2008-09 AND 2009-10

WAKE COUNTY
PUBLIC SCHOOL SYSTEM

ACADEMY OF READING® (AoR) 2008-09 AND 2009-10 EVALUATION

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ABSTRACT

Academy of READING (AoR) is designed to improve students' foundational reading skills; it is used in almost all Wake County Public Schools (WCPSS) secondary schools. Central staff recommended students with prior End of Grade/Course (EOG/EOC) scale scores placing them high in Level II or low in Level III have first priority for service; many students served scored below this range (second priority). Program completion rates increased from 2008-09 (26%) to 2009-10 (41%), but were still considerably lower than desired (100%). Growth for 2009-10 AoR participants on End of Grade reading/English tests was strong (with the percentage of students reaching their growth targets increasing from 37.5% before service to 60.1% afterwards). This improvement is educationally important. Program completion gave students only a slight advantage in terms of EOG growth. The program appeared to be helpful, with patterns generally favoring middle school over high school students.

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SUMMARY

Students Served

Use of AoR software has expanded across schools over the last several years in WCPSS, with 55 of 58 secondary schools (95%) utilizing the program by 2009-10. The AoR software program served 3,640 students in 2009-10—much higher than the 1,358 students served in 2008-09. Schools appeared to use many different sets of criteria to identify students to receive service in AoR. In 2008-09 and 2009-10, fewer students scored in the primary EOG range (of high Level IIs and low Level IIIs) recommended by central staff than scored below it (the secondary target range). Assignment is a multi-step process, and the AoR teachers reported using a number of criteria to determine students to be served, including EOG/EOC scores, other assessments, Individual Education Plans, ESL status, and teacher recommendations.

Implementation

AoR was most commonly utilized in remedial electives in 2009-10 (44%), with Curriculum Assistance and regular English I classes the next most common (at about 15% each). Students work on computer-based lessons related to foundational reading skills with teacher support as needed. Overall, the program appeared to be well implemented. Contracted AoR coaches from the vendor (TE21) found most teachers were implementing all key elements of the program, and 97% of survey respondents reported receiving training.

Aspects of the program's use of technology, the content, the pacing, the motivational aspects, and the data provided were mentioned both as likes and dislikes.

- Teachers appreciated the focus on basic skills, the self-pacing, the motivators, the available data feedback, and the opportunity to work one-on-one with students.

- On the other hand, a number of teachers indicated that the high standards for accuracy and rapid responses (automaticity) for some exercises led to student frustration and/or boredom. Teachers also reported issues related to technology glitches, slow pacing, immature characters used in the materials, and difficulty in understanding the narrator. A common request was also that some vocabulary and more comprehension be added to the program. A few schools had issues of computer access and dependability.

Outcomes

After completing a pretest, students are assigned a training stream in AoR. The length and number of skills each student must master varies depending on their performance on the pre-test). The objective was that all students would complete at least 80% of their program (a very high standard). This objective *was not met* either year, with AoR program completion rates at only 26% in 2008-09 and 41% in 2009-10. The percentage of students completing the program between 2008-09 and 2009-10 did increase; this could relate to better implementation at schools with the program for two or more years or the fact that more middle schools were involved in 2009-10 than 2008-09.

The EOG/EOC program objective was that students would improve in their reading comprehension as measured by Reading or English EOG/EOC; this objective *was* met. Based on the 2009-10 cohort, the percentage of students reaching or exceeding their growth target increased from 37.5% before service to 60.1% after service. Comparisons of average academic growth scores for Spring 2009 and Spring 2010 also indicated statistically significant improvement. Analyses revealed a medium effect size, which is considered educationally significant. Students appeared to benefit, on the average, whether they finished the program or not (with a slight advantage for those completing at least 80% of their training program).

Cost Benefit

While AoR has been a considerable investment for WCPSS over time ($1.8 million), the continuing costs are considerably lower than the initial costs of site licenses and training. If the cost of the licenses is amortized over time, and annual costs are added, the cost per student in 2009-10 was $148. The cost per student will vary by school depending on the number of students served per school; the cost per school averages out to $9,779. The cost per successful student (based on those with academic change scores at or above 0) was $246; those with costs below this average included students who scored high in Level II and in the low to mid-range of Level III. However, the *number* of students who improved was far greater in the high Level I and middle Level II range, with a slightly higher cost per successful student of $253 to $262.

Recommendations

Overall, AoR did appear to meet the need of improving many students' foundational reading skills. Continuation of AoR is recommended, with the following areas for improvement:

- Target services to student needs more strategically,
- Improve the program to increase student success, including targeted training for teachers to clarify some misconceptions,
- Consider the best classroom structure and level for these services.

ACADEMY OF READING® (AoR) 2008-09 and 2009-10 EVALUATION

This bulletin is organized around key questions of interest. AoR *implementation and one-year impact are examined.*

Question: What Need Does AoR Address? What Are Its Goals?

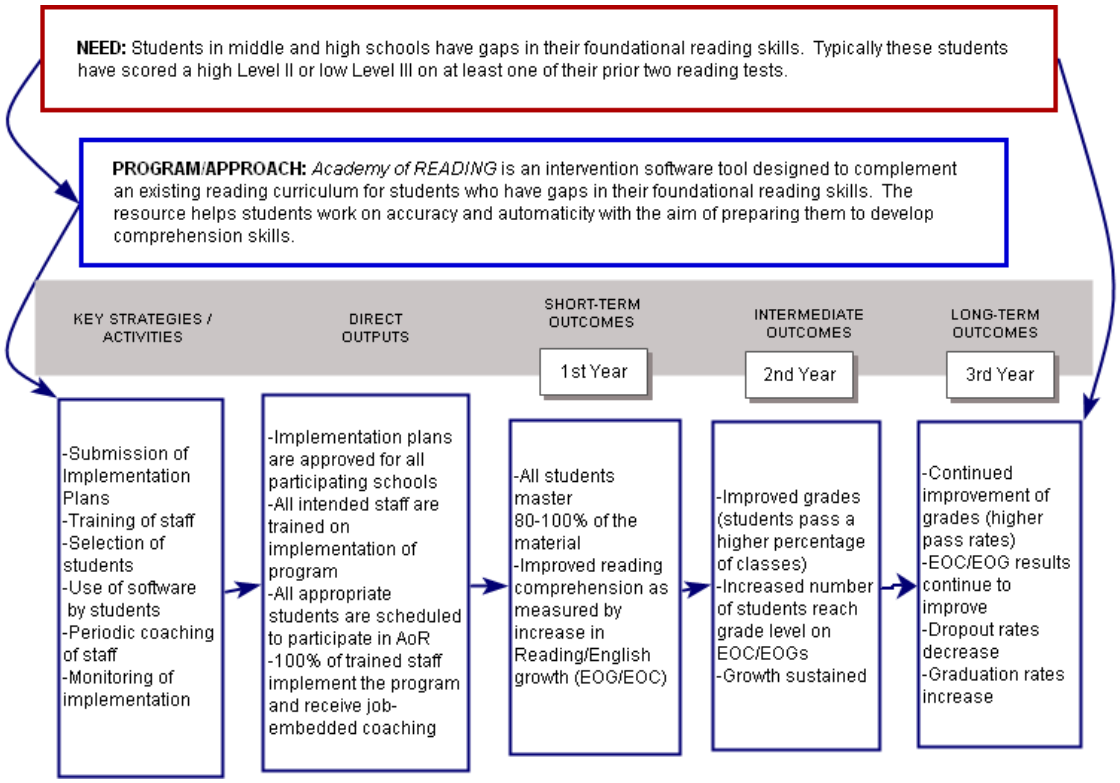
The AoR is a reading intervention software tool designed to complement an existing reading curriculum for students who have gaps in their foundational reading skills. The program is designed to build accuracy and automaticity in *sound matching, letter-sound matching, decoding, phonics, and fluency* to prepare students to develop comprehension skills. Because reading is so important to success in many high school subjects, improved reading skills should lead to increased reading comprehension and success in high school. The logic model shown on page 2 was developed collaboratively between the Evaluation and Research Department (E&R) staff and program staff to illustrate the need, short-term, intermediate, and long-term goals of the AoR. Briefly, program goals are to:

> *"Automaticity… is defined by the program as learning skills to a level of rapid automatic responding through practice."*
>
> *Florida Center for Reading Research (2004)*

- Help students master the skills in the AoR software the semester or year they are served,
- Improve EOG/EOC growth in reading and English the year of service and over time,
- Increase the percentage of grades of C or better for courses over time, and
- Ultimately increase graduation rates in the long-term.

The WCPSS literacy team recognizes the AoR as one option available to struggling readers in middle and high schools. Being able to read fluently is considered essential to high school success. Other remedial approaches may be better suited for students with greater deficits in reading, which involve more teacher-directed, multi-sensory reading instruction. Likewise, students who possess adequate foundational reading skills but struggle with issues such as comprehension or vocabulary may be better served by instruction and resources designed with that focus. Regardless of the approach or resource, teachers must use diagnostic and formative assessments to determine how best to tailor instruction to meet students' needs. Professional development and resources for this continuum of instructional needs are made available to schools.

Figure 1
AoR Logic Model for WCPSS



Curriculum and Instruction (C&I) contacts selected Academy of READING (AoR) based on research cited by Rissman (2004). One of these studies, by Fiedorowicz (1986), was a small experimental study with 16 students; he found that student participants receiving the program performed significantly better on standardized measures of reading accuracy and speed than those who did not. However, the two groups were not significantly different on an audio-visual matching task. A larger quasi-experimental study of 115 reading disabled students from five districts in Ontario (Fiedorowicz and Trites, 1987) also found that participants who received the AoR training showed significant improvement on standardized measures of word recognition measures and speed and accuracy of paragraph reading compared with matched students who did not. A more recent study by Loh (2009) studied results for 1,945 high school students across 13 states who had participated in AoR. He found gains averaging 1.6 grade levels on program measures for high school students, with the greatest gains for those with 10-20 hours of time on task. Most students can accomplish this in one semester, although some may need one year. AutoSkill (2007) also indicates that the AoR product is responsive to small experimental studies that found improved brain functioning (based on pre- and post-imaging) and reading skills for dyslexic readers who were given a three-week, phonologically driven instructional treatment. Beyond these studies, the Best Evidence Encyclopedia reviewed a variety of reading programs for secondary students; they found no studies that met their criteria for experimental and control studies on AoR, and therefore did not rate the effectiveness of AoR (Johns Hopkins University School of Education's Center for Data-Driven Reform in Education [CDDRE], 2008).

Question: What Are the Evaluation Questions of Interest?

The E&R program accountability staff met with the Director for K-12 literacy and the Senior Directors for Middle and High Schools to discuss goals for the program and ways to measure its effectiveness. E&R staff then drafted the evaluation plan, with the key evaluation questions and data sources shown in Table 1. Program staff played a critical role in providing data for many of the questions. Subsequent meetings and communications have been primarily with the Director of Literacy to obtain necessary data and additional details and clarifications.

Table 1
Key Evaluation Questions and Data Sources—AoR 2008-09 and 2009-10

Question	Data Source
1. What need is the program designed to address? What are its goals?	Program staff interviews (turned into logic model) 2009-10 teacher survey
2. What are the key strategies used in AoR?	Program staff and vendor (TE21) Websites Articles 2009-10 teacher survey
3. Which schools have utilized AoR and for how long?	Program staff
4. Which students were targeted and actually served by the program in 2008-09 and 2009-10?	Program staff Participant files EOG/EOC test records 2009-10 teacher survey
5. Was the program implemented with fidelity in 2009-10?	Trainer site visit reports
6. Did the program meet its short-term goals for program completion and for EOG/EOC growth?	Participant files EOG/EOC test records
7. What costs and resources are needed to implement AoR? What benefits are anticipated? Was the program cost-effective in 2009-10?	Program staff — budget records and expectations Studies on program effectiveness and cost benefit Cost effectiveness initial analysis
8. Should the program be continued as is, modified, or discontinued?	All (see Recommendations)

Information on methodology and analyses is included in Appendix 1. Intermediate and long-term benefits cannot be addressed at this time. In a future year, we hope to have the opportunity to analyze the 2009-10 student cohort over time in terms of future grades earned, EOG growth, and dropout rates.

Limitations of this Study

Students who did not complete at least 80% of the program could not be included in the analysis of improvement across the AoR program categories unless they took the post-test; we must assume that these students likely improved less in their foundational reading skills than other students. Therefore, readers must be cautious about overstating the effectiveness of AoR in terms of improvement within AoR. Non-completing students were included in the EOG/EOC analyses of growth (if they had appropriate EOG/EOC scores), so those analyses were not impacted.

Prior EOG/EOC Reading growth test scores for Spring 2008 and/or Spring 2009 were missing for about 20% of the students in this study. Missing test history data prohibits us from determining whether students were appropriate for the program or made achievement growth over time. These students may have been new to the district in 2008-09, not present during testing, exempt from testing as new Limited English Proficiency (LEP) students in their first year of school in the U.S., or not in the appropriate high school course that year to be tested. In addition, Students with Disabilities (SWD) who took alternate forms of the EOG and EOC would not have scale scores, which are the basis for growth analyses.

Cost benefit analyses can be approached in a variety of ways. Different methods could lead to somewhat different results. We utilized cost effectiveness ratios based on the percentage of students meeting their expected academic change score. Cost benefit results should always be considered in the context of other results in reaching conclusions about projects.

The teacher survey had a low return rate at 35%. Still, the 63 responses seemed representative enough to inform our understanding of WCPSS program implementation. Middle school teachers represented 80% of respondents, slightly higher than the middle school students in AoR (67%). Multiple choice and open-ended responses provided insights about the variability in selection methods, implementation issues, and teacher misunderstandings about AoR. As always, readers must just be cautious in the types of generalizations made from the survey data.

Lastly, a comparison group was not feasible to establish for this study. As a post hoc analysis, we could match students based on prior EOG/EOC scores, but we did not have scores available to match students on a measure of foundational reading skills. Also, some students in AoR may have also been in Integrated Reading (IR), which is sometimes combined with AoR. Since students were in various class configurations, we must assume that AoR would still have a discernable impact even without other supports. The widespread improvement across schools sharing the common element of participation in the AoR strengthens our assumption that the program made a difference for students. If a future study is launched, we will explore the feasibility of establishing a comparison group again.

Question: What Are the Key Strategies Used in AoR?

AoR focuses on the foundational reading skills of sound matching, letter-sound matching, decoding, phonics, and fluency. AoR includes only a limited amount of work on comprehension

at the end of the training sequence and no material of vocabulary. Improving foundational skills is considered essential to helping students increase comprehension. Teachers of AoR in 2009-10 were asked how helpful they felt AoR was in addressing various reading skills areas. Their perception matched the program's coverage fairly well. Most teachers realized that AoR was most helpful for phonemic awareness, phonics, and fluency. Most also understood that AoR was less helpful with comprehension and vocabulary. However, 30% of the respondents indicated that AoR was somewhat or very helpful with comprehension, and 40% indicated it was somewhat or very helpful with vocabulary. This represents a misunderstanding of AoR. A number of teachers requested better coverage of comprehension and vocabulary as possible improvements to the product.

In WCPSS, AoR is used for students within some regular English/Language Arts classes, within electives, within Curriculum Assistance (CA) courses, and in English as a Second Language (ESL) classes. Students utilize the software program to focus on their foundational reading skills three to five times per week for 30-40 minutes per session over a period of one to two semesters. The program measures the students' actual time spent on task, with a goal of at least 45 minutes of time spent on task per week. Time on task does not include time spent on activities such as start-up, shut-down, taking assessments, visiting the Trophy Room, or changing avatars. Loh (2009) studied results for 1,945 high school students across 13 states. He found gains averaging 1.6 grade levels on program measures for high school students, with the greatest gains for those with 10-20 hours of time on task. (In WCPSS, most students could have 10-20 hours of time on task during one semester of service.) In addition, Loh reported that 40% of the students gained two grade levels (categories) or more after participating in the program.

Students' starting level is based on a screening test that consists of several maze passages. Students are then assigned a "training stream" and move through an individually assigned series of tutorials, activities, and assessments with the goal of mastering 80-100% of the material on each skill assigned. Students who start at the lowest levels (Below Basic and Basic) are considered below grade level and have to complete more material to complete their training stream than those who score Proficient, Advanced, or Graduate. Once students have completed their training stream, they take the post-assessment, again consisting of several maze passages.

Maze passages are assessments in which students choose the most appropriate word from several options to complete a passage within a time limit (e.g., three minutes).

Teachers serve actively as coaches while students are working on their tasks. Teachers have constant access to a monitoring system on their own computer which allows them to see exactly what errors a student is making and constantly updates to list students in priority order of need for teacher coaching. In order to support teachers in learning how to best coach students, coaching strategies, training, observations, review, and support are provided by the AoR training and support vendor (a company named TE21). In addition, each school has its own Site Coordinator who works with the District Coordinator and Technology Services to schedule training, troubleshoot technological issues, and encourage best practice.

Question: Which Schools Have Utilized AoR?

AoR was rolled out to schools over time in WCPSS. Table 2 illustrates schools with the program each year. Three schools had the program before 2007-08. Service was rolled out first to high schools, because staff believed there were fewer existing resources available to help struggling readers compared to middle school, and that reading skills were critical to success in high school. In 2009-10, many middle schools were added. Presently, nearly all secondary schools in WCPSS (55 of 58) have this resource — 33 middle schools and 22 high schools.

Table 2
Years of Service in AoR by School

No.	Middle Schools	2007-08 or Before	2008-09	2009-10	High Schools	2007-08 or Before	2008-09	2009-10
1	Carnage	X	X	X	Millbrook	X	X	X
2	Heritage	X	X	X	Fuquay-Varina	X	X	X
3	Moore Square	X	X	X	Mary Phillips	X	X	X
4	East Garner		X	X	Apex		X	X
5	Fuquay		X	X	Athens Drive		X	X
6	Holly Ridge		X	X	Broughton		X	X
7	Reedy Creek		X	X	Cary		X	X
8	Mt. Vernon		X	X	East Wake		X	X
9	Wake Forest		X	X	Enloe		X	X
10	Zebulon		X	X	Green Hope		X	X
11	Longview MS		X	X	Knightdale		X	X
12	Apex			X	Longview HS		X	X
13	Carroll			X	Leesville Road		X	X
14	Centennial			X	Middle Creek		X	X
15	Daniels			X	Panther Creek		X	X
16	Davis Drive			X	Sanderson		X	X
17	Dillard			X	Southeast Raleigh		X	X
18	Durant Road			X	Wake Early College		X	
19	East Cary			X	Wake Forest-Rolesville		X	X
20	East Wake			X	Wakefield		X	X
21	East Millbrook			X	Garner			X
22	Leesville Rd			X	Holly Springs			X
23	Ligon			X				
24	Lufkin Road			X				
25	Martin			X				
26	North Garner			X				
27	River Oaks			X				
28	Salem			X				
29	Wakefield			X				
30	Wendell			X				
31	West Cary			X				
32	West Lake			X				
33	West Millbrook			X				

Note 1: Moore Square MS had no students enrolled in 2008-09; Green Hope HS had none enrolled in 2009-10.
Note 2: Holly Grove MS started in 2010-11; Mills Park MS and Heritage HS anticipate starting in 2010-11.
Note 3: Longview, River Oaks, and Mt. Vernon MS, Mary Phillips and Longview HS are alternative schools.

Question: Which Students Were Targeted and Actually Served by AoR?

Students Targeted

WCPSS staff considers AoR most appropriate for those students with some gaps, but not extreme gaps, in foundational skills. Central staff recommends students in the top 25% of Level II or the bottom 25% of Level III as most likely to benefit from the program (first priority). Staff emphasizes that AoR not be the sole resource used for students with the most foundational needs (those in Level I primarily) because it might not be intensive or multi-modal enough on its own. Central staff did not change this recommendation when EOG cut scores were raised in 2007-08. In 2008-09 and 2009-10, the targeted group for AoR was to be based primarily on the pattern of EOG scores over the past two years. District staff recommended that:

- Students who had a pattern of EOG scale scores in the top 25% of Level II and the bottom 25% of Level III in reading or English I for the past two or three years were considered those most likely to make gains through AoR. Students with declining scores (e.g., Level III to Level II) were also possible candidates. These students were considered first priority for service. Beyond the first priority group, if space was available, students in Level I or the bottom 75% of Level II were allowed into the program as the next most likely to make gains.

- The resource would be used primarily with students in grades 6-9, with some older students who had been retained at some point or still had gaps in reading skills.

- In addition, students on an Occupational Course of Study (OCS) could also be considered, if AoR was in addition to direct reading instruction provided by a teacher.

Authorized AoR trainers from TE21 sometimes expressed the opinion that the resource was helpful to a broader range of students — Level I and Level II.

WCPSS central contacts ask that teachers review these data for the past two years in making their recommendation. This is intended to be a multi-step process:

- The sending teachers make a recommendation that the student receive additional support in Reading/Language Arts or a remedial elective the next year. These recommendations are made before the state tests are given for the current year, so they reflect the prior year's test scores. Teachers also use other data in recommending students likely to benefit from AoR—including screening assessment scores, classroom performance, and teacher or SST recommendations of students.

- The specific student placement is decided by the receiving school staff (e.g., administrators and master schedulers) who schedule students for the year. These schedulers should check the most recent EOG/EOC score to confirm the recommendations. Students are typically placed in a remedial or regular-level class by the scheduler. Some regular English courses may include primarily students with lower scores the prior year.

- AoR is considered a supplemental tool by the receiving teacher. Teachers screen the students most likely to need the resource with one or more short assessments made available by the Consortium on Reading Excellence (CORE) and then make their decision about who is served in AoR (Diamond, 2008). Once students are selected, they take the AutoTest Cloze Paragraph Assessment to determine their starting place and training stream in the program.

CORE assessments are provided by the Consortium on Reading Excellence (CORE) as quick screening tools.

Cloze assessments measure understanding of words in context. Students fill in blanks in a paragraph or passage with no options provided (within a time limit).

Students Served

As shown in Table 3, the AoR served 1,358 students in 2008-09. In terms of student characteristics, FRL, SWD, LEP, Black/African American, and Hispanic/Latino students are over-represented compared to WCPSS characteristics overall. White students are under-represented. This pattern of service is appropriate in that the subgroups that are over-represented are more likely to score below grade level on the EOG tests. The most striking difference is for SWD students (44% of students using AoR vs. 14% in WCPSS). Females are also underrepresented relative to males.

In 2009-10, the number of students served in AoR more than doubled compared to 2008-09, from 1,358 to 3,640 (as the number of campuses increased). The profile of students served was similar in 2009-10 and 2008-09 by gender and racial/ethnic group, but some differences of note were found in FRL and SWD percentages. The percentage of students who had low income (as indicated by FRL status) increased from 50% to 63%, and the percentage of SWD decreased from 44% to 30%.

Table 3
Student Characteristics, 2008-09 and 2009-10, Grades 6-12

Characteristic	AoR Students				WCPSS Middle and High			
Year	2008-09		2009-10		2008-09		2009-10	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
FRL	684	50%	2,280	63%	17,770	23%	20,763	29%
SWD	602	44%	1,087	30%	9,536	14%	9,630	13%
LEP	294	22%	682	19%	4,408	6%	4,214	6%
Female	565	42%	1,652	45%	35,787	51%	35,176	49%
Male	793	58%	1,988	55%	34,451	49%	36,675	51%
American Indian	4	0	12	0%	202	0%	208	0%
Asian	41	3%	129	4%	3,827	5%	4,075	6%
Black/African Am.	638	47%	1,819	50%	19,875	28%	20,124	28%
Hispanic/Latino	290	21%	752	21%	6,621	9%	7,123	10%
Multiracial	55	4%	167	5%	2,631	4%	2,917	4%
White	330	24%	761	21%	37,082	53%	37,404	52%
Total	**1,358**		**3,640**		**70,238**		**71,851**	

Note: 1: Students may appear in more than one category: race and gender, FRL, SWD, and/or LEP.
2: Participants total 1,358 for 2008-09 and 3,640 for 2009-10 within race and gender categories.
Data Source: 2008-09 and 2009-10 WCPSS Annual Demographic Report – www.wcpss.net/demographics

We also explored the grade level distribution of those served and the assessments taken based on the 2008-09 and 2009-10 cohorts. Results shown in Tables 4 and 5 suggest that:

- Middle school use exceeded high school use in both 2008-09 and 2009-10. Students in grades 6 used the program most heavily both years. At the high school level, grade 9 had the heaviest use.

- Over three-quarters of participants took the regular EOG/EOC in the year prior to participation, with about 10% in the 2008-09 cohort and 7% in the 2009-10 cohort taking alternate assessments such as North Carolina Checklist of Academic Standards (NCCLAS), NCExtend1, or NCExtend 2. Over 10% had no scores available for both cohorts.

Table 4
2008-09 AoR Participants and Tests Taken in 2007-08

2007-08 Test Type	Grade in 2008-09								
	6	**7**	**8**	**9**	**10**	**11**	**12**	**Total**	**%**
EOG	289	193	179	276				937	69.0%
EOC				48	45	2	1	96	7.1%
NCCLAS				5	3			8	0.6%
NCEXTEND1	2	2	4	2				10	0.7%
NCEXTEND2	34	24	25	17				100	7.4%
NCEXTEND2-OCS Eng I					9	1		10	0.7%
None	24	25	24	70	14	32	8	197	14.5%
Total	**349**	**244**	**232**	**418**	**71**	**35**	**9**	**1,358**	100.0%

Note: All tests are displayed above, regardless of score or exemption. Nine students with blank scores are included in the above counts under the corresponding test.

Program staff indicated that students served in grades 11 and 12 would be more likely to be Occupational Course of Study (OCS) students. These students do take the Extend II assessments for English I, Algebra I, and Life Skills courses. While 10 students are shown taking OCS for English I, additional OCS students could be in the "None" category if they completed the English I test before grade 11.

Table 5
2009-10 AoR Participants and Tests Taken in 2008-09

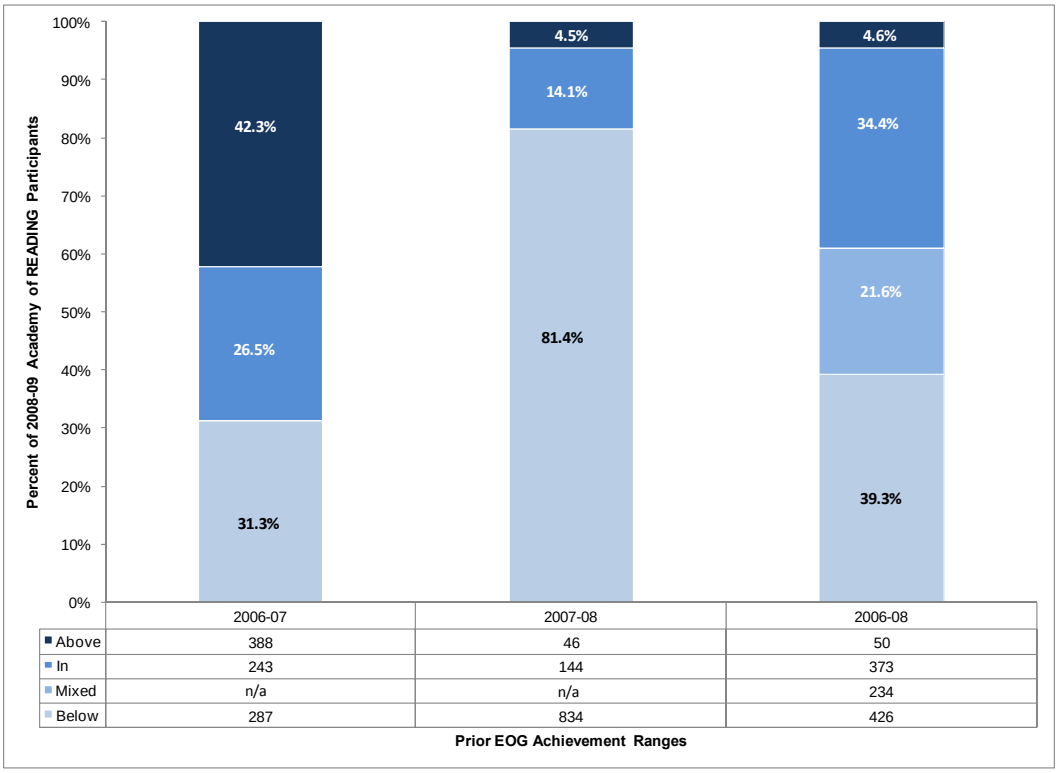
2008-09 Test Type	Grade in 2009-10								
	6	**7**	**8**	**9**	**10**	**11**	**12**	**Total**	**%**
EOG	931	758	823	432				2,944	80.9%
EOC				33	35	5		73	2.0%
NCCLAS	3	1		2				6	0.2%
NCCLAS-Eng I					7			7	0.2%
NCEXTEND1	2	3	6					11	0.3%
NCEXTEND2	69	61	35	43				208	5.7%
NCEXTEND2-OCS Eng I					11	2	1	14	0.4%
None	84	66	79	64	28	31	25	377	10.4%
Total	**1,089**	**889**	**943**	**574**	**81**	**38**	**26**	**3,640**	100%

Note: All tests are displayed above, regardless of score or exemption. Four students with blank scores are included in the above counts under the corresponding test.

In terms of EOG score patterns, we explored whether students served met the first and second priorities for the program in 2008-09 and 2009-10 based on students with EOG/EOC scores available at least one year. Figure 2 displays the percentage of students in each score range each of the two prior years and combined across years. In Figure 2, we included those meeting the

first priority criterion at least one year (rather than both years). When patterns of scores across two years are examined for those in AoR in 2008-09, results indicate that about a third (34.4%, or 373 of 1,083) of the students scored in the target range, with the largest group (39.3%) having scores below the first priority range both years. An additional 21.6% showed a mixed pattern of scores that were both outside the target range, with nearly all declining from above to below the target range. Based on this loose interpretation of the criteria for first and second priority, 73.7% of the students served technically met those criteria. However, second priority students out-numbered the first priority students. If we counted only those students who had first priority scores both years, only 14 students scored in the target range in both of the two prior years (less than 1% of those served).

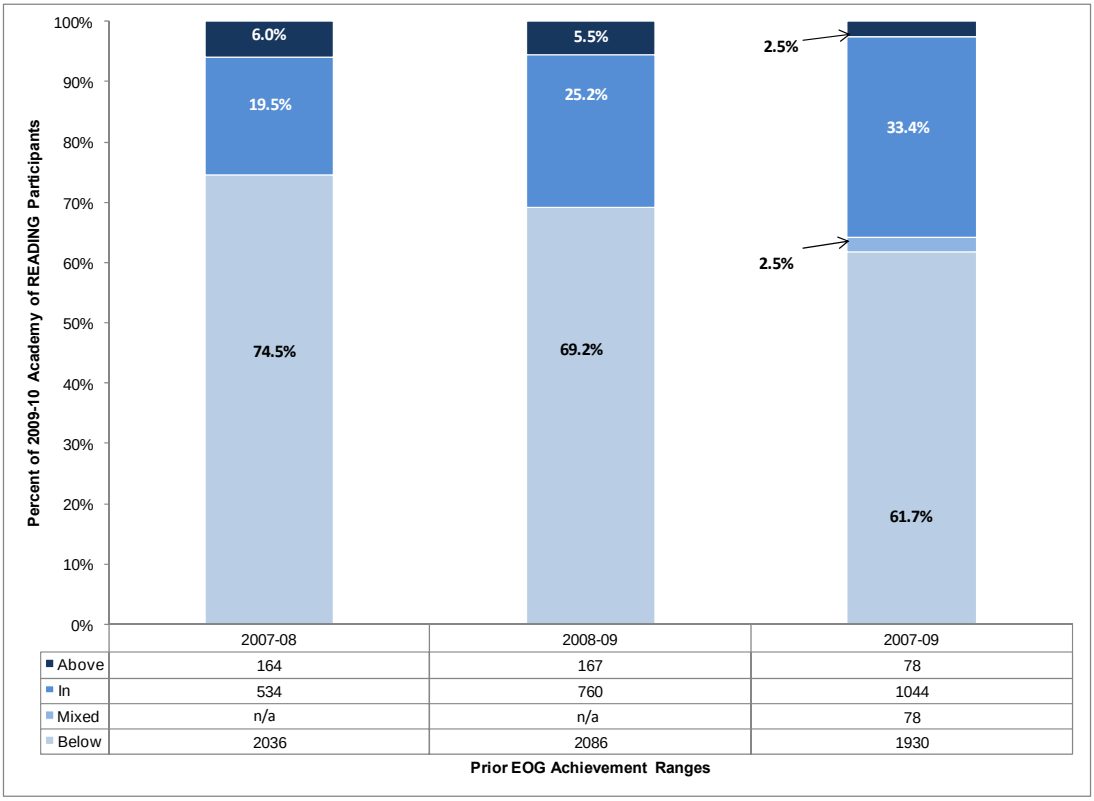
Figure 2
Prior Two Years of EOG/EOC Achievement Ranges for 2008-09 AoR Students



	2006-07	2007-08	2006-08
Above	388	46	50
In	243	144	373
Mixed	n/a	n/a	234
Below	287	834	426

In 2009-10, the pattern of prior scores for those in AoR was similar to 2007-08 and 2008-09; the majority of those served scored below the target range. As shown in Figure 3, when combined across years, 33.4% had at least one prior score within the first priority range, with 61.7% in the second priority range. Thus, the percentage of students scoring in the first priority range was about one-third both years, with the percentage below this range increasing in 2009-10. Overall, 95% of those served were in the first or second priority range. However, the fact that more students were in the second priority than first priority range is an issue. It is not clear that all first priority students were considered before enrolling the second priority students.

Figure 3
Prior EOG/EOC Achievement Ranges for
2009-10 AoR Students



2008-09 N= 1,358
Note: 440 students either took alternate assessments or were missing test scores in 2006-07, and 334 for 2007-08. 1,083students had at least one test score in 2006-07 and/or 2007-08 (275 were missing both).

2009-10 N= 3,640
Note: 906 students either took alternate assessments or were missing test scores in 2007-08, and 627 for 2008-09. 3,052 students had at least one test score in 2007-08 and/or 2008-09 (588 were missing both).

Finally, we reviewed survey results for more information on the criteria that were used to select students for AoR. Just over half of the teachers used EOG scores as at least one criterion for selecting students. Overall, 29% indicated they used one year of EOG scores; 26% used two years. Those who did not use them were fairly evenly split in terms of whether they had access to EOG scores or not. Given that the screening and selection process has multiple steps, it is not totally surprising that many teachers did not use the EOG scores. Nine of the 63 respondents indicated in their comments that the administrative team selected the students, so their role was to do additional assessments to determine students' appropriateness for AoR. One mentioned that their scheduler selected all Level II students; another mentioned Level Is and IIs.

On the other hand, some teachers, presumably those in regular English I courses, did find it appropriate to check EOG scores. A variety of criteria other than test scores were mentioned as playing a part in those decisions. Eight of the 63 respondents cited factors related to students'

status as SWD or ESL. A few teachers commented that they made a decision based on students' status alone. Others were more specific, indicating Individual Education Plans (IEPs), English proficiency based on ACCESS tests, or other scores drove their decisions within these groups. No data-based guidance has been available regarding which SWD or LEP students might benefit to date, so this evaluation may help inform those decisions.

Eight teachers also mentioned the CORE assessments, which are a recommended step in the selection process. Four mentioned the AoR pre-assessment, which is a longer assessment designed for placement once students have been selected.

Just over half of the respondents (54%) indicated they could serve all of the students who appeared to have needs based on their screening in 2009-10. Those who said they could not cited several capacity reasons: insufficient time (6), computers (7), space (5), teachers (5), and too many students (4).

- Time often referred to scheduling issues, but also to the issues of the short length of time available to use at lunch or other times outside the normal school day. Two respondents mentioned that parents opted out of service to allow their students to take band or other classes.

- Two teachers mentioned that the class was limited to use in a SWD class or an Integrated Reading class and therefore missed some non-SWD students who might benefit from AoR.

Question: Did Teachers Implement the Program with Fidelity in 2009-10?

Coaches' Ratings

The contracted coaches from TE21 (a company authorized to support AoR) observed teachers of the program several times a year, and rated them on whether they were meeting seven important objectives considered critical to program implementation on this scale: objective currently not being met (1), needs improvement (2), or being met (3). A copy of the form is attached as Appendix 2. A blank score was given if the coach was not able to observe the objective being implemented.

For the 2009-10 cohort, coaches visited 209 teachers at times when AoR was scheduled to occur during the spring of 2010. They were actually able to observe in 168 classrooms (80%); AoR was not occurring in 41 classrooms on the day of their visit. Teacher absences and schedule changes were two reasons observations did not take place in 20% of the cases. For the 168 teachers observed, the most common (modal) rating was a "3," indicating appropriate program implementation. There were some cases where only a portion of the objectives were observable; this was particularly true for teachers who couldn't be observed, but their students' time on task and progress could be obtained by the coach. In these situations, averages were computed from the ratings of the observed objectives. Just over three-fourths were implementing six or all seven of the objectives.

- Almost 60% of the teachers met all program objectives (97 of 168 or 57.7%),

- 32 (19.0%) met 6 of 7 objectives, with a need for improvement in one area,
- 39 (23.2%) needed improvements in more than one area, with 15 rated as a solid "2," and 2 teachers were rated as a "1."

Teachers' Views

A copy of the teachers' survey, and the corresponding results from the multiple-choice and open-ended questions, are shown in Appendix 3. Overall, 63 responses were received.

Training: All but two respondents indicated they had training in AoR. Over 90% of respondents either agreed or strongly agreed that the training helped them understand and implement the program reasonably well. Similarly, 90% indicated that the AoR coaching was essential to their ability to implement the program effectively. For all three items, "agree" was slightly more common than "strongly agree" as a response.

Strategies: Results related to strategies suggest AoR was implemented appropriately.

AoR was most commonly used in remedial electives in 2009-10 (44% of respondents), with Curriculum Assistance and regular English I classes the next most common (at about 15% each). Other class settings mentioned included reading decoding and Curriculum Assistance (for SWD students), ESL, and Occupational Course of Study (Item 3).

Overall, 89% of teachers reported using AoR three to five days a week, which is recommended. The largest percentage of respondents used AoR three days a week (44%); 11% indicated they used AoR four days a week; 34% indicated daily use; 11% utilized it two days a week (Item 10).

Most schools were in the recommended range of session length of 30-40 minutes; 39% indicated 30 minute sessions and 45% indicated 45 minute sessions. Small percentages indicated 25 minutes or less (11%) or 50 minutes or more (5%). WCPSS contacts indicate 40 minutes (or more) is preferable because it allows more time for instruction since set up and closing out the sessions take the same amount of time regardless of session length (Item 11).

Likes: In general, many teachers liked aspects of the use of technology, program content, pacing, motivators used, and data for teachers and students to monitor progress. Since many comments were repeated, only representative open-ended comments are included in Appendix 3b.

Technology—Many respondents liked the fact that AoR uses the computer and that it is interactive. A few mentioned liking the graphics. Many respondents mentioned the value of the reporting tools available for both students and teachers to monitor progress. Several teachers specifically mentioned the value of the teacher tool in allowing them to monitor progress and support students one-on-one while others continue learning.

Likes (continued)

Content—Many teachers liked the program's focus on basic skills. Word building, phonics, phonological awareness, visual-sound matching, automaticity and fluency, and oral distinctions of letters were mentioned specifically. One teacher said she "saw gains from students who were compensating in reading by skipping words…[students] actually slow down and try to work out the words."

Pacing—Numerous teachers appreciated the fact that AoR allowed students to work at their own pace and level. Teachers also noted that the program allows students to focus just on their weak areas. A few teachers mentioned liking the fact that students must master needed skills before progressing.

Motivation—The certificates and other motivators used were also mentioned as positive. One teacher commented that "students work hard to earn them. Students remained focused and are motivated to reach the next level." Another wrote that the format made students "less embarrassed about doing foundational work." Others indicated it was good with motivated students, with middle school students, and with ESL students. A few teachers mentioned that using the computer was motivating in itself.

Dislikes: Five or more teachers mentioned dislikes that fell into most of the same categories.

Technology—At least five respondents mentioned computer glitches such as incorrect scoring of responses, unreliable networks, and charts that would not print. Another issue mentioned numerous times was that the narrator's voice was difficult to understand (i.e., a "Canadian accent" with different pronunciation of some letter sounds). The volume was cited as inconsistent by some respondents. One teacher expressed disappointment with the reporting tools.

Content—The lack of enough comprehension material was cited by nine teachers. Vocabulary was also cited as an area to add. Others felt the materials were too childish for high school students, including some of the logos, illustrations, and visuals.

Pacing—Allowing students to self-pace themselves was cited as a plus by some teachers, but the pacing of the program was described as boring, repetitious, frustrating, and tedious by over 10 respondents. One respondent's comment on timed lessons was illustrative: "Kids get stuck on the pacing. So even though they may have achieved accuracy for 50 trials, they need to keep doing it until the pacing is the same."

Dislikes (continued):

Motivation—Motivating students to buy into the program was described as difficult because the program was viewed as boring. Comments suggested some students were just bored with school in general; others said it was related to students getting stuck on a skill which held them back from moving forward.

Class Size—Most teachers did not cite class size as an issue. However, two teachers indicated their classes were too large to allow as much one-on-one work as they would like. Central staff recommends 6-10 students per teacher (depending on the number of special education students).

Challenges: Appendix 3c includes representative open-ended comments about challenges encountered and ways the program could be improved.

Technology—Computer access and dependability of the network were described as technology hurdles for some schools. Two described computer crashes during student training time. One teacher indicated that, "for a while, the program would just not work correctly on Thursdays." Not having enough computers to handle all the children who might benefit was also mentioned by two schools.

Content—Concerns related primarily to boredom with the tedious parts of the program and the same pacing issue (being able to answer items correctly within a certain time limit). One teacher said, "having 100 plus trials is not uncommon for some students." Another teacher indicated that the listening-visual match part is very confusing and the slightest noise throws students off. Finally, one teacher indicated she had students in her group who did not know enough English to understand the program or her directions.

Challenges

Technology: *"At our school, no one was interested in helping with the computer problems. It was hit or miss whether we could use them or not. It made for planning nightmares, students off task because of a change in the routine, and the data wasn't as valid as it should have been."*

Content: *"AoR is not the best program to be used with students with severe reading problems. I supplemented AoR with phonics games, tests, as well as reading comprehension stories that were on the level of my students."*

Pacing and Motivation: *"The program is not for everyone. Some kids grow so frustrated with the program and start hitting keys instead of trying."*

Pacing and Motivation—These issues again went hand in hand, with teachers describing difficulties related to getting students to buy-in and to remain motivated to continue the program. One teacher indicated her students "hate the program and are frustrated by it." Finally, one teacher indicated, "High school students sometimes rebel at having a reading class."

Other issues came up related to teacher and scheduling issues. One teacher indicated she/he had too many students and not enough support. She/he had to develop additional work for those who completed the program and it was overwhelming for him/her.

Ideas for Improvement: In terms of ideas for improvement, most suggestions related to the same areas.

Technology—Eight teachers made suggestions for technology improvements that focused on:

- eliminating glitches in the software,
- expanding program capabilities,
- making the interface more user-friendly so that more teachers could participate,
- creating a smarter interface for recognizing mastery of a skill,
- having sounds that were pronounced more accurately, consistently, clearly, and loudly every time,
- adding enhancements so that teachers could adjust learning streams or specific assignments, and see more from their station,
- adding an option for students to be able to have a sound repeated and to be able to see their own reports so they could monitor their own progress.

Content—Many respondents requested more focus on comprehension and vocabulary development. Several teachers requested more mature characters be used for middle and high school students — especially high school students.

Improvements

Technology: *I would like what the teacher can "see" as the student responds to trials to be expanded. On the comprehension, I would like to "see" the stories without having to read over the student's shoulder, or to see the responses to auditory/ visual exercises without having to use a splitter to interrupt the student as he/she is progressing.*

Content: *Teachers need to be able to make adjustments to the student's lesson assignments as needed. For example, I teach 9th grade students, many of whom need lessons from the 6/7 Comprehensive Training Stream, however the computer assigns them to the 8th grade stream.*

Pacing/Motivation—A number of teachers suggested that the time/pacing requirements be relaxed because students get stuck on a skill otherwise. As one teacher commented, “Take away the demand that students complete skill sets within a specific time limit or within a consistent time limit.” Findings ways to help students reach the core readings more quickly was specifically mentioned.

Structures— Two teachers noted that some students may need more than a year to complete the program and this option should be available. One teacher felt the class worked better as an elective. One suggested that it be changed to a direct instruction program four days a week during the summer.

Question: Did the Program Meet Its Short-Term Goal for Program Completion?

AoR includes a pre-assessment of students' skill level, with students classified as Below Basic (roughly two years or more below grade level), Basic (about one year below grade level), Proficient (at grade level), Advanced (above grade level), or Graduate (well above grade level). Graduates have mastery of all skills taught through AoR. Based on the pre-assessment, the lowest scoring students are assigned the greatest number of skills to complete, with the opposite being true for the higher scoring students. The vendor has indicated that most students should finish in one semester, but that students starting at the Below Basic level may need two semesters or more to complete the full training stream. SWD and LEP students may also need extra time to reach automaticity. In WCPSS, students can typically have one or two semesters in the program.

The WCPSS goal for the program is for all students to master 80% or more of the skills in their assigned training stream. This is a high standard for success; gaining two categories (or grade levels) is another standard for success seen in research studies (Loh, 2009).

Completion Rates Overall and by Pretest Levels

Table 6 illustrates that only 25.6% of students with pre-tests completed 80% or more of their training stream in 2008-09 and 40.8% in 2009-10 (see the Total row). While the improvement from 2008-09 to 2009-10 is notable, AoR fell far short of the district goal for AoR service both years, which was that all students would complete at least 80% of their training stream.

The Total Enrolled column in Table 6 illuminates a key contributing factor, which is that the most common pre-assessment level by far was Below Basic in both 2008-09 and 2009-10 (about three-fourths of the students). Thus, most of those served had a large number of skills to complete. A distant second was Basic, which included 13% and 18% of the 2008-09 and 2009-10 students, respectively. Proficient was the next most common category of students. TE21 trainers consider these three categories of students as likely to benefit from the AoR program. About 5% of the students served who took a pre-test (67 in 2008-09 and 149 in 2009-10) scored advanced or graduate, which TE21 trainers indicate is too high to benefit greatly from the program. These students would only be assigned a few of the more advanced skills to work on to complete their training stream. Completion rates varied by year of service and pre-test level.

- As the italics indicate, students served in 2009-10 were showing higher completion rates for each pretest level than for those served in 2008-09. The groups with the highest completion rate of assigned work were those within the higher categories initially with the least work to complete — 63% to 72% of those scoring proficient, advanced, or graduate initially in 2009-10. Still, about one in three students in these groups did not complete their assigned training stream.

- For those students who initially scored Below Basic, only 20% completed their training stream in 2008-09, and 36% in 2009-10. Thus, four in five of these students in AoR in 2008-09, and two in three in 2009-10, failed to complete their training stream.

Table 6
Pre Test Levels for Students in AoR
and Percent Completing at Least 80% of their Training Stream

	2008-09			2009-10		
	Total	Completing		Total	Completing	
Pre Test Level	Enrolled	Number	Percent	Enrolled	Number	Percent
Below Basic	1,078	218	20.2%	2,720	982	36.1%
Basic	179	82	45.8%	639	314	49.1%
Proficient	34	12	35.3%	131	82	*62.6%*
Advanced	18	7	38.9%	53	36	*67.9%*
Graduate	49	29	59.2%	96	69	*71.9%*
Total	**1,358**	**348**	**25.6%**	**3,639**	**1,483**	**40.8%**

Note: One student did not take the pre-test in 2009-10.
Interpretation Example: 1,078 of the 1,358 students (79%) of those served in AoR in 2008-09 scored Below Basic on their pre-assessment; 20% of the 1,078 students (218) completed 80% or more of their training stream.

Final AoR Categories by Completion Rate

Those who completed their training stream were more likely to be classified as Graduate based on a final post-assessment (See Figure 4.)

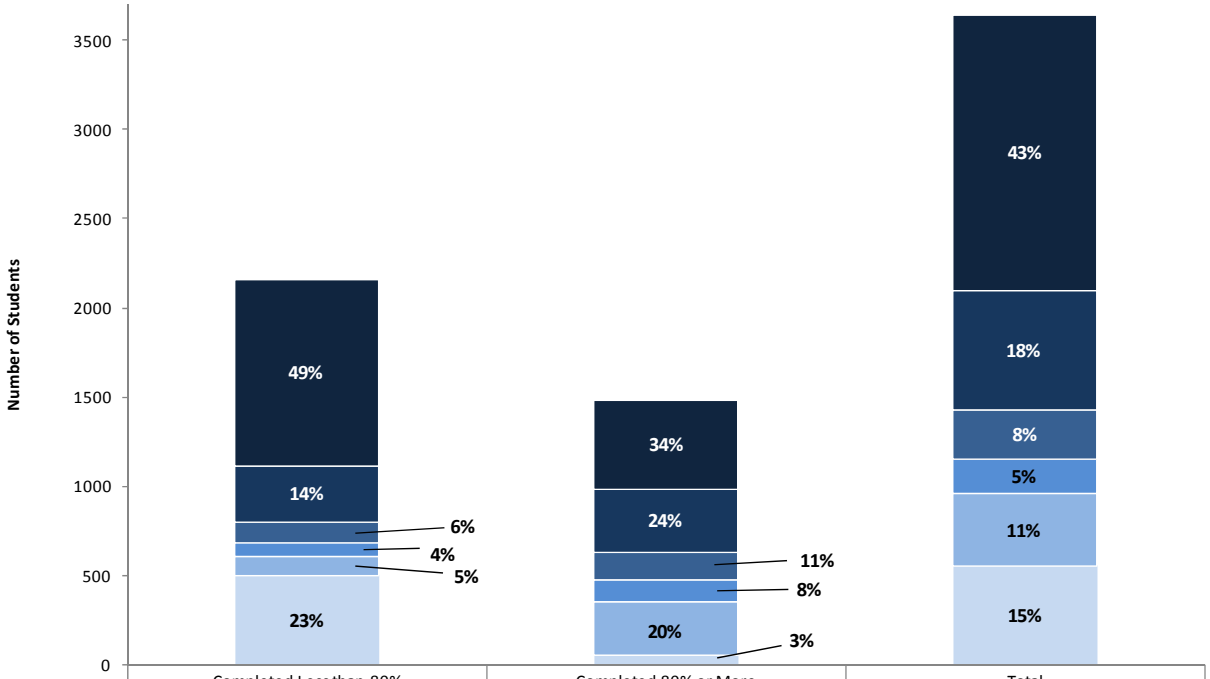
- A total of 552 students (15.2%) did not take a post-assessment and therefore could not be assigned a final status. Most did not complete 80% of their training stream, and we assume nearly all would not have reached graduate status.

- Of the 1,483 who completed at least 80% of their training stream, 20.4% (302) reached the status of Graduate. Below Basic and Basic were the most common final statuses (See Figure 4.)

- Of the 2,157 students who did not complete 80% of their training stream, 102 (4.7%) reached the status of Graduate.

- Overall, 11% (404) of AoR 2009-10 participants reached Graduate status.

Figure 4
Final Status of 2009-10 AoR Participants by Completion Status and Overall



	Completed Less than 80%	Completed 80% or More	Total
Below	1048	499	1547
Basic	310	353	663
Proficient	119	159	278
Advanced	77	119	196
Graduate	102	302	404
No Post Test	501	51	552

Note: Students who completed 80% or more n=1,483. Students who did not complete at least 80% n=2,157. Total N (last column) represented all AoR students in 2009-10 (3,640)

If we focus only on students completing at least 80% of their program and taking a posttest, Table 7 indicates that only about one quarter of the AoR students reached the goal of Graduate (26.5% in 2008-09 and 21.1% in 2009-10). Students' chances of reaching Graduate status generally increased as the students' initial category increased.

- Those who started out as Below Basic (the largest group) were most likely to stay in that category in both 2008-09 and 2009-10. For example, in 2009-10, only 15.5% of those starting out as Below Basic were able to reach the Graduate category. If improvement of two or more categories is checked, 29.8% of the students met this standard for success.

- Those who started out as Basic were most likely to stay as Basic (35.9% and 38.9%). In 2008-09, almost as many (33.3%) moved up to Graduate status. An additional 7.7% reached the Advanced category, meaning 41% improved by two categories. In 2009-10, 38.5% increased by two categories.

- Those who started out as Proficient had a varied pattern in 2008-09 and 2009-10. (Note only 11 students were in this category in 2008-09--11.) For 2008-09 participants, students were as likely to increase two categories to Graduate or to decrease two categories to Below Basic (27.3% each). In 2009-10, more students moved up to Graduate (32.9%), than down to Below Basic (12.7%).

- Those who started out as Advanced or Graduate scored above grade level initially and had few skills assigned. The highest percentage of students stayed in their initial category, with about one third of the Advanced students moving up to Graduate in 2009-10. However, some students dropped in category status, especially in 2009-10.

Thus, students scoring Below Basic initially were unlikely to improve to the Graduate level, even if they completed 80% of their training stream. Moving up two categories was also unlikely. The likelihood of improving to Graduate was greater in other initial categories.

Table 7
Pre- and Post-Test Levels for Students Completing 80% or More of the Program

2008-09 Pre- and Post-Test Levels											
Post	**Below Basic**		**Basic**		**Proficient**		**Advanced**		**Graduate**		**Total**
Pre	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
Below Basic	118	*57.8%*	43	21.1%	9	4.4%	5	2.5%	29	14.2%	204
Basic	11	14.1%	28	*35.9%*	7	9.0%	6	7.7%	26	33.3%	78
Proficient	3	*27.3%*	2	18.2%	2	18.2%	1	9.1%	3	*27.3%*	11
Advanced	*	*	*	*	*	*	*	*	*	*	7
Graduate	1	3.6%	2	7.1%	0	0.0%	0	0.0%	25	*89.3%*	28
Total	**134**	**40.9%**	**75**	**22.9%**	**18**	**5.5%**	**14**	**4.3%**	**87**	**26.5%**	**328**
2009-10 Pre- and Post-Test Levels											
Post	**Below Basic**		**Basic**		**Proficient**		**Advanced**		**Graduate**		**Total**
Pre	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
Below Basic	464	*48.5%*	207	21.7%	85	8.9%	52	5.4%	148	15.5%	956
Basic	18	6.1%	115	*38.9%*	49	16.6%	42	14.2%	72	24.3%	296
Proficient	10	12.7%	18	22.8%	15	19.0%	10	12.7%	26	*32.9%*	79
Advanced	1	2.9%	3	8.6%	5	14.3%	15	*42.9%*	11	31.4%	35
Graduate	6	9.1%	10	15.2%	5	7.6%	0	0.0%	45	*68.2%*	66
Total	**499**	**34.8%**	**353**	**24.7%**	**159**	**11.1%**	**119**	**8.3%**	**302**	**21.1%**	**1,432**

Note 1: In 2009-10, 51 additional students completed at least 80% of their training stream, but did not take pre- or post-assessment.
Note 2: In 2008-09, 20 additional students completed at least 80% of their training streams, but did not take a post-assessment.
Note 3: No detail is provided for group sizes less than 10 to support confidentiality of student data.
Note 4: Italics show most common post-placement for each pre-assessment group.
Interpretation Example: For students scoring Below Basic upon entry to AoR in 2009-10, almost half (48.5%) scored at the same level on the post-assessment; 15.5% showed great improvement by reaching graduate status.

Goal Attainment EOG/EOC Impact

The word "cohort" always refers to the AoR students served in 2009-10 over time (from before to after AoR service).

Analyses of outcomes of AoR on EOG/EOC achievement focus on the *2009-10 cohort* over time (before and after service). The program was more mature and more students were available for analysis in the 2009-10 cohort. We will always use the word *"cohort"* and the test dates rather than school years to distinguish these analyses over time from those reflecting the separate groups served in 2008-09 and 2009-10.

As noted earlier, less than half (41%) of the 2009-10 cohort in AoR completed 80% or more of their training stream. When we examined AoR program completion based on prior EOG/EOC scores, we found some groups were more successful in completing the program than others. (See Table 8.)

- Students in the 2009-10 cohort were most likely to complete their training stream (about 53%) if they initially scored in the upper range of Level II or the bottom range of Level III on the EOG/EOC in spring 2009. This is the range WCPSS central staff had recommended for service.
- Several groups had completion rates between 42% and 48% — those who scored in the upper part of Level I (42%), the bottom or middle part of Level II (44% and 48%), or the middle part of Level III (48%). These hovered around the overall completion rate of 45%.
- Those with more extreme scores — those scoring in the bottom part of Level I or the upper part of Level III or IV initially — were less likely to complete the program (25-33%).

Table 8
2009-10 Cohort Program Completion by Prior EOG/EOC Achievement Level Range

	Students Completing 80% or More of the Program		Total Students
Achievement Level	**n**	**%**	**n**
Level I - Bottom	*	*	1
Level I - Middle	116	30.1%	385
Level I - Upper	285	41.7%	683
Level II - Bottom	133	43.6%	305
Level II - Middle	342	48.0%	712
Level II - Upper	254	*52.8%*	481
Level III - Bottom	149	*53.4%*	279
Level III - Middle	70	47.9%	146
Level III - Upper	3	25.0%	12
Level IV - All	*	*	9
Total	**1,355**	**45.0%**	**3,013**

Note 1: There were 246 students who took alternate assessments the prior year, 37 (15%) of whom completed the program. Similarly, there were an additional 381 students with missing EOG/EOC scores, 91 (23.9%) who also completed the program.
Note 2: Shading and italics reflects the most positive results.

Another question of interest is the relationship between prior EOG/EOC levels and the AoR category assigned to students before and after service. This was studied for those completing at least 80% of their training stream within the 2009-10 cohort (see Table 9). Higher prior EOG/EOC scores did relate somewhat to higher pre- and post-assessment AoR scores, but assessment category placements were lower than expected.

- Overall, most students who were assessed for AoR started out as Below Basic, which TE21 coaches described as two years below grade level. This was also the most common placement for students from the middle of Level I to the middle of Level III on the prior year's EOG (the only groups with adequate sample sizes for analysis). The percentage of students in Below Basic declined with higher prior EOG/EOC scores, with a range of 82% to 45%. These findings suggest that the pre-assessment is very difficult. Some relationship of EOG/EOC scores is evident, but some higher-achieving students also may not have done their best on the pretest.

- At the end of the 2009-10 school year after service, the most common result was that those in the bottom three EOG/EOC Level score categories continued to stay in the Below Basic category. Those in the middle of Level II were most likely to move up one category to Basic, and those above this point on EOG/EOC scores were most likely to reach Graduate status.

- The decline in the percentage of students in the Below category varied by EOG/EOC pre-test level, with those starting in Level II or low to middle Level III having the greatest reduction of 35% (compare the first column of the table from the Pre to Post EOG Level). Those with higher EOG/EOC pre-levels had a slightly higher reduction than those with EOG pre-levels in Level I.

Table 9
2009-10 Cohort AoR Assessment Levels Before and After Service based on Prior EOG/EOC Scores

	Pre AoR Level										
Pre EOG/EOC Level	**Below**		**Basic**		**Proficient**		**Advanced**		**Graduate**		**Total**
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Level I - Bottom	*	*	*	*	*	*	*	*	*	*	*
Level I - Middle	91	*82.0%*	18	16.2%	.	0.0%	.	.	2	1.8%	111
Level I - Upper	206	*74.1%*	55	19.8%	8	2.9%	6	2.2%	3	1.1%	278
Level II - Bottom	98	*75.4%*	21	16.2%	7	5.4%	2	1.5%	2	1.5%	130
Level II - Middle	219	*65.8%*	71	21.3%	23	6.9%	5	1.5%	15	4.5%	333
Level II - Upper	139	*57.0%*	58	23.8%	20	8.2%	11	4.5%	16	6.6%	244
Level III - Bottom	80	*54.8%*	39	26.7%	8	5.5%	6	4.1%	13	8.9%	146
Level III - Middle	30	*44.8%*	17	25.4%	10	14.9%	3	4.5%	7	10.4%	67
Level III - Upper	*	*	*	*	*	*	*	*	*	*	3
Level IV - All	*	*	*	*	*	*	*	*	*	*	2
Total	864	65.8%	281	21.4%	76	5.8%	33	2.5%	60	4.6%	1,314
Pre EOG/EOC Level	**Post AoR Category**										
Level I - Bottom	*	*	*	*	*	*	*	*	*	*	*
Level I - Middle	67	*60.4%*	22	19.8%	6	5.4%	6	5.4%	10	9.0%	111
Level I - Upper	143	*51.4%*	61	21.9%	27	9.7%	23	8.3%	24	8.6%	278
Level II - Bottom	52	*40.0%*	34	26.2%	20	15.4%	9	6.9%	15	11.5%	130
Level II - Middle	87	26.1%	108	*32.4%*	37	11.1%	25	7.5%	76	22.8%	333
Level II - Upper	47	19.3%	60	24.6%	40	16.4%	32	13.1%	65	*26.6%*	244
Level III - Bottom	28	19.2%	35	24.0%	16	11.0%	16	11.0%	51	*34.9%*	146
Level III - Middle	11	16.4%	13	19.4%	7	10.4%	5	7.5%	31	*46.3%*	67
Level III - Upper	*	*	*	*	*	*	*	*	*	*	3
Level IV - All	*	*	*	*	*	*	*	*	*	*	2
Total	435	33.1%	334	25.4%	154	11.7%	116	8.8%	275	20.9%	1,314

Note: Analysis is based on those completing 80% or more of the program and having pre- and post-assessments in AoR. An additional 51 students completed at least 80% of the program but did not take the post-assessment. Also, 37 students took alternate assessments and 91 had no scores at all. The mode (the most common value) is highlighted in italics for each row.

Interpretation Example: Of the 244 2009-10 AoR students who scored in the upper Level II range on their 2008-09 EOG/EOC, 57% pre-tested in the "Below" (Basic) category in AoR. On the post-assessment, 19.3% of these students remained in the "Below" category as well, with 37.7% moving up to higher categories.

Question: Did AoR Meet Its Short-Term Goal for EOG/EOC Impact?

A second short-term goal for WCPSS staff was for AoR participants to increase their growth on the North Carolina End of Grade and End of Course tests. This was measured through Academic Change (AC) scores on the tests, which measure whether students made at least one year's growth for a year of instruction relative to the rest of the state's population. This measure is more sensitive to growth within level score ranges, and is a better measure of overall growth across the group. E&R staff analyzed both the percentage of students reaching AC growth targets and the changes in average AC scores from year to year and compared them to the state data.

Percentage of Students Reaching or Exceeding Academic Change Growth Targets

Table 10 shows several important positive trends for EOG/EOC result patterns for the 2009-10 cohort.

The percentage of participants reaching their growth targets improved considerably from before to after AoR service, especially at the middle school level.

- For the 2009-10 cohort of students in AoR, the percentage of participants reaching their growth targets increased considerably, from 37.5% to 60.1%.

- The percentage of students in each grade who reached their reading/English growth target on the EOG/EOC increased at each grade except Grade 10 (where the number of students was small).

- Utilization of AoR at the middle school level appears to be somewhat more likely to lead to student success in reaching EOG/EOC growth targets than at the high school level, with the highest increases and overall percentages of students reaching growth targets. Grade 7 had the largest improvements (increasing 33 percentage points, from 30% to 63% reaching their AC target).

Table 10
Percentage of Students in the 2009-10 Cohort of AoR Who Reached or Exceeded Growth Targets in 2008-09 and 2009-10 on EOG/EOCs

	Spring 2009			Spring 2010		
Grade in 2009-2010	Met Target		Total	Met Target		Total
	n	%	n	n	%	n
6	330	39.7%	831	551	*60.7%*	907
7	195	30.0%	651	468	*62.8%*	745
8	293	40.9%	717	486	*60.3%*	806
9	151	37.4%	404	242	*54.5%*	444
10	18	62.1%	29	2	33.3%	6
11	*	*	<10	-	-	0
12	-	-	-	-	-	0
All	988	37.5%	2,634	1,749	*60.1%*	2,908

Note: Of the 3,640 participants in 2009-10, 2,634 had academic change scores in 2008-09 and 2,908 in 2009-10. Reaching a growth target for a student is defined as having an academic change score greater than or equal to zero. An increase in the percentage of students with positive AC scores is highlighted and italicized.

The percentage of students meeting their AC growth target on the EOG/EOC increased for students regardless of the teachers' level of implementation of AoR. The increase was slightly greater for those in the classrooms of teachers with middle or high levels of implementation than those with low levels of implementation. It is interesting that those "not observed" had the highest percentage of students reaching growth targets in 2009-10, but the reason for this result is not known.

Table 11
Implementation Level and 2009-10 Cohort Students Meeting or Exceeding Growth Targets

	Spring 2009			Spring 2010		
Implementation Level	Met Target		Total	Met Target		Total
	n	%	n	n	%	n
Low	178	39.6%	449	277	55.2%	502
Middle	151	36.7%	412	267	59.7%	447
High	494	36.7%	1,346	884	59.4%	1,489
Not Observed	165	38.6%	427	321	68.3%	470
All	988	37.5%	2,634	1,749	60.1%	2,908

Note: Implementation ratings came from AoR coach evaluation forms. Not all teachers were available to be rated at the time the coach visited the school. Also, based on classroom names, not all teachers received documented coaching visits, making their implementation level unable to be determined.

Tables 12 and 13 show the patterns of growth for the 2009-10 cohort based on students' pre-assessment levels and post-assessment levels. When patterns of growth are examined based on students' initial and final placement in the program, positive trends are evident.

*The greatest increase in **number** of proficient students was within the Below Basic group.*

*Those initially scoring in the highest categories of AoR showed the greatest improvement in the **percentage** of students making growth over time.*

- The number of students in the lower categories far outweighs those in the higher categories. The greatest increase in *number* of proficient students was within the Below Basic group.

- All categories of students showed an increase in the percentage of students reaching growth targets between Spring 2009 and Spring 2010.

- Those placed in the highest categories of AoR initially showed the greatest improvement in the percentage of students making growth over time (with the percentage of those classified as Graduate increasing from 28% reaching EOG AC targets to 72%).

When patterns for growth targets are examined relative to post-test levels after service in AoR, patterns are similar but somewhat less in magnitude.

Table 12
Percentage of 2009-10 Cohort Meeting or Exceeding Growth Targets by Pre-Level AoR

	Spring 2009			Spring 2010		
	Met Target		Total	Met Target		Total
Pre Level	n	%	n	n	%	n
Below Basic	730	39.0%	1,872	1,193	57.4%	2,080
Basic	185	35.0%	529	374	65.7%	569
Proficient	38	33.3%	114	85	68.5%	124
Advanced	14	32.6%	43	36	72.0%	50
Graduate	21	27.6%	76	61	71.8%	85
All	988	37.5%	2,634	1,749	60.1%	2,908

Note: 988 of the 3,639 students that took a pretest in 2009-10.
Additionally, 2,908 of these students had academic change scores in 2009-10.

Table 13
Percentage of 2009-10 Cohort Meeting or Exceeding Growth Targets by Post Level AoR

	Spring 2009			Spring 2010		
	Met Target		Total	Met Target		Total
Post Level	n	%	n	n	%	n
Below Basic	359	36.8%	976	585	52.8%	1,107
Basic	211	37.9%	556	385	64.0%	602
Proficient	83	34.4%	241	166	63.4%	262
Advanced	52	31.7%	164	137	*73.3%*	187
Graduate	136	41.2%	330	261	72.7%	359
All	988	43.6%	2,267	1,749	69.5%	2,517

Note: 988 students that post tested had academic change scores in 2008-09; 2,517 in 2009-10.

The question of whether completing 80% of the program or more was critical to success on EOG/EOC growth is addressed in Table 14.

- Student groups who completed 80% or more and those who completed less than 80% both showed improvement in terms of the percentage of students reaching growth targets.

- The greatest improvement was evident for those who completed 100%. The differences by completion subgroup were only about 11%.

Table 14
Percentage of 2009-10 Cohort Meeting or Exceeding Growth Targets by Completion Rate

	Spring 2009			Spring 2010		
Program Completion in 2009-10	Met Target			Met Target		
	n	%	Total	n	%	Total
Completed 100%	312	36.7%	851	622	*66.8%*	931
Completed 80-99%	132	36.7%	360	245	62.7%	391
Completed 80% or More	*444*	*36.7%*	*1,211*	*867*	*65.6%*	*1,322*
Completed Less Than 80%	544	38.2%	1,423	882	55.6%	1586
All	988	37.5%	2,634	1,749	60.1%	2,908

Note: 988 students had academic change scores in 2008-09; 2,908 in 2009-10.

Table 15 reveals several positive trends based on prior EOG level scores and growth for the 2009-10 AoR cohort.

- All EOG/EOC subgroups showed an increase in the percentage of students reaching their growth targets except those in the small group scoring in the upper level III category.

- The most positive change in the percentage of students reaching growth targets from 2008-09 to 2009-10 was for students initially scoring in the middle of Level I. This group moved from 12.7% reaching their growth target to 55.7% reaching the growth target, an increase of 43%. The group initially scoring in the upper range of Level I had the next best improvement (of approximately 33 percentage points).

- The percentages of students reaching their growth targets increased between lower and higher prior EOG/EOC level scores in 2008-09. Differences in the percentage of students reaching growth declined in Spring 2010 after the AoR intervention.

- Overall, the AoR Students moved up from below to at average district growth on the EOG/EOC, helping to close this achievement gap. In WCPSS overall, 62% of English I students and 59% of middle school reading students met their growth targets.

Table 15
Percentage of 2009-10 Cohort Students Meeting or Exceeding Growth Targets by 2008-09 EOG Level

	Spring 2009			Spring 2010		
08-09 EOG/EOC Ach Level	Met Target		Total	Met Target		Total
	n	%		n	%	
Level I - Bottom	*	*	*	*	*	*
Level I - Middle	37	12.7%	292	192	*55.7%*	345
Level I - Upper	151	25.5%	592	383	*58.4%*	656
Level II - Bottom	100	37.2%	269	174	58.4%	298
Level II - Middle	284	45.5%	624	393	56.3%	698
Level II - Upper	210	47.3%	444	294	62.4%	471
Level III - Bottom	123	47.3%	260	201	73.9%	272
Level III - Middle	72	*53.3%*	135	95	66.9%	142
Level III - Upper	6	*54.5%*	11	5	50.0%	10
Level IV - All	*	*	7	*	*	8
All	988	37.5%	2634	1745	60.2%	2901

Note: Italics indicate the highest percentage improvement in students reaching their growth targets between Spring 2008 and Spring 2009.

Interpretation Example: In Spring 2009, the range of students in each pretest group reaching their growth standard was 12.7% (Level I Middle) to 54.5% (Level III Upper). The percentage of students in each pretest group meeting growth targets increased in Spring 2010, with differences between groups decreasing; the range was reduced to 50% (Level III Upper) to 73.9% (Level III Bottom).

Analyses of the percentage of students making growth by demographic category for 2009-10 can help identify student groups most likely to benefit from AoR. Of course, staff must be aware that individuals within groups may or may not fit the group profile and that additional testing and information should inform their decisions. Also, trends could vary across cohorts, especially for

groups with small numbers of students served. SWD and LEP students improved overall in the percentage reaching growth targets, but not to the same extent as all students. *Results suggest some types of SWD and English as a Second Language (ESL) students are more likely to benefit from AoR than others.*

- SWD students who are in the least restrictive settings (regular classrooms most of the time) are more likely to benefit from AoR than those in resource or separate settings.

- SWD students who were autistic or had serious emotional difficulties appeared to be more likely to improve than learning disabled students.

- ACCESS scores (not shown) suggest LEP students with some English but not extensive English are most likely to benefit from AoR (scores of 3 or 4 on a 6 point scale). The percentage of ESL students who reached their growth targets increased by only 8% after AoR service, with a higher increase for LEP students (of 15 percentage points).

Table 16
Percentage of 2009-10 AoR Students Making Growth Targets
Before and After Service by Demographic Group

		2008-09		2009-10	
		%	n	%	n
Not SWD	Not SWD/AG	37.2%	1930	62.5%	1365
	Academically Gifted	22.6%	53	74.5%	41
	All	**36.8%**	**1,983**	**62.8%**	**1,406**
SWD	**SWD Setting**				
	Regular	38.0%	413	54.7%	437
	Resource	43.0%	207	46.0%	202
	Separate	27.8%	18	35.7%	14
	Separate School	*	<10	50.0%	10
	SWD Group	**2008-09**		**2009-10**	
	Autistic	50.0%	12	71.4%	14
	Learning Disabled	40.8%	387	48.9%	401
	Other Health Impaired	39.4%	198	53.8%	195
	Serious Emotional Disability	27.7%	36	55.0%	40
	All SWD	**39.6%**	**651**	**51.3%**	**688**
	ESL/LEP Status	**2008-09**		**2009-10**	
ESL	ESL	44.7%	179	52.8%	216
	Not ESL	37.0%	2,452	60.7%	2,686
LEP	LEP	43.6%	388	59.2%	439
	Not LEP	36.5%	2,246	60.3%	2,469

Note: Groups and settings with fewer than 10 students are not included in this table, including the hearing impaired, intellectually disabled, students with speech/language issues, and those in a home setting.

Average Academic Change

The state's ABCs academic change (AC) score reflects whether students as a group grew more or less than the target projection. A growth score of zero means the target was met exactly. Tables 17 through 20 depict the mean and range (minimum and maximum values) of the academic change score for students enrolled. The AC for Spring 2009 actually reflects the growth between Spring 2008 to Spring 2009. The AC for Spring 2010 reflects student growth between Spring 2009 and 2010. Positive changes are noted in the Difference column.

- Across the tables, nearly all pretest means for Spring 2009 and Spring 2010 were negative while all post-test score means increased and were positive for EOG groups (with the exception of upper Level III students).

- By prior EOG/EOC achievement level, the difference columns show that the mean academic change scores were all positive, ranging from 0.1 (for upper Level III students) to 0.67 for middle Level I students. The mean difference was 0.29 across groups. Students in the middle and upper parts of Level I had above average improvements in AC mean scores.

- The percentages of students reaching growth targets varied considerably both before and after service in AoR (see Min and Max columns). Variation actually increased after service.

Tables 18, 19, and 20 show similar trends for EOG change scores based on the percent of the program completed, as well as the students' initial and post-level performance in the AoR program. Improved AC scores were evident from one year to the next for all subgroups, changing from below the state expectation to above it. The difference between AC mean scores before and after service was 0.29 — more than half a standard deviation (which was 0.5 on this measure in 2009-10). The groups that exceeded this average difference were those who completed 80% or more of the program, and those in the Basic level or above before or after service.

Considerable variation in average academic change was evident at a teacher level, ranging from -0.77 to +0.75. At a school level, it ranged from -0.46 to +.95. Thus, in both cases, some had well below average achievement while others had above average representing over one SD of improvement.

Table 17
Academic Change Score Statistics for 2009-10 Cohort of Participants by 2008-09 EOG/EOC Achievement Levels

2008-09 Achievement Level	Spring 2009					Spring 2010					Difference				
	Min	Max	Mean	SD	n	Min	Max	Mean	SD	N	Min	Max	Mean	SD	n
Level I – Bottom	-	-	-	-	0	*	*	*	-	1	-	-	-	-	0
Level I - Middle	-2.62	0.61	-0.51	0.49	292	-1.34	3.59	*0.12*	0.57	345	-1.37	3.79	0.67	0.78	267
Level I - Upper	-1.73	1.02	-0.3	0.47	592	-1.57	2.17	*0.08*	0.55	656	-1.62	2.47	0.39	0.76	579
Level II - Bottom	-1.4	1.22	-0.15	0.47	269	-1.5	1.51	*0.09*	0.55	298	-1.84	2.34	0.27	0.69	264
Level II - Middle	-1.74	1.38	-0.05	0.48	624	-1.77	2.32	*0.09*	0.54	698	-2.66	3.58	0.14	0.77	615
Level II - Upper	-1.65	1.47	-0.04	0.49	444	-2.3	1.65	*0.14*	0.5	471	-2.77	2.7	0.19	0.74	436
Level III - Bottom	-1.82	1.25	-0.04	0.47	260	-1.81	1.26	*0.23*	0.48	272	-2.22	2.28	0.28	0.69	253
Level III - Middle	-1.27	1.54	0.07	0.55	135	-3.2	1.31	*0.15*	0.58	142	-3.86	1.99	0.1	0.87	132
Level III - Upper	-0.69	1.01	0.03	0.57	11	-0.76	0.79	*0.02*	0.56	10	-1.56	1.48	0.09	0.95	9
Level IV - All	*	*	*	*	*	*	*	*	*	*	*	*	*	*	6
Total	-2.62	1.81	-0.16	0.51	2,634	-3.2	3.59	0.11	0.54	2,908	-3.86	3.79	0.29	0.77	2,561

Note: 2,908 students had academic change scores in 2009-10 *and* achievement level scores in 2008-09. 2,634 of these same students had academic change and achievement level scores in 2008-09. Furthermore, 2,561 of the 3,640 students served in 2009-10 had academic change scores in 2007-08 *and* 2008-09 *and* achievement levels in 2008-09. Min reflects minimum of lowest scores for students with Max reflecting the highest scores. SD is the standard deviation.

Table 18
Academic Change Score Statistics for 2009-10 Cohort of Participants by Program Completion

Program Completion	Spring 2009					Spring 2010					Difference				
	Min	Max	Mean	SD	n	Min	Max	Mean	SD	n	Min	Max	Mean	SD	n
Completed 100%	-1.99	1.38	-0.18	0.48	851	-1.77	3.59	0.2	0.53	931	-2.66	3.79	*0.39*	0.73	832
Completed 80-99%	-1.82	1.36	-0.21	0.51	360	-1.57	1.86	0.15	0.53	391	-1.94	2.55	*0.35*	0.76	353
Completed 80% or More	-1.99	1.38	-0.19	0.49	1,211	-1.77	3.59	0.18	0.53	1,322	-2.66	3.79	0.38	0.74	1,185
Completed Less Than 80%	-2.62	1.81	-0.13	0.53	1,423	-3.2	2.12	0.06	0.54	1,586	-3.86	3.58	0.21	0.79	1,376
All	-2.62	1.81	*-0.16*	0.51	2,634	-3.2	3.59	*0.11*	0.54	2,908	-3.86	3.79	*0.29*	0.77	2,561

Note: 2,908 students had academic change scores in 2009-10 *and* achievement level scores in 2008-09. 2,634 of these same students had academic change scores in 2008-09. Furthermore, 2,561 of the 3,640 students served in 2009-10 had academic change scores in 2007-08 *and* 2008-09 *and* achievement levels in 2008-09.

Table 19
Academic Change Score Statistics for 2009-10 Cohort of Participants by AoR Pre Level

AoR Pre	Spring 2009					Spring 2010					Difference				
	Min	Max	Mean	SD	n	Min	Max	Mean	SD	n	Min	Max	Mean	SD	n
Below Basic	-1.99	1.56	-0.14	0.51	1,872	-2.3	3.59	0.08	0.53	2,080	-2.88	3.79	0.25	0.77	1,809
Basic	-1.71	1.81	-0.17	0.5	529	-3.2	1.81	0.16	0.54	569	-3.86	2.34	*0.35*	0.74	521
Proficient	-1.74	1.25	-0.21	0.52	114	-1.08	2.32	0.27	0.56	124	-1.84	3.58	*0.47*	0.78	114
Advanced	-1.04	1.11	-0.22	0.51	43	-1.18	2.17	0.21	0.63	50	-1.2	1.56	*0.36*	0.76	43
Graduate	-2.62	1.18	-0.26	0.6	76	-1.32	1.96	0.24	0.57	85	-1.56	3.3	*0.49*	0.85	74
Total	-2.62	1.81	*-0.16*	0.51	2,634	-3.2	3.59	0.11	0.54	2,908	-3.86	3.79	*0.29*	0.77	2,561

Note: 2,908 students had academic change scores in 2009-10 *and* achievement level scores in 2008-09. 2,634 of these same students had academic change scores in 2008-09. Furthermore, 2,561 of the 3,639 students that took a Pre Test served in 2009-10 had academic change scores in 2007-08 *and* 2008-09. Overall pre-, post, and improvements (differences) are shaded. Differences above the overall average are italicized.

Table 20
Academic Change Score Statistics for 2009-10 Cohort of Participants by Post Level

AoR Post	Spring 2009					Spring 2010					Difference				
	Min	Max	Mean	SD	n	Min	Max	Mean	Std	n	Min	Max	Mean	SD	n
No Post Test Taken	-1.73	1.54	-0.11	0.52	367	-3.2	1.37	0.02	0.56	391	-3.86	2.34	0.16	0.8	346
Below Basic	-1.99	1.47	-0.16	0.52	976	-1.81	2.12	0.03	0.53	1,107	-2.77	2.7	0.21	0.77	938
Basic	-2.62	1.38	-0.15	0.5	556	-1.77	2.24	0.16	0.53	602	-2.66	3.26	*0.33*	0.73	550
Proficient	-1.74	1.36	-0.18	0.5	241	-1.08	3.59	0.21	0.55	262	-1.84	3.79	*0.4*	0.79	239
Advanced	-1.85	0.94	-0.26	0.48	164	-1.21	2.32	0.25	0.53	187	-1.69	2.35	*0.48*	0.71	164
Graduate	-1.91	1.81	-0.13	0.53	330	-1.72	1.96	0.25	0.52	359	-1.77	3.3	*0.38*	0.81	324
Total	-2.62	1.81	*-0.16*	0.51	2,634	-3.2	3.59	*0.11*	0.54	2,908	-3.86	3.79	*0.29*	0.77	2,561

Note: 2,908 students had academic change scores in 2009-10 *and* achievement level scores in 2008-09. 2,634 of these same students had academic change scores in 2008-09. Furthermore, 2,561 of the students served in 2009-10 that took a Post Test had academic change scores in 2007-08 *and* 2008-09

Teachers' Views

Teacher survey results on the helpfulness of AoR for students based on their initial EOG Level scores corresponded well with the actual results students obtained at both extremes; teachers were likely to see Level I students and low Level II students as likely to benefit, and students with mid-range Level III and higher scores as unlikely to be helped (see Appendix 3a for details). These perceptions match the actual results based on academic growth. The few teachers interviewed indicated Level I students were not likely to benefit.

However, the actual results suggested fewer students who initially scored in the mid to upper range of Level II benefited, while teachers considered AoR somewhat helpful or very helpful for these students. Also, low Level III students showed relatively strong results with AoR, while the teachers had very mixed views on the helpfulness of AoR with this group (Appendix 3, Item 17).

A separate question asked teachers which types of students were likely to be helped with AoR.

- The majority of respondents believed a variety of groups were likely to be helped by AoR. When we examined responses of "Very Helpful" and "Somewhat Helpful" combined, students who worked well independently (75%), students with mid-range scores on screening instruments (72%), LEP students (68%), and students with low scores on the screening instruments (67%) were considered most likely to benefit. Next were those with failing grades in English/Language Arts the prior year (65%) and OCS students (58%).

- Teachers were most likely to respond that AoR was not likely to be helpful ("slightly helpful" or "not helpful" for students with attendance or behavior issues (72% and 71%, respectively).

Questions: What Costs and Benefits Were Anticipated and Realized with AoR?

Cost Analysis

Cost analysis techniques help determine the value of an intervention and the benefits derived; cost analysis can take several forms. If we know the resources needed to implement a program, and the benefits expected can be quantified, we can conduct a cost analysis as one piece of evidence about the value of the program. These analyses generally take into account the number of persons impacted, the amount of time over which the benefit may be assumed to exist, and the opportunity costs associated with the selection of intervention. Cost analysis results should be taken into consideration along with other evaluation information in decision making (Levin & McEwan, 2001).

Cost effectiveness is the cost analysis technique most appropriate to AoR (Levin & McEwan, 2001). Cost effectiveness is designed to compare the costs and effects of two or more alternatives with similar objectives. It focuses on which alternative yields a given level of effectiveness for the lowest cost (or the highest level of effectiveness for a given cost). In the case of AoR, we chose to treat the varying pretest levels on EOG/EOC as the alternatives for treatment. An alternative program with the same goals is not available for comparison, and AoR

assessments are not given to all students. Thus, we were examining which type of students were the best candidates for this alternative based on their pretest scores. Data was not available on another literacy alternative for students with the same type of foundational reading skill deficits and characteristics. Cost-effectiveness models can be used when costs can be expressed in monetary terms and outcomes can be expressed in standard units of effectiveness. One measure of effectiveness is chosen, and it should reflect the main objective of the alternatives.

Costs and Resources

AoR has been a considerable investment for WCPSS over time ($1.8 million). Continuing costs are considerably lower than initial costs. The monetary costs of AoR over time in WCPSS are shown in Table 21. The software licenses are one-time expenditures per school for the life of the program. Technology support is an annual cost that provides updates to the software and technical support for software issues. Professional development costs and substitute costs vary over time. WCPSS is exploring ways to reduce training costs for AoR now that the program is in place in most schools and many teachers have two years of experience..

Table 21
AoR 2009-10 Expenditures

Expense Category	2008-09 and Prior	2009-10	Total
Software Licenses—one-time cost……	$769,897	$258,840	$1,028,737
Technology Support—annual cost……	$30,216	$50,000	$80,216
Professional Development from TE21—annual adjustable cost ……...	$302,000	$378,000	$680,000
Substitute Teachers for Professional Development—annual adjustable cost……	$7,000	$7,000	$14,000
Total Expenditure	$1,109,113	$693,840	$1,802,953

Data Source: Budget information from program staff.

Other costs which must be considered are school resources in terms of equipment, space, and staff time. We chose not to monetize these costs, because most are opportunity costs, meaning that choosing to implement the AoR program eliminated the opportunity to implement another option (but may not have cost any more to do). It should be recognized that offering smaller classes for AoR could lead to larger sections of other classes—particularly in English.

- Schools utilized teachers within their regular allotments to staff the program. Thus, other electives may not have been offered as a result (an opportunity cost), or one English I section may have been tailored to utilize AoR and be consequently smaller than other classes (making the others slightly larger). The counselor or administrator in charge of scheduling must also do purposeful scheduling and check the most recent test results and other information to correctly place students into AoR.

- Students spent time in AoR that might have been spent in other remedial or non-remedial pursuits—again, this is an

Opportunity Cost:

Using resources in one way which takes away the opportunity to use them in another way. Resources are generally monetary, student time, or teacher time in education.

opportunity cost. It is important to assign students who will benefit from the program. Otherwise, students lose time that could be spent on more appropriate learning opportunities.

- Central staff coordinated the effort and the contracts, and therefore incurred an opportunity cost associated with the program. This cost will increase if central staff assumes more of the training and support functions for AoR.

Benefits

The primary benefit seen at this point is an increase in the percentage of students able to reach their growth targets (AC scores) on the EOG/EOC. Increases in foundational reading skills are assumed to be the reason, although program completion and assessment data provide weak evidence to support that view. The hope is that improved reading skills will lead to greater comprehension of class materials, which in turn will lead to greater success in terms of grades, staying in school, and graduating.

Test results showed there was a 25% increase in the percentage of students meeting or exceeding growth targets in 2009-10 as compared to 2008-09, the year before participation in the program. AoR improved from being less likely to as likely to show one year of growth after a year of instruction. The percentages reflected in Table 22 are reflective of only students who had scores in both years to demonstrate the program's potential improvement.

Table 22
Percentages of Students Meeting or Exceeding Growth Targets on 2009-10 EOG/EOC

Year	Number	Percent
2008-09	952	37.2%
2009-10	1,582	61.8%
Difference	**↑ 630**	**↑ 24.6%**

Note: Alternative assessments do not yield AC scores and are therefore not included.
n= 2,561 (students with scores in both years)

All prior EOG achievement levels had more students meeting or exceeding their growth target after service than before. Table 23 shows that students below the targeted range of Level II – High or Level III – Low prior to service seemed to exceed growth targets at a greater rate than was true for both those in the targeted range and above. Moreover, students scoring Level I showed the greatest improvement rate in exceeding their growth target.

Table 23
Percentages of Students Meeting or Exceeding Growth Targets on 2009-10 EOG/EOC by 2008-09 EOG/EOC Achievement Level

Level	2008-09	2009-10	n	Difference
Level I – Middle	11.6%	59.9%	267	↑ **48.3%**
Level I – High	25.0%	59.4%	579	↑ **34.4%**
Level II – Low	36.4%	61.0%	264	↑ **24.6%**
Level II – Middle	45.4%	57.1%	615	↑ **11.7%**
Level II – High	47.2%	63.8%	436	↑ **16.6%**
Level III – Low	46.6%	74.3%	253	↑ **27.7%**
Level III – Middle	52.3%	67.4%	132	↑**15.1%**
Level III – High	*	*	9	*
Level IV – All	*	*	6	*
All	**37.2%**	**61.8%**	**2,561**	↑**24.6%**

Note: Alternative assessments do not yield AC scores and are therefore not included. Also, the rates are determined for students with AC scores in both years.
* = Not shown due to sample size (10 or fewer students).
Level I – Low has been omitted because no students fit the criteria.

Cost Effectiveness Ratios

In our cost analysis, we will focus on 2009-10, when 3,640 students were served. The one-time cost of licenses will be included as an amortized cost over a ten-year period. Some software would become out-of-date much faster, but the annual updates should maintain the value of the software tool. To summarize the direct costs for 2009-10, we included software licenses ($1,028,737/10 years) + technology support at $50,000 (a district rate), professional development from TE21 ($378,000) + substitute costs ($7,000). These costs total $537,873.70. Thus, the cost per student in 2009-10 was $147.77. The cost per school was $9,779, which is important to recognize since the cost per student actually varies by school (since the number of students served varies).

In order to determine whether students showed statistical improvement after participation in the AoR, a repeated measures t-test was conducted on students' growth scores from the year they participated in the program (2009-10) as compared to the prior year (2008-09). Results showed that students demonstrated significant improvement ($t=18.77$, $df=2,560$, $p<.0001$) in growth after participation than before; this would be highly unlikely to happen by chance. The expectation for students statewide is that they will have an academic change score of 0 or better. These students moved from an average growth of less than 0 to an average annual growth of more than 0. After statistical significance was determined, an effect size was calculated using Cohen's *d* formula to determine a different, more standardized measure of student improvement. The results

Effect size shows how much difference a program/ intervention makes. It is the mean of the differences of the two years' growth scores divided by the standard deviation of the differences—change is expressed in terms of portions of a standard deviation.

AoR results for the 2009-10 cohort yielded an effect size of .38, which is considered moderate and educationally significant.

showed that the program had a moderate effect (d=0.38) on students' growth scores. Most statisticians would consider this an important educational effect.

Taking the next step, we examined the total cost benefit by pretest EOG category from AoR participation. As can be seen in Table 24, the price per student by group increases based on the proportion of students in the group who were successful in exceeding their target (defined as an academic change score greater than 0). Based on the 2009-10 participants with growth scores, the cost per successful student (based on those with academic change scores equal to or above 0) was $245.69; those with costs below this average included students who scored high in Level II and in the low to mid-range of Level III. However, the *number* of students who improved was far greater in the high Level I and middle Level II range, with a slightly higher cost per successful student ranging from $253.08 to $262.45.

Table 24
Cost Per Student by Prior EOG Level Scores

Level Score	Exceeded Target	*Available Growth Scores*	Cost per Student	Total Cost	Cost Per Successful Student
Level I-Low	*	*	-	-	-
Level I–Mid	192	345	$147.77	$50,981	**$265.52**
Level I-High	383	656	$147.77	$96,937	**$253.10**
Level II-Low	174	298	$147.77	$44,036	**$253.08**
Level II-Mid	393	698	$147.77	$103,143	**$262.45**
Level II-High	294	471	$147.77	$69,600	**$236.73**
Level III-Low	201	272	$147.77	$40,193	**$199.97**
Level III-Mid	95	142	$147.77	$20,983	**$220.88**
Level III-High	5	10	$147.77	$1,478	**$295.54**
Level IV-All	*	*	-	-	-
Total	**1,735**	**2908**	**$147.77**	**$429,715**	**$245.69**

Note: Calculations were not run for groups of students who had fewer than 10 growth scores available —see asterisk (*).

CONCLUSION

Overall, the AoR program in 2009-10 in WCPSS appeared to attain positive and promising results on EOG reading growth. The number of students served increased substantially, from 1,358 in 2008-09 to 3,640 in 2009-10 as more schools were added. Program completion rates improved across the two years, but were still lower than would be optimal. The program appeared to be somewhat more helpful for middle school than high school students, both in terms of program completion and EOG/EOC reading growth.

Students Served: School staff used a variety of criteria to identify students for service in AoR, despite district guidelines. Fewer students scored in the primary EOG recommended range (of high Level IIs and low Level IIIs) than scored below it (the secondary target range).

Implementation: AoR was most commonly utilized in remedial electives in 2009-10 (44%), with Curriculum Assistance and regular English I classes the next most common (at about 15% each). Overall, the teachers appeared to be adequately trained and the program appeared to be well implemented. Teachers liked and disliked aspects of the program's use of technology, the content, the pacing, the motivational aspects, and the data provided. Teachers liked the focus on basic skills, the self-pacing, the motivators, the available data feedback, and the opportunity to work one-on-one with students. Commonly reported dislikes generally related to ways to refine the program, including the slow pacing, unrealistic standards for some exercises, students' frustration and boredom with the materials, voice quality of the narrator, and immature characters in the materials.

Outcomes: Program completion rates were only 26% in 2008-09 and 41% in 2009-10. Thus, the objective that all students would complete at least 80% of the program was *not* met. AoR *met* the EOG/EOC objective that students would improve in their reading comprehension as measured by Reading or English. Based on the 2009-10 cohort, the percentage of students reaching their growth target increased from 37.5% before service to 60.2% after service. Average academic change scores increased from below to above the target. Students appeared to benefit, on the average, whether they finished at least 80% of their program or not (with those completing the program slightly more likely to show growth).

Overall, AoR did appear to meet the need of addressing many participants' foundational reading skills. However, improvements are possible.

DISCUSSION

Need: Clearly, some middle and high school students lack important foundational reading skills. Improving these students' basic skills in reading is an appropriate goal given that it should enable them to improve their reading comprehension. It appears AoR can be part of the answer for WCPSS, especially if we address the issues raised in the recommendations below.

Students Served: It is not uncommon for E&R to find the students served are not necessarily those who were described as the primary target for the program or service. Why is this? One set of reasons appears to be logistical. Placement is a multi-step process. EOG scores are listed as criteria, but referring teachers must rely on year-old scores to meet scheduling timelines. In addition, teachers must have access to assessment, classroom performance, and other data which they consider valid, or at least more valid, than the priority targets provided by central office.

The scheduler or teacher at the receiving school should review the current test scores and additional data available on student needs. With the large number of students at each school, purposeful scheduling can be time-consuming, and it may or may not always happen. Receiving teachers have varying amounts of control over whom they serve, and criteria being used vary accordingly. Additionally, the communication of the priorities may be unclear, or not communicated, to all appropriate staff. Some staff may believe that students in the designated ranges will not benefit as much as others, and therefore adjust the criteria for selection. Finally, student placement into the appropriate program may be constrained by staff available and course schedules. In the case of AoR, all of these factors appear to be at work.

Placement and Progress Categories: Loh (2009), who conducted research on the AoR product for AutoSkill, cites NAEP results indicating that 29% of students have reading skills two years or more below grade level upon entering high school. NAEP has high standards for basic proficiency. AoR may be using similar high standards in their placement categories, since many WCPSS students scored Below Basic when initially placed, even if they scored proficient on the state's EOG the previous spring. The fact that fewer than half reached "Graduate" status may also be reflective of these standards. Loh (2009) indicates that each category represents one grade level of improvement, so students who move up two levels are increasing by two grade levels in one semester. High standards are not a problem, as long as all staff members associated with the program understand this. The number of skills necessary to complete the program was actually reduced in 2009-10, but completion was still an issue in WCPSS. Staff may want to explore whether more students should participate two semesters or whether an increase of two categories should be the target (which would still be challenging but more realistic).

Data collection: Another common issue in conducting program evaluations is having easy access to necessary data. In the case of AoR, several issues increased the time necessary to complete this evaluation. Student identification numbers of participants are critical in matching data across files for evaluations. Use of the AoR software tool is not designated in course codes (one way we can identify participants and IDs), and the files internal to the program did not include WCPSS student identification numbers. In addition, costs over time could not be easily located by program staff, as well as the rollout schedule of the program by school over time. In

addition, coaches' ratings of implementation were not available in a usable electronic format and had to be re-keyed for analysis. All of these data were important to this evaluation.

As part of our response to the Curriculum Management Audit (CMA) findings, we are working more closely with program staff in the initial phases of program implementation so intended outcomes are clear and appropriate data are collected along the way (and kept in an accessible location). This will allow future evaluations to be completed more quickly.

RECOMMENDATIONS

AoR is addressing a real need in WCPSS and appears to be having a positive impact on EOG results related to literacy. Initial costs for licenses are already paid, except for a few existing schools, and nearly every school has trained teachers as well. Thus, continuing costs will be lower than the costs incurred by the district in the past. We recommend continuation of the program, with improvements in the areas that follow.

Target Services to Student Needs More Strategically

Program staff provided school personnel with informed opinions of the types of students likely to benefit from AoR. Some school staff followed those recommendations, while others used their own standards based on their experience, capacity, or other reasons. Now that AoR results are available, it should be possible to tailor service more tightly to student needs, and to tailor class structures and staffing more carefully to meet student needs. The eligibility criteria could be simpler, broader but more specific, more clearly communicated, and more consistently followed. This may involve sharing these results, discussing why teachers utilize current practices and what would be acceptable to them, and monitoring student selection more closely next year.

To be more certain that students placed in AoR truly have foundational issues with reading skills, placement guidelines must be reviewed and revised. It will be important to divide the process into screening that takes place by the sending teacher, the school scheduler, and the receiving teacher. Ideally, the revision process will involve both school and central staff. Final decisions should be communicated to all staff involved in writing, as well as in other ways. Contracted trainers should also be clear on the criteria for service WCPSS is using to identify program participants; doing so should avoid conflicting communications with the schools.

- The classroom teacher making the initial recommendation for possible AoR support should consider prior EOG scores, but also more current assessment and classroom performance data related to foundational reading skills. EOG scores are only one reflection of reading achievement, and actually reflect comprehension more than fundamental reading skills. EOG scores are also not available for the current year until after initial recommendations are due. Additional assessment data that are more sensitive to fundamental reading skills might include universal screening results with a Cloze paragraph assessment, and/or an oral reading fluency measure. Better guidance for teachers of ESL and SWD students is recommended. Some teachers seemed to assume that all ESL and SWD students would benefit; this perception was not supported by the data. English proficiency levels should be adequate to

understand the materials, and IEPs should reflect a need for developing foundational reading skills.

- Schedulers should consistently consider the most recent EOG scores and other information from sending teachers before placing students in AoR. While some evidence suggests the recommended range of high Level IIs and low Level IIIs are the ones most likely to benefit, most evidence suggests the range of prior EOG scores recommended for AoR can be broadened to include high Level I through low level III students (and some middle Level Is). Low Level Is or higher Level III or IV students are unlikely to benefit. Schedulers must also consider whether the class will be a homogeneous elective for reading support, or a classroom with a broader range of students such as English I. If a broader range of students is present, a paired teaching situation (perhaps with a regular and a Special Education teacher) may be necessary, with careful scheduling of content so basic instruction is not missed. A teacher must monitor progress as students work, and provide individual support to students as needed, and students should not miss core instruction in any subject. The broader range of students considered for the program may mean that more classes should be structured to include AoR instruction.

- Once student schedules are set, the receiving teachers must carefully consider whether all of their students in their classroom actually need the program. If students do not all need AoR, appropriate adjustments should be made to students' schedules or assignments (e.g., moving them to another class or having the student use other materials as soon as they complete the few skills not mastered). If students pretest as Graduate or Advanced, they would have already met the goal of the program, and there is little or no benefit to enrollment. About 5% of those served in 2009-10 scored Advanced or Graduate initially (149 students in 2009-10), which represents an opportunity cost since they could have been receiving instruction more appropriate for their learning needs.

Make Improvements to the Program and Training to Increase Student Success

Teachers raised some valid concerns about the program which, if addressed, could impact student success. Some would involve changes to the software program itself, while others could be handled internally within WCPSS. Central staff indicates that other concerns and comments made by teachers reflect a misunderstanding of the importance of automaticity to students' future success and their role as coaches when students become frustrated; these concerns may be best addressed through additional communication and/or targeted training.

WCPSS central staff should contact the vendor to see which concerns can be addressed on short-term and long-term timelines to improve the program. Some should be relatively easy adjustments, such as correcting the obvious glitches in the answer keys. Addressing issues like the narrator's accent, the visuals used, or adding other features could be longer-term goals. Three issues stand out as most important for sustained improvement.

- First are the frustration, boredom, and pacing issues which were frequently mentioned in relation to AoR. Part of this relates to the requirement for meeting both accuracy and timing/automaticity standards to move forward in the program. A few teachers praised the

program for not allowing students to move on until they truly mastered the skills, but more teachers cited negative consequences, such as students giving up or not completing the program. Survey responses suggest some misunderstandings of AoR options and intent. Additional professional development for teachers may be needed on the foundational reading skills (particularly automaticity) and on how to better coach to students' instructional needs when they get "stuck" in their lessons. Teachers may also not know all the options for adjusting instruction that are already available. If training does not make a positive impact, exploring ways to make other adjustments to AoR standards may be necessary. Improvements should increase program completion and success rates.

- Second is the limited comprehension and lack of vocabulary material in the program. Adding more material in these areas would be advantageous to both WCPSS and the publisher. These are part of a balanced literacy approach, and comprehension skills are vital to student success. Other products may include these areas to a greater extent, but we have already invested a great deal in AoR, so it would be best to explore whether this could be added to the software before making any additional investments. Some teachers have identified and used materials to build comprehension once students complete AoR, but a uniform approach could be helpful. Students who complete their training stream early would then have a next step readily available.

- Third, the goal of 100% completion of AoR should be discussed with staff, given that less than half of participants reached that standard. It may be that the goal could be an improvement of two categories or more (meaning all students would reach at least proficient status [at grade level] or above) or that more students should be recommended for a second semester of AoR. Improvement in reaching academic change growth targets was evident after AoR service, but was only slightly better for those completing the program than not. Still, 40% of students did not reach their academic change targets after service, and it may be that additional service could be helpful.

Consider the Best Classroom Structure and Level for these Services

AoR is used both within regular English/Language Arts classes and in a variety of elective settings. School-based and central services staff could benefit from discussing the various settings within which AoR is currently provided, as well as ways to optimize them. This could lead to recommendations for the most ideal settings to use, or to structure guidelines for making the most of the settings that cannot be changed.

A second issue for discussion and consideration is whether the program should become more of a middle school resource over time. Program completion and EOG growth favored middle school students over high schools students, and it would be advantageous to have middle school students helped before entering high school. The issue of the degree of need at each school should also be addressed. It is conceivable that some elementary schools may actually need the program more than some high schools which have few low achievers. Transferring licenses from some low need schools to high need schools could lead to cost savings.

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APPENDIX 1
EVALUATION METHODOLOGY

Program Staff and Vendor Interviews

In the course of data collection, the Data Analyst and Senior Director for Program Accountability had several meetings with central staff contacts (the Director of Literacy and SWD Senior Administrator for Literacy, and one with two representatives of the vendor (TE21). Establishing the logic model was the first step, securing needed data from program staff was a second step, asking questions as they arose was a third step, and reviewing results was a fourth step. Some delays were encountered in the process of data collection, as well as some technical issues described in the appropriate sections.

Teacher Survey 2009-10

Questions were developed in collaboration with program staff after a variety of questions about student selection and program implementation were raised. E&R staff drafted the questions and then solicited feedback and suggestions from program staff. Teacher names were secured from teacher rosters and observation records, and 193 surveys were sent directly to the 2009-10 AoR teachers via email, with a link to a Zoomerang electronic survey. As it turned out, about 13 of the staff to whom email were distributed had either left the system or taught Academy of Math rather than Reading. Therefore, the final sample size was 180. In order to obtain the results in time for analysis and reporting, the survey window was limited to October 20 to November 3. With one reminder, the return rate was 63 teachers (35.0%). While this was lower than desired, it was fairly representative of the middle and high school distribution of students served, with roughly two-thirds being middle school teachers and one-third being high school teachers.

Website and Articles

The primary articles reviewed were those provided by staff as supporting the selection of AoR. A few other references on secondary reading research, secondary technology-based interventions, and AoR were also found via a web search. This study did not include a comprehensive literature review in the interest of time.

AoR Participant Files

AoR software tracks student data using the AoR software tool. Unfortunately, it does not record student identification numbers. These are essential to matching student results to other district files. In this case, use of AoR is often embedded as a tool within another course, so course numbers did not help to secure student identification numbers.

For purposes of analyzing student outcomes, program staff provided lists of students' names, program completion rates, pre-test scores and levels, post-test scores and levels, and numbers of levels gained/lost for each class and each school; these data were obtained from TE21. Initially, there were 4,178 students listed as participants, but 289 students were duplicate entries and were removed, resulting in 3,889 unique students. Because no student identification numbers were

provided, extra time was needed to write a SAS program to obtain each student's NCWISE number using their first and last names, as well as their school. A fuzzy match search was employed to accommodate spelling errors; most but not all students could be found. Additional efforts were put in place to attempt to find district identification numbers for all students. Ultimately, 3,640 of 3,889 students (94%) could be located. Because there was no way of obtaining demographic and outcome data without identification numbers, the remaining 249 (just over 6% of the total sample) students were dropped from the sample. In some cases, these individuals were students who had left the district, changed names, or may have been a fictitious name used to demonstrate the software.

EOG/EOC Test Scores

EOG test scores in reading were secured for middle school students, and EOC scores in English I were secured for high school students via E&R student rosters. Missing test score data posed a challenge to any kind of longitudinal analysis. Specifically, two issues arose which reduced test scores available for students: a high concentration of students taking alternate assessments (for SWD and a few LEP students), and the focus of the outcome portion of the analysis on growth scores, each of which required test scores from two years.

Growth scores were not computed for alternate assessments. Since these tests are quite different from one another, staff chose to focus on EOG/EOC exams for growth analyses and treat alternate assessments as their own category. Overall, only 2,921 students (or 80.2% of the total sample) had EOG/EOC results. The remaining 20% either took alternate assessments or were missing scores in at least one of the years.

There were other circumstances where a student did not have a test score but was documented as participating in the program. First year LEP students are exempt from taking reading EOG/EOCs; other students may have come into the district late or left the district before testing; some students may have been absent on the day of testing.

On the other hand, there were some cases where students who did not have prior EOG/EOC levels ended up having growth scores. These students were 8th graders in 2007-08 and did not take the English I EOC in 2008-09, but instead took it in 2009-10. As such, these students did not have a level score for 2008-09, nor for the year prior to participation. Nevertheless, they did have growth score values as a result of taking the 2009-10 English I EOC — based on their 8th grade reading EOG.

Effect Size

General descriptive statistics are shown below for 2008-09 and 2009-10 Academic Change (AC) scores for participants in the AoR in 2009-10.

Year	n	Mean	Standard Deviation	Minimum	Maximum
2008-09	2,634	-0.16	0.51	-2.62	1.81
2009-10	2,908	0.11	0.54	-3.20	3.59
Difference	2,561	0.29	0.77	-3.86	3.79

In order to evaluate the size of the treatment effect for AoR, Cohen's *d* was computed, to determine the difference between two population means, which was then divided by the standard deviation from the data. Cohen's *d* is a standardized measure of effect size for a repeated measures t-test:

$$d = \frac{\mu_D}{\sigma_D} = \frac{0.29}{0.77} = 0.38$$

where μ_D is the mean and σ_De is the standard deviation of the difference in academic change scores from 2008-09 and 2009-10 (μ_D = 0.29, $\sigma_D = .77$). The results (*d* = 0.38) indicate that the program had a medium effect on student performance with respect to academic change from the year before and the end of the year of participation.

Trainer Site Visit Reports

AoR staff provided reports on implementation ratings to E&R in electronic files. While these files were electronic, they consisted of individual documents with color-coded ratings of performance for each teacher. Therefore, E&R staff had to manually key ratings from spring observations. Since we were interested in how teachers were rated by the end of the year, we started with the last observation of the year. If that was not available for a teacher, we went back to the prior observation to pick up additional teachers.

In some cases, coaches were not able to directly observe implementation during a school visit for a specific teacher, yet were able to look at their students' "time on task" percentages. In these cases, the teachers were rated solely on whether this value met the program's objectives or not. Still, there were many teachers who were not observed or given implementation ratings. These teachers may have been at a school that was not receiving coaching support in 2009-10, or may have had section names that were unidentifiable.

Cost Effectiveness Analysis

Securing costs for the program was completed by the Director of Literacy, who had the data verified through the program's vendor. Maintaining accurate costs over time was made more difficult by the fact that AoR does not have its own separate budget code, and the fact that a staff change occurred after AoR was launched. Staff will be encouraged to maintain accurate records regarding schools served, as well as future costs incurred, for evaluation purposes.

The Cost-Effectiveness Analysis book by Levin and McEwan (2001) was used as a guide for calculating the costs and other benefits, as well as for the cost effectiveness model used in this analysis.

APPENDIX 2

Coach Observation Form For Teachers
TE21, Inc. Site Visit Summary
FOR ADMINISTRATIVE USE ONLY

Consultant:			**School Name** **Wake County Public Schools**	**Date**
Teacher	**Grade and Product**	**Computer Location and Time**	**Observations of Teacher**	**Implementation Review and Suggestions for Improvement**
Teacher Name	Academy of Reading Grade Levels	Lab or Class Number Time of class(es)	Teacher effectively uses training monitor report. ☐ Teacher maintains an environment conducive to learning. ☐ Teacher quickly responds to students who are struggling. ☐ Teacher receptive to consultant's suggestions and ideas. ☐ Teacher actively using coaching strategies that consultant has modeled. ☐ Teacher uses motivational strategies to promote student success. ☐ Class maintains sufficient time on task in the program. ☐	
■ Objective is being met by teacher			■ Needs improvement	■ Objective is currently not being met

Academy of READING
Teacher Training Summary

Site Visit Codes:	**Teacher**	**Initial Training**	**Follow Up Training #1**	**Follow Up Training #2**
Absent, Absent-Excused, No Usage, Leave, Track Out, Schedule Conflict				

APPENDIX 3

Zoomerang Survey Form and Responses
Multiple Choice (3a)

Academy of READING Teacher Survey

Response Status: Completes

Filter: No filter applied

Nov 04, 2010 10:52 AM PST

1. Please select your school level.		
Middle	41	65%
High	22	35%
Total	63	100%

2. In which school years have you taught Academy of READING? (Mark all that apply).		
2010-11	34	54%
2009-10	61	97%
2008-09	20	32%
Prior to 2008-09	3	5%

3. In what type of class did you use Academy of READING in 2009-10? (Mark all that apply).		
Pull out from regular language arts or English class	5	8%
Within regular language arts or English class	9	14%
Remedial elective	28	44%
Curriculum Assistance class	10	16%
Other, please specify	22	35%

4. How many prior years of EOG/EOC scores did you use to select students for screening for possible service in Academy of READING in 2009-10?		
One year	18	29%
Two years	16	26%
I did not have access to EOG/EOC scale scores.	12	19%
I had access to EOG/EOC scores but did not use them to select students.	16	26%
Total	62	100%

5. What other criteria did you use to select students for screening in 2009-10? (Mark all that apply).		
Blue Diamond results	10	16%
CORE assessment results	31	50%
Universal screening results	10	16%
Classroom performance	35	56%
Teacher or SST recommendation	27	44%
None	7	11%
Other, please specify	20	32%

6. What EOG/EOC criteria did you use in 2009-10 to select students for screening for possible service in Academy of READING? (Mark all that apply).		
Level I	33	52%
Level II (bottom quarter)	33	52%
Level II (mid-range)	27	43%
Level II (top quarter)	21	33%
Level III (bottom quarter)	7	11%
Level III (mid-range)	0	0%
level III (top quarter)	0	0%
Level IV	0	0%
I did not use EOG/EOC scores to select students.	24	38%

7. Please explain how you determined the criteria that you used for screening.		
59 Responses		

8. Were you able to serve all of the students who appeared to have needs based on the screening in 2009-10?		
Yes	34	54%
No	29	46%
Total	63	100%

9. Please explain why you were unable to serve all of the students who appeared to have needs.		
29 Responses		

10. How many days per week did identified students participate in Academy of READING in 2009-10?		
1	0	0%
2	7	11%
3	27	44%
4	7	11%
5	21	34%
Total	62	100%

11. About how long were your Academy of READING sessions?		
25 minutes or less	7	11%
30 minutes	24	39%
45 minutes	28	45%
50 minutes or more	3	5%
Total	62	100%

12. What do you do if a student has completed his/her assigned work in Academy of READING early?		
Assign work for additional practice	16	26%
Send the student back to regular class	5	8%
Let the student do other work	19	31%
Other, please specify	22	35%
Total	62	100%

13. What aspects of the program do you like best?
59 Responses

14. What aspects of the program do you like the least?
59 Responses

15. How could the program be improved?
57 Responses

16. What challenges have you faced while implementing Academy of READING?
58 Responses

17. Please indicate how helpful Academy of READING is for students with EOG/EOC scores in the following ranges in the prior year. (Respond for all ranges that apply to your Academy of READING students).

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Very helpful	Somewhat helpful	Slightly helpful	Not helpful
Level I	18 32%	19 33%	15 26%	5 9%
Low Level II	20 34%	24 41%	11 19%	3 5%
Mid-range Level II	15 28%	26 49%	7 13%	5 9%
High Level II	19 37%	16 31%	10 20%	6 12%
Low Level III	8 22%	8 22%	8 22%	12 33%
Mid-range Level III	5 18%	4 14%	1 4%	18 64%
High Level III	3 11%	4 14%	2 7%	19 68%
Level IV	2 7%	4 15%	2 7%	19 70%

18. Please indicate how helpful Academy of READING is for the following types of students. (Respond for all ranges that apply to your Academy of READING students).

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Very helpful	Somewhat helpful	Slightly helpful	Not helpful
Students with failing grades in English/Language Arts the prior year	10 19%	25 46%	13 24%	6 11%
Students with the lowest scores on the screening instruments	18 32%	20 35%	15 26%	4 7%
Students with mid-range scores on the screening instruments	10 18%	30 54%	13 23%	3 5%
Students who work well independently	28 51%	13 24%	10 18%	4 7%
Occupational Course of Study (OCS) students	9 24%	13 34%	12 32%	4 11%
Students with Disabilities (SWD)	13 24%	21 39%	17 31%	3 6%
Limited English Proficient (LEP) students	18 36%	16 32%	11 22%	5 10%
Students who have behavior issues	3 5%	13 24%	22 40%	17 31%
Students who have attendance issues	5 9%	10 18%	14 25%	26 47%

19. Please indicate how helpful you feel Academy of READING has been in addressing the following issues.

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Very helpful	Somewhat helpful	Slightly helpful	Not helpful
Comprehension	7 11%	12 19%	25 40%	18 29%
Phonemic Awareness	39 63%	18 29%	5 8%	0 0%
Fluency	16 26%	26 42%	13 21%	7 11%
Vocabulary	8 13%	17 27%	20 32%	17 27%
Phonics	38 61%	16 26%	7 11%	1 2%

20. Did you receive training for Academy of READING?

Yes	61	97%
No	2	3%
Total	63	100%

21. Please indicate your level of agreement with the following statements.

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Strongly Agree	Agree	Disagree	Strongly Disagree
Training for Academy of READING helped me understand the program.	26 43%	31 51%	4 7%	0 0%
I was able to implement Academy of READING reasonably well with the training I received.	25 41%	32 52%	4 7%	0 0%
Academy of READING coaching improved my ability to use Academy o f READING.	26 43%	29 48%	6 10%	0 0%
Academy of READING coaching was essential to my ability to implement the program effectively.	24 39%	25 41%	11 18%	1 2%

Appendix 3b

AoR Report: Illustrative Open-Ended Comments— What Teachers Liked Best and Least

(Note: Comments are as written; only minor punctuation and spelling corrections were made)

	Liked Best	Liked Least
Data	Weekly report allows students to monitor goals. All of the data available regarding student progress and performance. This is particularly helpful for creating IEPs and PEPs and addressing specific skill deficits that are impacting student's ability to read. Pretesting to assess level. I like the way the program keeps records and statistics on each student and on the class as a whole that are easily accessible to the teacher at any time. You can see how each child is doing in addition to the time on task. Since we have a "visual" through the puzzle that the students are creating on screen, we can see quickly students who are struggling without being tied to the computer.	Placement tests. I am disappointed with some of the reporting tools. For example, when a student misses comprehension questions, I would like to see the entire passage. Also, there are responses that register as incorrect when the students are responding that appear differently when we review the errors the student has made. This happens too frequently and has been observed by multiple teachers. For example, the word will be "married", the student selects the correct answer (visually and auditory) but the system marks the selected answer as incorrect. When we review the items missed, the item lists the word as "marred". Difficulty in passing certain tests.
Technology	I liked the fact it's multimedia; it's interactive. Students like using the computer. Kid friendly graphics. Measurable; able to show students and teachers progress immediately. Computerized.	There are times when the program says the student has put in an incorrect answer when actually they have not. Teacher time --not for mistakes, but for too much time-- means to me that they are really trying. The computer glitches were tough to manage. Computer network is unreliable, charts and graphs do not print, claims to work on reading comprehension but does not. The narrator's voice is difficult for the students to understand and hear the different pronunciations of the letter sounds. Kids from the south hear the accent or lack of accent and make mistakes on the different sounds. The little yellow blob appears juvenile to most students.

	Pacing	Students worked at their own pace and level. Independent; pinpoints areas of need. The program helps break down areas of weakness for each individual and they work to strengthen only those weak areas. Students liked the rewards; progress monitored. I like the individually diagnostic and prescriptive nature of the program. It places a student where they need to be and requires mastery of a needed skill before allowing them to progress to the next skill. Flexibility -- allows me to work with one student while others are on Academy. Allows teacher time to work one-on-one with students …everybody in the room can be working at a different level.	Kids get stuck on the pacing. SO even though they may have achieved accuracy for 50 trials, they need to keep doing it until the pacing is the same. It can sometimes get tedious for them. The program's demand that they complete skills within a certain time limit tends to trap them in a skill that they really have a basic mastery of. Teenagers tend not to be very predictable and can get easily distracted. Hard to complete program unless you use it every day of the week day and continue with the program with results. ADHD students get frustrated easily and have trouble passing the tempo parts of the program. Very repetitious-- students got bored. Did not teach reading comprehension or vocabulary did not explain cultural differences, idioms. The initial pacing schedule. Repetitive tutorials. It's boring as hell, modifying times and tasks is more ambiguous than it is productive, students who can read but do not have good grammar or comprehension test poorly and do not grow much, especially on EOGs, students become frustrated to the point of quitting because of the pacing that is required, despite adequate mastery and understanding (i.e. distractions, interruptions, ending class, or attitudes can all mess up a pace and cause students to have to start over on a skill).

Motivation	I like the certificates. The students work hard to earn them. Students remained focused and are motivated to reach the next level. I do think the program is good with motivated students. When success is seen by the student they want more. [Students] feel less embarrassed about doing foundational work. Motivating for middle school students. It provides positive feedback and allows for each student to work on their own levels. It's really effective and empowering for ESL students and students that seemed to miss phonetic assembly for one reason or another. Repetition caused the students to focus in order to go to the next level. Giving up is not an option. I saw gains from students who were compensating in reading by skipping words…actually slow down and try to work out the words.	Some students fought the program. The frustration of the students when they get stuck in a skill…. Student sometimes had to do same lesson 30 times. Students need to have a certain degree of motivation and buy in to be successful. It is a little boring for them, but as the teacher I understand the importance of the skills and work to convey this to the students. It takes a lot of concentration on the students' part and it can be very frustrating to them. Program appeared to be on elementary level to student and therefore they were turned off immediately and did not want to do it. An extremely boring program. Too much repetition. Pretest is too long and students quit trying. Too much practice with some of the lessons made the students not want to continue…maybe condense some of it. It is a hard program if a student doesn't speak English.

Content	It's great for improving their fluency… Comprehension, visual-sound match. I also like the focus on automaticity and fluency, since these are necessary for comprehension. The phonics and comprehension passages. The word building activities. Students learn the basic phonics and oral distinction of each letter or letter combination. I particularly like that the program emphasizes phonological awareness.	I don't feel that it helps students much with their comprehension. Lacked comprehension/vocabulary component that English Language Learners desperately need. The small amount of comprehension passages ...usually only see towards the end of the program. The reading passages are just checkups. The open syllables have short vowel sound. The program can be very frustrating for some students and easy for others. The pretest has many grammar and usage type questions, not comprehension. For example, the use of their of there and its or it's. Students who read at grade level or just below are given similar lessons to those who read 2 or 3 years below. Vocabulary is missing. It stopped at 8th grade; some wanted to go higher. Students getting easily frustrated when they could not pass a skill and there was not a different kind of activity to have them practice that skill. For the high school setting, the logos/illustrations/visuals are a little childish. This embarrasses some of the children. I was only comfortable if a student really needed this type of remedial help, many of my students were extremely frustrated by the program.

Appendix 3c
AoR Report: Challenges and Suggestions

	Challenges	Suggestions
Data		Shorter pretest. Vary the practice assessments. Include review games. Move from cartoon to actual video. Provide an option for the students to have the sound repeated. Increase the number of questions on the comprehension assessments. Have more of a focus on the end results of intervention for high school students The placement test could include activities to see if the student is hearing letters, and another person's voice should be used. Students should be able to view their own reports so they can self-monitor, reading comprehension needs improving, there should be an option for daily progress in addition to weekly progress OR the weekly report should have a daily column.

Technology	Computer access and dependability of the network are the largest hurdles. We also need more time built into our schedule to work on the academy. Computers that are slow; students who grow tired of the program. For a while, the program would just not work correctly on Thursdays... Lack of technical information, not enough computers Time, space, system crashing. It takes forever to put new students in your classes. At our school no one was interested in helping with the computer problems. It was hit or miss whether we could use them or not. It made for planning nightmares, students off task because of a change in the routine, and the data were not as valid as it should have been. It is frustrating. …program shut down during student trainings. I personally did not have many problems, but some of my colleagues had trouble with not enough computers or headphones, not being able to consistently schedule time in the computer lab, and difficulty taking time away from an academic class (usually English). Technology can trip us up a bit in the classroom (e.g. computers needing to be re-imaged; broken head phones). Nothing too major.	I would like what the teacher can "see" as the student responds to trials to be expanded. On the comprehension, I would like to "see" the stories without having to read over the student's shoulder, or to see the responses to auditory/visual exercises with Make more user friendly so that other teachers can do this as well. Fell to mostly Language Arts teachers.

Pacing/ Motivation	Some autistic students have a hard time getting the pacing down. At times, it is difficult to move on. Perhaps having the option to skip a lesson and come back to it the next session would have been helpful. Students becoming frustrated when they have reached accuracy during an Auditory-Visual or Visual match skill, but not the pacing. I've had students who could not stand it, so we had a devil of a time getting them to buy in. Students get frustrated or bored with repeating certain tests. Keeping students motivated because some students became frustrated easily. The program is not for everyone. Some kids grow too frustrated with the program and start hitting keys instead of trying. I have several kids on it but some that do not need the fluency/ decoding piece and I challenge them on their levels with individualized work in targeted areas. I think when the program is broadly used through the school. Many teachers lose focus causing the students [to] lose focus. The program can cause loss of interest and boredom for students. The program needs to come from a central location with teachers that have interest in the program. It is not a filler program where students "play" on the computer. Most of them go through the motions, but I did not see any transfer to real-world reading. Intervention resistance. Some students just will not do it because it is reading remediation…high school students sometimes rebel at having a reading class. Students tend to listen to music or search the net unless the teacher is standing behind them. My students became very discouraged with the program. They had a hard time achieving mastery. I am not sure if AoR is the best program to be used with students who have severe reading problems. I supplemented AoR with Phonic games, tests, as well as reading comprehension stories that were on the level of my students.	Make the fluency or pacing component within a greater time such as 10-30 seconds as opposed to 5. Greater ease in moving to the next level. I feel that if the program is going to be used with special education students with severe reading problems, the teacher should be able to go in and modify the program as needed. In addition a special needs student with serious reading problems needs more.

Content	It's EXTREMELY confusing and the slightest noise (including someone walking past) throws students off if they are doing the listening-visual match. Helping a student get through a lesson based on pacing. I like to change the preset guidelines but some kids struggle with the pacing and having 100 plus trials is not uncommon for some students. phonic sounds were unclear and difficult to understand (Canadian woman) Program would freeze causing frustration to already frustrated students. Students who do not speak enough English to tell them how to do it. Not enough training. Being forced to do a program that you do not really understand. Keeping students motivated when they are struggling.	Get to the core readings faster. More vocabulary and comprehension skills. More comprehension. Have it mixed it instead of at the end of program. More test analysis questions, more homophones, more Greek/Latin roots. Take away the demand that students complete skill sets within a specific time limit or within a consistent time limit. Make the program a little more "mature" and multicultural. The characters that talk to them need to appear a little older/more mature. Some of my students are past 18 years old. I think the characters get on the students nerves sometimes. For middle school a more mature character would be more appropriate. Change the pretest to be more on comprehension and reading. If you could have the option of clicking on words and getting definitions in the comprehension passages. The program needs to be written with more mature graphics for HS students. More variety--teach reading strategies I wish there were more reading modules earlier in the program. Narrator for each region or state with common accent for each. They could provide preplanned supplemental interventions for when a student requires "teacher time." Have all lessons so that the student can have a sound repeated. Having a different kind of activity for a student to do when they were having a lot of difficulty with a skill.

Students in need/class size	One of me, and many students. I'd like more time to work with each student individually. Too many kids without enough support and I had to implement additional work for those that completed the program when I was already overwhelmed by too many students at one time. More students NEED to participate in this program, but there is only room for so many students within the class.	Change it to a direct instruction program, with a teacher for four weeks during the summer. Kids who cannot read by the time they get to high school get further and further behind in their classes - taking them away for even a short amount of time puts them at greater risk for failure. The program should be given to students that it is designed for. -The program is NOT for students who do not speak a lot of English and they should not be forced to do it. -Inform administrators concerning who should and should not do this program. -Someone should explain exactly how this program has helped students and what are the study results and on whom.