figure 8) and letter-sound correspondence (Figure 9).

Figure 8. Percentage of all surveyed children able to correctly name letters

* Note: Letters were not presented in this order on the survey.
**Figure 9. Percentage of all surveyed children able to produce the correct sounds of letters**

*Note: Letters were not presented in this order on the survey.*

As depicted in Figure 10, children were also significantly more likely to give the correct names and sounds for uppercase letters than for lowercase letters.

**Figure 10. Percentage of all uppercase and lowercase letters correctly identified**
By determining Pearson’s correlation coefficient \( (r) \), shown in Table 9, we find that for the letter identification task, a letter’s position in the alphabet is a stronger predictor of a child’s ability to identify it than if the letter is uppercase or lowercase.

However, for the letter-sound correspondence task, the opposite is true; whether a letter is uppercase or lowercase is a stronger predictor of a child’s ability to identify it than its position in the alphabet.

On average, although both factors did correlate with children’s ability to identify letters, neither was stronger than the other.

Table 9. Pearson’s correlation coefficient (r) for letter identification and letter-sound correspondence

<table>
<thead>
<tr>
<th>Relationship between and correctness</th>
<th>Letter Identification</th>
<th>Letter-Sound Correspondence</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>earliness in the alphabet</td>
<td>( r = 0.9 )</td>
<td>( r = 0.2 )</td>
<td>( r = 5.5 )</td>
</tr>
<tr>
<td>uppercase-ness and correctness</td>
<td>( r = 0.7 )</td>
<td>( r = 0.4 )</td>
<td>( r = 5.5 )</td>
</tr>
</tbody>
</table>

3. Number Identification

Data from our assessment revealed a large gap between the number of children who could count to 20 and the number of children who could identify three given numbers between 1 and 20. As shown in Figure 11, 53% of children who could count to 20 could not identify 3 given numbers between 1 and 20. This reveals that, as with letters, many children in Nuba have merely a rote understanding of numbers.

Figure 11. Ability to identify numbers, among children who can count to 20
4. Gender Parity

Although grade level attainment is relatively equal between boys and girls\(^9\), girls demonstrated consistently lower learning outcomes, as shown in Figures 12 and 13. Considering that our study did not assess attendance rates, lower rates of attendance among girls could be one possible explanation for the discrepancy.

**Figure 12. Gender differences for reading**

![Graph showing gender differences for reading](image)

**Figure 13. Gender differences for math**

![Graph showing gender differences for math](image)
5. Grade-Level Disparities

Many school systems surrounding Nuba (specifically the national systems for Sudan, Ethiopia, Kenya, and Uganda), have adopted policies of automatic grade promotion, in which students progress to the next grade in school regardless of their mastery of certain concepts. Although grade retention (or repetition) is in fact practiced in Nuba, this research reveals large disparities among students at each grade level, suggesting many children are continuing to the next grade regardless of their abilities.

The results of our assessment not only reveal that students are generally below minimum proficiency compared to global standards, but they also reveal that many individual students have fallen behind. Across the different education indicators in our assessment, scores within each grade level show a rather large range.

As shown in Figure 14 and Figure 15 on the following page, several children have advanced through Grades 2 and 3 without being able to name 10 given letters of the alphabet.

**Figure 14. Letter identification scores among children with a Grade 2 education**
Figure 15. Letter identification scores among children with a Grade 3 education

As shown in Figure 16, 18 students (41% of sample), completed Grade 2 without being able to read any words.

Figure 16. Number of words read among children with a Grade 2 education
Although students who have completed Grade 3 are able to read more words than those in Grade 2, the range of scores remains quite large, as shown in Figure 17.

**Figure 17. Number of words read among children with a Grade 3 education**

For mathematics (as also explained on page 18), 2 students (5% of sample) who had completed Grade 2 could not count to 20. 20% of students who had completed Grade 1 could not count to 20. As shown in Figure 18, 11 students (25% of the sample) completed Grade 2 without being able to complete a single addition, subtraction, or multiplication operation.

**Figure 18. Math operations scores among children who have completed Grade 2**

The fact that each indicator for education shows such a wide range of scores for each grade level, and a substantial number of students testing below proficiency, suggests that students are often passed to the next grade levels without gaining necessary skills.
Conclusions

The results of this rapid assessment survey, measuring education levels of 8- and 9-year-old children in the Nuba Mountains, offer some useful insights that may inform To Move Mountains’ work to help improve the education system.

Overview of Findings
Firstly, this study shows that there is opportunity to improve education access. With 29% of 8- and 9-year-old children having received no education at all, the average child this age has had an average of 1.5 years of schooling (Pre-Unit and some Grade 1). Only 16% of the surveyed children could name 10 given letters and none could give the sounds of 10 letters. Only 60% could count to 20 in the language of school instruction, much less perform simple math operations. Improving education access in Nuba could help improve these rates.

Even more notably, however, this study shows that there is a great need for improved educational quality. 100% of the children in our sample who had completed Grade 2 and at least 7 of 8 children who had completed Grade 3 failed to meet minimum proficiency for reading. At least 61% of children who had completed Grade 2 and at least 6 of 8 children who had completed Grade 3 failed to meet minimum proficiency for math.

Furthermore, this study revealed several gaps in student learning. One such gap is a lack of phonemic awareness among children. Many students are learning letters rote, without understanding the connection to reading. Children are also much more likely to identify capital letters than lowercase letters, and much more likely to identify letters at the beginning of the alphabet than at the end. Evidence suggests that many children are also learning numbers merely rote, without being able to consistently identify them.

There are also significant gaps in individual students’ achievement. Although girls and boys have equal rates of grade completion, girls show lower scores across all indicators. In addition, many students are falling behind proficiency for their grade levels.

Next Steps
In response to these findings, To Move Mountains proposes the following areas for action:

1. Curriculum design
   Experts in curriculum design attest that student assessment data is essential for guiding curricular changes\(^\text{10}\). To Move Mountains and its team of education advisors will therefore utilize these results within the Nuba curriculum design by:
   - Acknowledging where students’ literacy and numeracy skills are currently;
   - Developing a curriculum guide based on current levels of achievement and needs for

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2. **Teacher training**
   To Move Mountains will work with its group of 25 future teachers and with the Nuban Ministry of Education in order to:
   - Create teacher training modules that encourage higher levels of student comprehension (along all levels of Bloom’s Taxonomy), above mere rote learning.
   - Introduce methods of teaching letters, sounds, words, and numbers, specifically, that promote inductive reasoning and integration of skills (e.g. both auditory and tactile components).
   - Provide teachers with methods for differentiated instruction in order to attend to the wide range of student achievement levels within their classrooms.

3. **School operation**
   In partnership with the local community, To Move Mountains plans to open and operate private community schools throughout Nuba. Findings from the study suggest that school administration should:
   - Facilitate regular teacher training and professional development.
   - Strive to increase student enrollment and attendance, and to reduce barriers.
   - Implement minimum standards for grade promotion.
   - Encourage girls’ attendance and instruct teachers to pay special attention to girls’ needs and engagement within the classroom.
   - Routinely implement student assessments and use resulting data for continual improvement.

4. **Future research**
   This survey has also revealed the following areas for further research:
   - Qualitative research, including:
     - community-based interviews to understand people’s perspectives of the education system, learn about their goals for the curriculum, and foster community engagement;
     - classroom observations to better understand teacher practice.
   - Educational assessments that incorporate the following elements not included in the rapid assessment survey:
     - measures of attendance, rather than only grade completion;
     - more education indicators, and additional questions for each indicator;
     - a more reliable method for determining children’s writing abilities.
   - A follow-up study to determine progress after To Move Mountains has carried out its programming.

With the results of this assessment and of future research, To Move Mountains will be able to carry out its activities for curriculum development, teacher training, and school operation in a more informed manner. It is with high hopes that we aim to help the people of Nuba improve upon the state of education thus presented and offer children a better education system, resulting in a better quality of life.
Appendix

Education Assessment Questionnaire for use with 8 years old

Parental Permission for Child Participation in Assessment

INTERVIEWER STATEMENT:
Hello, my name is ________________, and I am helping a NGO called To Move Mountains better understand the educational needs in the Nuba Mountains. To achieve this goal, we would like to test the ability of your child to read, write, and compute math IF YOUR CHILD IS 8 YEARS OLD. No services will be withheld nor will you or your family be discriminated against if they choose not to participate. Your child’s participation this study is voluntary, and your child may decline to participate in the assessment or stop the assessment at any time. The results of this assessment will be held in strict confidence and will not be shared with anyone else. Would you like to have your child participate in this assessment? Please sign here

Date ___________ (If not, thank them for their time.)

TO BE ANSWERED BY THE CHILD’S PARENT OR PRIMARY CAREGIVER

Child’s Name: ________________ Questionnaire No.: _____
Date: ____/____/____ Village: __________ County: ______________________
Age of Child: ___ years Main language child speaks: ______________________
Gender of Child: ☐ Male ☐ Female

Highest grade level the child has completed (if the child has never attended school, circle “0”): 0 PreUnit 1 2 3 4 5 6
If currently enrolled in school, name of school the child currently attends:

_________________________

TO BE ANSWERED BY THE CHILD

INTERVIEWER STATEMENT:
Thank you [name of child] for helping me today! I would like to give you a short test. We want this test to be fun for you, so please do not be nervous! This test will help us better understand how you learn. You can stop the test at any time. Thanks again for helping me today; I am proud of you!
Reading

1. Name these letters (Circle if correct) Number correct: _________
   A t C m D r G v P e

2. What are the sounds of these letters (Circle is correct): Number Correct: _______
   E n B s F w K i Z o

3. Read these words (circle the words that are read correctly) Number Correct _______
   cat hat dog sun fun sit pen kid box cry

4. Read these words (Circle the words that are read correctly). Number correct _______
   table frog rock down sheep chalk
   through bellow traveling mountains conflict

5. Read these sentences. (Circle the sentences read correctly) Number Correct _________
   The dog ran fast.
   Mary and her son went to the market.
   Even though Kuku wanted to go to the party, his mother would not let him go.

Writing

1. Write the letters that I say. Number correct _______

2. Write the words. Number Correct _______
   ___________ ___________ ___________ ___________ ___________ ___________
3. Write these sentences. Number Correct: __________

__________________________

__________________________

__________________________

Name these colors. Number correct: __________

[Images of colored squares]

**Mathematics**

1. Count from 1 to 20. Correct: Yes or No

2. Name these numbers. Circle the ones that are correct. Number correct: __________

2  9  16  25  78  152  547  222  1500  6354

4. Do these math problems. Number correct: __________

<table>
<thead>
<tr>
<th>2</th>
<th>8</th>
<th>25</th>
<th>89</th>
<th>154</th>
<th>692</th>
<th>284</th>
<th>2953</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5</td>
<td>-4</td>
<td>+34</td>
<td>-11</td>
<td>+28</td>
<td>-476</td>
<td>+386</td>
<td>-341</td>
</tr>
</tbody>
</table>

5. Do these math problems. Number correct: __________

2 x 3 = _____  5 x 8 = _____  4 x 7 = _____  9 x 6 = _____  8 x 1 = _____

**INTERVIEWER STATEMENT:** Great job! Thanks again [name of child] for participating. I am proud of you!