Teaching Elementary ELLs to Read Like Scientists

A Model for Content-Based Literacy Instruction

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NNETESOL
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Who I Am

• Classroom Teacher
• Literacy Specialist
• Instructor

DESE “Selected Populations” Data Summer 2014

<table>
<thead>
<tr>
<th>Title</th>
<th>% of School</th>
<th>% of District</th>
<th>% of State</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Language not English</td>
<td>28.1</td>
<td>26.8</td>
<td>17.3</td>
</tr>
<tr>
<td>English Language Learner</td>
<td>18.5</td>
<td>13</td>
<td>7.9</td>
</tr>
<tr>
<td>Low-income</td>
<td>75.3</td>
<td>59.7</td>
<td>38.3</td>
</tr>
<tr>
<td>Students with Disabilities</td>
<td>22.9</td>
<td>21.6</td>
<td>17.0</td>
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What We Know About Literacy and Science

1. Children need to read, write, and speak about something interesting (Allington, 2002; Guthrie et al., 1999).
2. Reading and writing can be used as tools of inquiry in science. Reading and writing benefit when embedded in an inquiry-based science setting (Pearson et al., 2010).
   “When literacy activities are driven by inquiry, students simultaneously learn how to read and write science texts and to do science” (Pearson et al., 2010, p. 459-460).

Summer Program Setting

• Staff
  • Director and Assistant Director
  • 2 interventionists, 10 teachers, 6 paraprofessionals, 1 art intern
  • Target students—41 struggling readers and writers entering 1st-5th grade
• 5 classrooms
• Team taught
• Four weeks long, four days a week, four hours a day

Purpose

Provide intensive summer interventions in literacy for struggling readers and writers (predominantly ELL) through science and art.

Three Mantras
• Every child will read something well every day.
• Our curriculum is the child’s needs.
• Every interaction leads to more independence.
Planning our Water Content

Professional Development Sessions

- Developing science content, experiments, and field trips with Marine Science Educator
- Informational text focus—how to scaffold learning
- Analyzing assessment data and determining next instructional steps

Multi-modal approach to learning

(Pearson et al., 2010)

Program Planning

<table>
<thead>
<tr>
<th>Week</th>
<th>Read-It</th>
<th>Talk-It</th>
<th>Write-It</th>
<th>Do-It</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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Weekly Planning

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
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</thead>
<tbody>
<tr>
<td>Science Content Learning Goals</td>
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<td></td>
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<tr>
<td>Experiments in biology, chemistry, physics, or related disciplines that yield valid results</td>
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<tr>
<td>Reading Workshop</td>
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<td></td>
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<tr>
<td>Writing Workshop</td>
<td></td>
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<tr>
<td>Oral rehearsal before writing</td>
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<tr>
<td>Shared writing experiences</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Oral rehearsal before writing</td>
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</table>

Do-It

- Conduct experiments
- Go on fieldtrips
- Watch videos
- Keeping scientific journal—integrating writing
- Art projects connected to content

Talk-It

- What I thought I knew
- What I have learned as a scientist chart (Revised KWL charts)
- Discussing experiments—making predictions, discussing results, drawing conclusions
- Shared writing experiences
- Oral rehearsal before writing
Read-It

• Supported investigations and experiences with reading texts
• Topic-based texts for read alouds and guided reading
• Reading and rereading multiple texts—individually, in pairs, rereading, with support, as read alouds
• Researching their own questions—paired research

Write-It

• Wrote lab reports (informational)
• Researching their own questions—paired research (note taking and informational)
• Wrote guides—how to prepare for a natural disaster in Salem (informational)
• Wrote about experiences on field trips and what happened when they touched the animals (narrative)
• Wrote to advocate to Save the Manatees (opinion)

Daily Literacy/Science Schedule

• Morning Meeting
• Responsive Classroom
• Discussion
• Daily agenda
• Fluency work with poems
• Content generation
• Reading workshop
• Guided reading
• Word work
• Independent reading
• Read alouds about content
• Writing Workshop
• Writing about science experiments, field trips, videos, their research, and reading
• Daily wrap-up
• Goals for the next day
• Content focus
• Art extensions (field trips to SSU for 4th and 5th graders)
• Daily debriefing and planning time for teachers

Reading Outcomes

<table>
<thead>
<tr>
<th>Number of Children</th>
<th>Growth on the BAS reading assessment</th>
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<tbody>
<tr>
<td>21 children (53%)</td>
<td>+1.5-3 months</td>
</tr>
<tr>
<td>6 children (15%)</td>
<td>+4-6 months</td>
</tr>
<tr>
<td>7 children (18%)</td>
<td>+7-9 months</td>
</tr>
<tr>
<td>6 children (15%)</td>
<td>maintained</td>
</tr>
</tbody>
</table>

• 7 children (14%) who were previously below grade level are now on or above grade level
• An average of 3.7 months of growth in four weeks
• Attendance = 91%

More Progress!

• 93% of the children increased their spelling ability
• 95% of the children increased in their content knowledge
Begining of Program

The water is dark.

End of Program

The fog is coming. Today, the water is low. It was rain. Then it is sunny. I like to go outside.

Pre-Program Writing

I know the weather can be rainy and sunny and cloudy and snow and cold and windy. I look. I hear. The rainy.

Post-Program Writing

I see the animals jumping on the water. I see the water moving. I see rocks on the water. I see grass on the water. I see blue water. I see gray water. I see big bay. I see the sun. I draw the sun. I see the beach. The scientists working in the colored water.

As a Scientist, I've learned...

"Scientists do the same experiments over and over again to see if what they're doing is really true."

"A scientist never gives up because they want to know how the world works."

"Sometimes an experiment doesn't work and sometimes it does – that's part of being a scientist."

Draw a Scientist

What does a scientist do?

Scientists work in the lab.

So much science are good at finding things.
Principles for Improving Children’s Literacy and Science Achievement

1. All children learn best when the learning is situated in context (Goldschmidt, 2010; Guthrie et al., 1999), and this is particularly true for ELL students (Cummins, 2000).
2. Assessment should inform instruction (Valencia & Buly, 2002).
3. Children need more experience with “high-success reading” (Allington, 2002, 2006). They need to read independent level texts independently, instructional level texts with “minimal” support, AND frustrational level texts with support.
4. Professional development, coaching, and collaboration build teachers’ capacity (Guskey, 2003).

Implications and Application

We believe that programs such as this can be implemented during and outside of the school year. It will take:

• Collaboration between classroom teachers, ESL teachers, content-area teachers, and district leaders for PD opportunities
• Understanding of motivational, content-rich, language-intensive materials
• Identification of students at risk
• The opportunity for hands-on, content-based learning

Questions and Comments

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Thanks for coming!