

INTERVENTION MONTHS GRADES 6-8: ELECTIVE RESULTS 2008-09

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Question 1: What need does Intervention Months 6-8 address?

North Carolina Student Accountability Standards require targeted intervention be provided to students who fail to meet statewide accountability standards. Intervention Months of employment were allotted to middle schools to help them provide intervention to students who are struggling academically.

Question 2: What are the goals and strategies of Intervention Months 6-8?

The primary goal of Intervention Months is to increase the percentage of students who are academically successful. In 2008-09, Intervention Months 6-8 allotted Wake County Public School System's (WCPSS) 32 middle schools 762 months of employment to be used along with other resources to provide targeted supplementary assistance to students requiring academic intervention beyond that provided in the regular classroom.

Four intervention models were utilized in 2008-09: out of school small group; daytime electives and team time; daytime small groups (only at the elementary school level); and out of school time intersession. In 2008-09, 3,155 middle school students participated in a reading or mathematics intervention elective funded by Intervention Months; student participation data were not consistently available for the other types of support. For further information on Intervention Months' 6-8 goals and strategies see Table 1.

Major Findings

- **Expenditures:** In 2008-09 Intervention Months funded middle schools in the amount of \$4,015,740.
- **Students Served:** In 2008-09, 3,155 students participated in an intervention elective. The vast majority (>95%) of these students with a valid test score, scored a Level I, II, or low III on either the reading or mathematics EOG in 2007-08 (>91% scored a Level I or II). More than half (54%) of the students served were Black/African American and 58% qualified for free or reduced-price lunch.
- **Other Resources:** Of the students who participated in an intervention elective, 26% or 816, also received additional assistance through programs such as special education, Helping Hands, and Community ALP.
- **Achievement:** Findings suggest that participation in an intervention elective did not have a positive impact on reading achievement as measured by EOG proficiency or growth. The percentage of intervention elective participants at or above grade level increased more for mathematics than reading. A statistically significant higher percentage of students who participated in a mathematics intervention only made growth than did academically similar students not enrolled in the intervention elective.
- **By School Results:** There was a great deal of variation across schools in terms of their ability to move students to grade level.
- **Recommendations:** Review approaches used for academic support in consultation with Curriculum and Instruction staff to ensure their appropriateness and availability. Consider alternative delivery models in reading to improve student success. Schools with the largest improvements in student achievement should be used as exemplars, and their strategies shared with other schools.

Impact Evaluation reports provide basic evaluative outcome information on standard indicators. These reports may suggest a need for further study of the efficacy of a program.



Background

Prior to 2008-09, middle schools provided intervention through the Accelerated Learning Program (ALP). ALP, which focused on grades 3-8, began in 1999-2000. ALP was initially designed to provide additional instruction outside of the school day to students who scored below grade level on reading or mathematics End-of-Grade (EOG) exams (Baenen & Lloyd, 2000). In 2000-01, ALP also began to provide day-time intervention services. Initially, ALP funded schools through a per student dollar amount based on the number of students below grade level. In an effort to simplify funding procedures, ALP switched from funding dollars per student to funding teachers’ months of employment (MOE). This change allowed principals more latitude to use positions during the day. In 2008-09, ALP was renamed Intervention Months (Lougee & Baenen, 2009). For additional information on the implementation and impact of ALP, see the Accelerated Learning Program (ALP) Grades 3-8: Evaluation 2002-03 at: http://www.wcpss.net/evaluation-research/reports/2004/0328alp_3to8_2002-03.pdf.

Goals and Strategies

The primary goal of Intervention Months in middle schools was to increase the percentage of students who are academically successful as measured by the EOG. The logic model shown in Table 1 highlights the needs, resources, and goals of Intervention Months 6-8 (Intervention Months Guidelines, 2008).

**Table 1
Middle School Intervention Months Logic Model, 2008-09**

Need: Some WCPSS students perform below grade level expectations in WCPSS. This percentage has increased as standards have become more rigorous. Having students score at grade level will increase the likelihood that they will graduate on time.				
INPUTS	STRATEGIES	OUTCOMES – IMPACT		
		Short-Term	Intermediate	Long-Term
Allotments provided based on students scoring below grade level. Allotments supported staff to provide supplementary instructional interventions to students in literacy and math.	Schools select electives as a service delivery model. Schools determine: <ul style="list-style-type: none"> • group size with recommendation of not more than 15, • materials used, and • students to serve. 	<ul style="list-style-type: none"> • Supplementary electives implemented effectively. • Students provided with interventions targeted to their needs. • Students show improved ability to meet grade-level expectations in core classes. 	<ul style="list-style-type: none"> • Students increase proficiency on EOG (e.g., Level I to II). • Students meeting reading and/or mathematics growth targets (academic change) on EOG. • Served students who were initially proficient remain proficient on EOG. 	All students score proficient on EOG.

Data Source: Logic model provided by program staff.

Intervention Months Guidelines

Under the North Carolina Student Accountability Standards, 2009 targeted intervention must be provided to “all students who do not meet statewide student accountability standards” (i.e. scoring below Level III on 3-8 EOGs). Further, the North Carolina Student Accountability Standards require the interventions “involve extended instructional opportunities that are different and supplemental and that are specifically designed to improve these students' performance to grade level proficiency.” In light of these requirements WCPSS Board Policy states:

Focused Intervention strategies and accelerated activities must be provided and should include research-based best practices that meet the needs of students (5530.3.2, R&P) (Intervention Months Guidelines, 2008).

Intervention MOE were allotted to middle schools to help them provide academic interventions to students performing below grade level in reading and/or mathematics. MOE were to be used along with other resources to provide targeted supplementary assistance (beyond those provided in the regular classroom) to students requiring academic intervention. District guidelines further stated that “the goal [of intervention] is to ensure that Level I and II students are offered at least 80 hours of targeted help during the year. Intervention programs should begin no later than the end of the first quarter” (Intervention Months Guidelines, 2008).

Four intervention models were utilized in 2008-09:

- Out of School Small Group
- Daytime Electives and Team Time
- Daytime Small Groups
- Out of School Time Intersession

Schools combined models and provided a variety of interventions to increase the opportunities of students in need of support and maximize the number of students receiving assistance. The four intervention models are outlined in Table 2. Three of the four models described are used at the middle school level; daytime small groups are used exclusively at the elementary school level. Daytime electives were the most common model used at the middle school level.

Table 2
Intervention Months 6-8
Models of Intervention, 2008-09

Model		Service Delivery	Group Size	Hours of Supplementary Instruction	Level	# of Middle Schools
Daytime Electives and Team Time	Daytime Electives	Daily elective in remedial reading and/or mathematics that is supplemental to the students regular or special education program.	Group of no more than 15 students is recommended.	Year-long course is recommended. Minimum is an 18-week course.	Elementary Magnets and Middle Schools	26 ¹
	Daytime Team Time	Flexible remedial groups identified by ongoing assessment provided as a supplement to the core curriculum. Includes Special Education and English as a Second Language students.	Group of no more than 15 students is recommended for effective instruction.	30 minutes a day for the school year with the potential of up to 80 hours of instruction for 160 days.	Elementary and Middle Schools adopting a similar daily schedule and instructional calendar.	10
Out of School Time Intersession		Small group instruction during intersession breaks in year-round calendar schools.	No more than 15 students per teacher with small group differentiation.	48 hours for half day sessions and 96 hours for full day sessions.	Elementary and Middle Year-round Schools or schools on an alternative calendar.	1
Out of School Time Instructional Groups		Small group instruction for a minimum of 1 hour after school and/or 3 hours on Saturday.	6 students per teacher is optimal for effective instruction.	A minimum of 80 hours of instruction. Can be a combination of after school hours and Saturday.	Elementary and Middle Schools	11
Daytime ALP-Small Groups		Small group instruction that supplements reading and mathematics. In-class groups are recommended. Instruction is supplemental and does not take place of regular mathematics or literacy instruction.	A group of 6 students is recommended.	For literacy: Use the 30 or 45 minute lesson plan format that is recommended on the Intervention Teachers' Blackboard site.	Elementary	0

Data Source: (Intervention Months Guidelines, 2008).

¹ While 26 of the 32 middle schools in 2008-09 initially reported utilizing an elective, one school (Moore Square Middle) did not offer intervention as an elective. The intervention model used at this school included a combination of intervention teachers pushed into classes and students pulled during their elective to work on specific skills in small groups that met for approximately one quarter of the 2008-09 school year.

Intervention Resources

Through collaboration with WCPSS' Curriculum and Instruction Department there are several literacy resources recommended in the *Intervention Months Guidelines for 2008-09*. These resources include: the *AMP Reading System*, the Academy of Reading, and the CORE reading assessment series. The *AMP Reading System* was piloted at two WCPSS schools in 2006-07. Teachers provided feedback regarding the program's ease of implementation and student buy-in to the program. This research-based program is designed to enhance reading skills by providing students assistance with comprehension, fluency, and vocabulary (Pearson, 2006). According to Curriculum and Instruction staff the *AMP Reading System* is most helpful for students who have scored a Level II or low Level III since they are most likely to struggle with these concepts. This program is not designed as a remediation for the State Standard Course of Study (SCOS); rather it helps students improve reading skills, which will in turn help their performance on the EOG.

The Academy of Reading, a web-based literacy program, is designed to produce accelerated results from students who are struggling academically (AutoSkill, 2009).

The methodology of the [Academy of Reading] program incorporates instructional and behavioral principles to address skills development and learner motivation, while providing intervention strategies. It is a structured and sequential intervention program that helps struggling students become proficient readers. Students develop fluency in foundation reading skills through focused training in phonemic awareness, sound symbol association, phonics and decoding, and comprehension (Intervention Months guidelines, 2008).

The CORE Reading Assessment is a series of formal and informal reading assessments. The assessments are designed to assist teachers with identifying areas of strength and weakness, in monitoring reading development, and in planning appropriate instruction (CORE, 2008).

Currently, there are no resources recommended for mathematics at the middle school level. Program staff is working with Curriculum and Instruction staff to develop and incorporate mathematics resources aimed at middle school intervention into the intervention guidelines.

Question 3: What resources are needed to implement the program?

In 2008-09, Intervention Month allotments were determined in April of 2008 (prior to the 2007-08 EOG testing period) based on the number of students expected to score Level I and II at each school in 2007-08. Schools were allotted one month of employment (MOE) for every 13 students projected to score a Level I or II at the end of the 2007-08 school year. Additionally, schools projected to have 30% or more of their students qualify for free or reduced-price lunch (FRL) received 1 MOE for every 20 FRL students (allotments may have been capped). In 2008-09, one month of employment equaled to \$5,270—this amount was divided into salary, Federal Insurance Contributions Act (FICA) and Retirement². These funds provided 762 MOE to 29 middle schools (24 MOE were converted to fund tutoring and 738 remained MOE). Thus, based

² In 2008-09, Intervention MOE did not include transportation costs.

on the conversion rate of \$5,270 per MOE, in 2008-09 Intervention Months funded middle schools at a cost of \$4,015,740. Of the \$4,015,740 allotted to middle schools, \$126,480 were converted to fund tutoring and \$3,889,260 remained in MOE.

Question 4: What are the characteristics of the students served?

Due to the lack of available student level data, the student results examined in this report reflect only the most common of the four intervention models—students who participated in middle school intervention electives. The intervention elective model required that students be initially screened based on their previous year’s EOG scores. Further screening utilizing literacy and mathematics assessments (i.e., Blue Diamond, CORE assessments, etc.) were recommended to determine the exact literacy and/or mathematics needs of the students. While appropriate targeted interventions were required for all students who received a Level I or II (performed below grade level) on their EOGs, there was no requirement that all Level I and II students be placed in an intervention elective. Given an intervention elective may not have been appropriate for all Level I and II students, these students may have been served by another resource such as special education, ESL, Helping Hands, or another available resource. Additionally, EOG levels which represent a range of EOG scale scores (student scores may fall to the high or low end of each range) are one measure of student achievement; student performance within the classroom may also indicate whether additional academic support is needed.

In 2008-09, 3,155 students in grades 6-8 were enrolled in intervention electives. Nearly all (>95%) students with a valid test score who participated in the intervention electives scored a Level I, II, or low III on either the reading or mathematics EOG in 2007-08 (>91% scored a Level I or II). Students who were not enrolled in the elective intervention course, but who scored a Level I, II, or low III on either the reading or mathematics EOG, are presented for comparison. It should be noted that 4,669 students (43% of the 10,871 Level I and II students in 2007-08) who scored Level I or II on the reading and/or mathematics EOG were not served by the intervention elective or another known resource. Thus, a large portion of students below grade level received no known resource. While some of these students may have been served by an alternate intervention model or a school-based intervention, due to data not being available the percentage of these students receiving some type of assistance is not clear.

Because intervention services are targeted to students struggling academically, the vast majority of students who participated in an intervention elective had scored a Level I, II, or low III on either the reading or mathematics EOG. Data on students who received a Level I, II, or low III, but who did not participate in an intervention elective were offered as a reference.³ However, it should be noted that these students were not matched one-to-one by academic and demographic characteristics; thus, this group does not represent a matched comparison group. Table 3 displays the demographic characteristics of students enrolled in grades 6-8 in 2008-09 who participated in an intervention elective, and the students who received a Level I, II, or low III on either the reading or mathematics EOG. While a higher percentage of intervention elective students were low income (as determined by FRL status) and/or Black/African American

³ Low Level III is defined as students who scored within one standard deviation of the bottom of the Level III range of EOG scale scores.

students, a lower percentage were students with disabilities (SWD) as compared to academically similar students who did not participate in an intervention elective.

While these groups were academically similar, there were a few notable demographic differences between the two groups of students. Notable differences include:

- While 54% of students who participated in an intervention elective were Black/African American students, Black/African American students comprised 40% of the students who did not participate.
- Fifty-eight percent of students who participated in an intervention elective in grades 6-8 qualified as FRL, compared to 45% of students who did not participate.
- Fourteen percent of students who participated in an intervention elective were SWD students, which is half the proportion of students who did not participate (29%).

Table 3
Students Characteristics, 2008-09, Grades 6-8

	Intervention Elective 6-8		Comparison Students	
	Number	Percent	Number	Percent
FRL	1,838	58.3%	5,170	45.3%
SWD	438	13.9%	3,286	28.8%
LEP	439	13.9%	1,376	12.1%
Male	1,637	51.9%	6,173	54.1%
Female	1,518	48.1%	5,235	45.9%
American Indian	11	0.3%	31	0.3%
Asian	51	1.6%	407	3.6%
Black/African Am.	1,698	53.8%	4,536	39.8%
Hispanic/Latino	565	17.9%	1,756	15.4%
Multiracial	153	4.8%	476	4.2%
White	677	21.5%	4,202	36.8%
Total	3,155	100%	11,408	100%

Note: 1: Students will appear in more than one category: race and gender, FRL, SWD, and/or LEP.

2: Overall N=14,563 for table includes students who participated in an intervention elective and students who did not participate but scored a Level I, II, or low III on either the reading or mathematics EOG in 2007-08.

3: Participants total n=3,155 and comparison students total n=11,408 within race and gender categories.

Data Source: June 2009 WCPSS Student Locator.

Interpretation Example: Of the 3,155 participants, 438 or 13.9% were SWD students.

Of the 3,155 students participating in intervention electives in 2008-09, 888 participated in a reading elective, 1,549 participated in a mathematics elective, and 427 participated in both a reading and mathematics elective⁴.

Question 5: What other services did students receive?

Of the 3,155 students who participated in an intervention elective, 816 or 26% also received assistance through another service. Among the 11,408 students used as a comparison (students who scored Level I, II, or low III on their reading and/or mathematics EOG), 36% received services from another resource. Table 4 displays the other services students received in 2008-09. The resources listed in Table 4 include programs and services in which student participation was recorded centrally. Student level data reflecting school-based services were not available centrally and are not included in this report.

Table 4
Intervention Elective 6-8
Percentage of Students in 2008-09 Receiving Other Services

	Intervention Elective 6-8		Level I, II, & Low III	
	Number	Percent	Number	Percent
Community ALP	9	0.3%	22	0.2%
Communities In Schools of Wake County Learning Center	11	0.3%	37	0.3%
Communities in Schools	62	2.0%	48	0.4%
Helping Hands	35	1.1%	142	1.2%
Homeless	81	2.6%	255	2.2%
Partnership for Educational Success	77	2.4%	208	1.8%
English as Second Language (ESL)	186	5.9%	568	5.0%
SWD	438	13.9%	3,286	28.8%
Total Unduplicated Number of Students Receiving Other Services	*816	25.9%	*4,120	36.1%

- Note: 1. Within each resource listed, the number and percentage represent the total number of students served by that resource; students who received more than one resource were counted in each of the individual resources listed.
- *2. Total number and percentage does not represent the summation of the numbers above. Rather the total represents the total number of individual students who receive one or more services in 2008-09.

Data Source: 2008-09 End-of-Year Middle School Student Roster and Mainframe Report.

⁴ At two schools, reading and mathematics electives were not coded separately thus, the data on 291 students who participated in an intervention elective does not appear in student results by subject.

Nearly half (48%) of students who performed below grade level on the reading EOG, and nearly a third (33%) of students who performed below grade level on the mathematics EOG in 2007-08 did not receive any known resource.

Given WCPSS offers a variety of programs to assist students’ academic performance, it was helpful to examine students not only in terms of their participation in an intervention elective, but also in terms of their participation in other resources. Thus, the remainder of this report which is focused on student achievement results is presented in terms of the cross section between participation in an intervention elective and another resource (see Table 5).

**Table 5
Student Groups: Student Participation in Intervention Elective
by Other Services, Grades 6-8**

		Other Resource	
		Yes	No
Intervention Elective	Yes	Intervention Plus (n=816)	Intervention Only (n=2,339)
	No	Other Resource (n=4,120)	None (n=7,288)

Data Source: 2008-09 End-of-Year Middle School Student Roster

The student results are presented in terms of four student groups: intervention elective participants who received at least one additional resource (Intervention Plus), intervention elective participants who received no additional resource (Intervention Only), students who did not participate in an intervention elective but who received another resource (Other Resource), and students who received no known resource (None).⁵

Question 6: Has the provision of intervention electives improved students’ academic achievement?

The findings suggest that participation in an Intervention Months elective did not have a positive impact on reading achievement as measured by EOG proficiency or growth. Generally, there was a higher percentage of students proficient in mathematics than reading. Students who participated in a mathematics intervention course had higher growth than comparison students.

- Although overall reading achievement was not positive, among Level I students who participated in the intervention elective only, a higher percentage (50%) were able to move up to Level II or higher than that of students who received another resource (39%).

⁵ Participants in school-based interventions are not recorded centrally; thus, students within each group listed may have received additional assistance beyond the regular classroom instruction that is not reflected in this report.

- The results of participation in an intervention elective were stronger for mathematics than reading. A statistically significant higher percentage of students who participated in a mathematics intervention elective made growth than did academically similar students not enrolled in an intervention elective.

Academic Proficiency

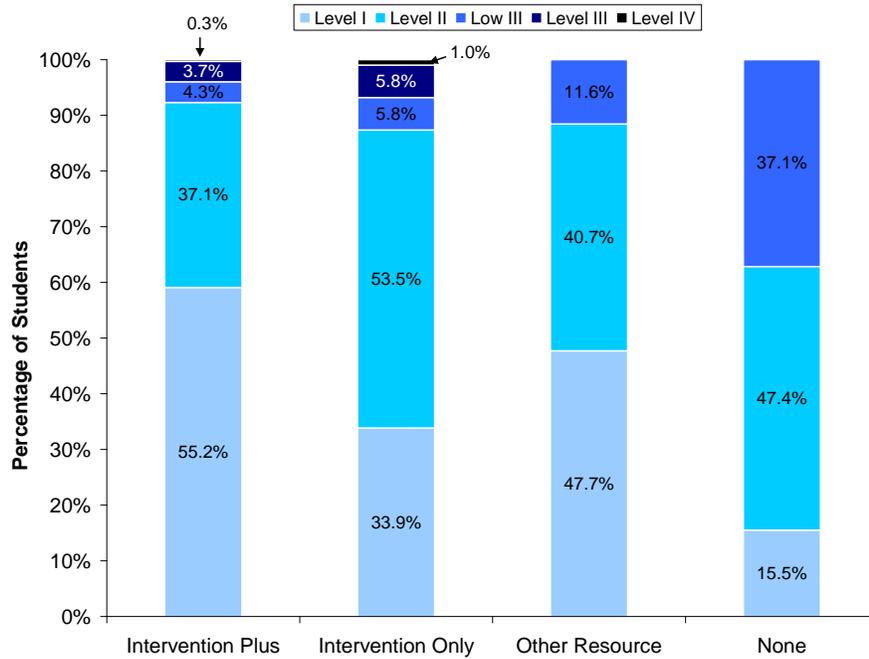
The 2007-08 reading and mathematics EOGs proficiency for students who participated in an intervention elective and comparison students is presented in Table 6 and graphically depicted in Figures 1 and 2. The 2007-08 results are used to capture student performance prior to program participation in 2008-09. While the vast majority (>95%) of students with a valid test score who participated in an intervention elective scored Level I, II, or low III similar to the students used as a reference, there was a greater concentration of intervention elective participants distributed toward the lower levels. For example, overall 41% of students who participated in an intervention elective received a Level I in reading compared to 27% of comparison students (those who received a Level I, II and low III in reading but did not participate in an intervention elective). On the other hand, only 5% of intervention elective students received a low Level III in reading compared to 28% of comparison students (see Table 6).

Table 6
Percentage of Students by Reading and Mathematics EOG 2007-08, Grades 6-8

		Level I		Level II		Low Level III		Level III		Level IV	
		#	%	#	%	#	%	#	%	#	%
Intervention Plus other resource	Read	192	59.8%	108	33.6%	12	3.7%	8	2.5%	1	0.3%
	Math	174	14.3%	845	69.3%	65	5.3%	108	8.9%	28	2.3%
Intervention Only	Read	279	33.9%	441	53.5%	48	5.8%	48	5.98%	8	1.0%
	Math	126	27.5%	290	63.3%	20	4.4%	22	4.8%	0	0.0%
Total Intervention Elective	Read	471	41.1%	549	47.9%	60	5.2%	56	4.9%	9	0.8%
	Math	300	17.9%	1,135	67.6%	85	5.1%	130	7.7%	28	1.7%
Other resource (no intervention elective)	Read	1,799	47.7%	1,535	40.7%	436	11.6%	0	0%	0	0%
	Math	955	30.1%	1,708	53.7%	515	16.2%	0	0%	0	0%
None	Read	1,003	15.5%	3,064	47.4%	2,403	37.1%	0	0%	0	0%
	Math	231	6.3%	1,779	48.7%	1,644	45.0%	0	0%	0	0%
Total Comparison Students	Read	2,802	27.4%	4,599	44.9%	2,839	27.7%	0	0%	0	0%
	Math	1,186	17.4%	3,487	51.0%	2,159	31.6%	0	0%	0	0%

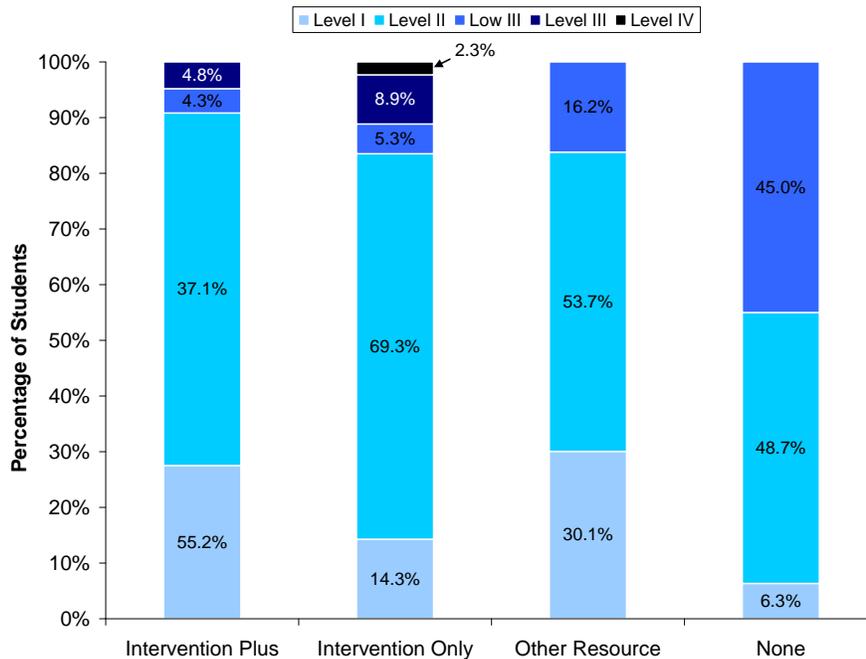
Note: Students may be presented twice, once in the reading numbers and percentages and once in mathematics.
Data Source: 2008-09 End-of-Year Middle School Student Roster and June 2009 WCPSS Student Locator.

Figure 1
Percentage Grade 6-8 Reading EOG Scores by Achievement Level, 2007-08



Data Source: 2008-09 End-of-Year Middle School Student Rosters
 Interpretation Example: Among Intervention elective participants who received only the intervention, 33.9% scored a Level I in 2007-08 compared to 15.5% of students who received no known services.

Figure 2
Percentage Grade 6-8 Mathematics EOG Scores, by Achievement Level, 2007-08



Data Source: 2008-09 End-of-Year Middle School Student Rosters

The percentage of students moving up at least one EOG level is one way to gauge program effectiveness in improving achievement⁶. Overall, reading students who received no known resource out-performed other student groups. This finding may indicate that type or level of support provided by the intervention elective was insufficient. It could also indicate that schools correctly identified the students who were more likely to improve without additional support.

As stated earlier, it is not clear from the available data which of these students may have received either a school-based intervention or another intervention model (daytime team time, out of school time intersession, and out of school time instructional groups). Thus, to identify the number of students who received no service, additional intervention data would need to be reported centrally.

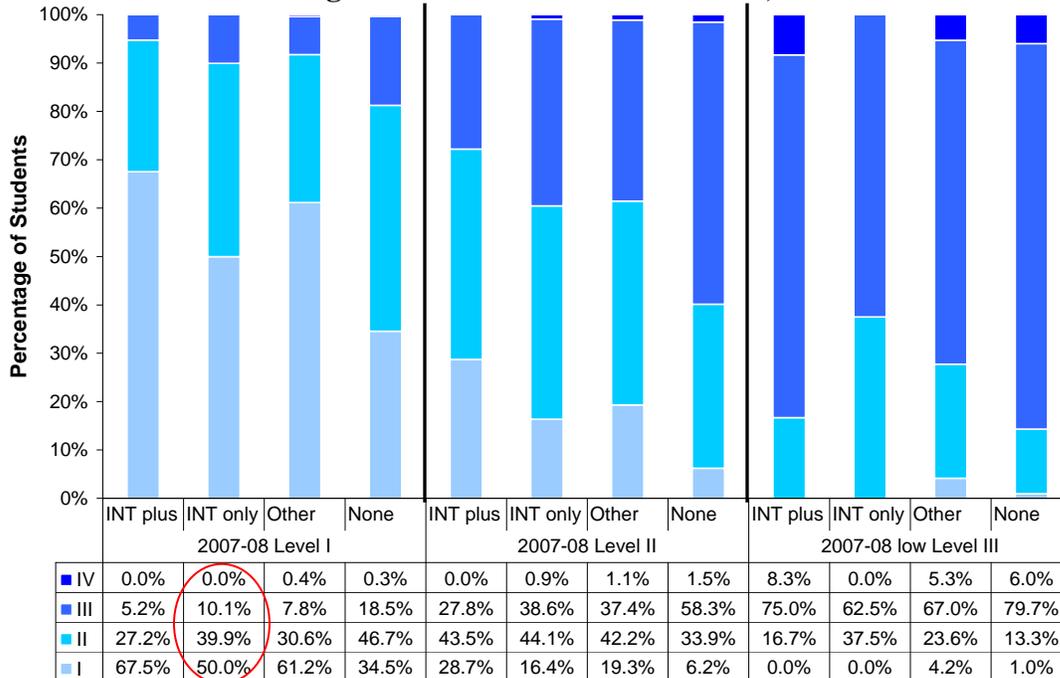
Participation in an Intervention Months elective did not have a positive impact on reading achievement as measured by EOG proficiency. Among students who participated in an intervention elective, intervention only students who scored a Level I or II appeared to benefit more from the intervention than did those who had scored a low Level III. The reverse was true among students who scored a low Level III.

⁶ Students who score a Level I or II are considered below grade level while students who score a Level III or IV are considered at or above grade level.

As shown in Figure 3:

- Of students who scored a Level I in 2007-08, 32% of intervention plus and 50% of intervention only students moved up to Level II or higher in 2008-09. Among students who did not participate in an intervention elective, 39% of students who received another resource and 66% of students who received no known resource, moved up to Level II or higher.
- Of students who scored a Level II in 2007-08, 28% of intervention plus and 40% of intervention only students moved up to Level III or IV (at or above grade level) compared to 39% of students who received another resource and 60% of students who received no known resource.
- Of students who scored a Level III in 2007-08, 17% of intervention plus and 38% of intervention only moved down to Level I or II in 2008-09 as compared to students who received another resource (28%) and those who received no known resource (14%).

Figure 3
Reading EOG Level 2007-08 to 2008-09, Grades 6-8



Note: Intervention plus (INT plus) n=320; Intervention only (INT only) n= 821; comparison student receiving another resource (Other) n = 3,741; & comparison students receiving no known resource (None) n=6,460.

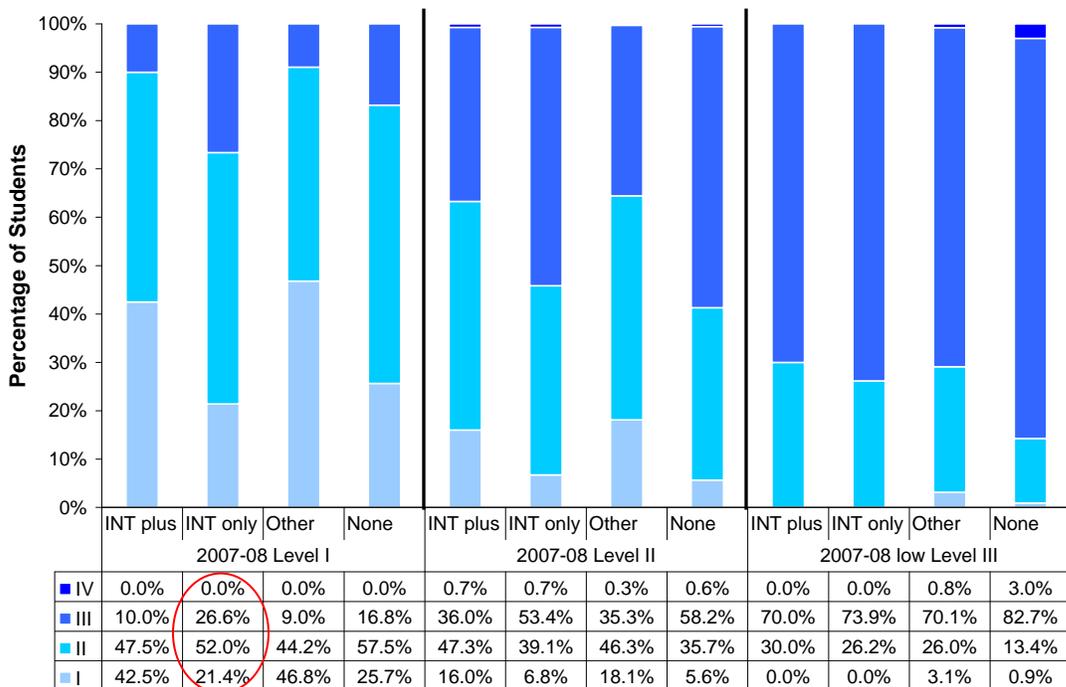
Data Source: 2008-09 End-of-Year Middle School Student Rosters

Interpretation Example: Among Intervention only students, of those who scored a Level I in 2007-08, 50.0% remained at Level I, 39.9% received a Level II, 10.1% received a Level III, and 0.0% received a Level IV in 2008-09.

Figure 4 displays the EOG mathematics proficiency levels from 2007-08 to 2008-09. Across the four student groups considered, students who participated in an intervention elective but did not receive support from another resource out-performed comparison students who received another resource (among low-Level III students this difference was slight). While students who received no known resource out-performed intervention only students at Levels II and III, the opposite was true among students who scored a Level I in 2007-08.

- Of students who scored in Level I in 2007-08, 58% of intervention plus and 79% of intervention only students moved up to Level II or higher. Among students who did not participate in the intervention elective, 53% of students who received another resource and 74% of students who received no known resource, moved up to Level II or higher.
- Of students who scored in Level II in 2007-08, 37% of intervention plus and 54% of intervention only students moved up to Level III or IV (at or above grade level) compared to 36% of students who received another resource and 59% of students who received no known resource.
- Of students who scored in Level III in 2007-08, 30% of intervention plus and 26% of intervention only students moved down to Level I or II scores in 2008-09 as compared to students who received another resource (29%) and those who received no known resource (14%).

Figure 4
Mathematics EOG Level 2007-08 to 2008-09, Grades 6-8



Note: Intervention plus (INT plus) n=435; Intervention only (INT only) n= 1,218; comparison student receiving another resource (Other) n = 2,636; and comparison students receiving no known resource (None) n=3,639.

Data Source: 2008-09 End-of-Year Middle School Student Rosters

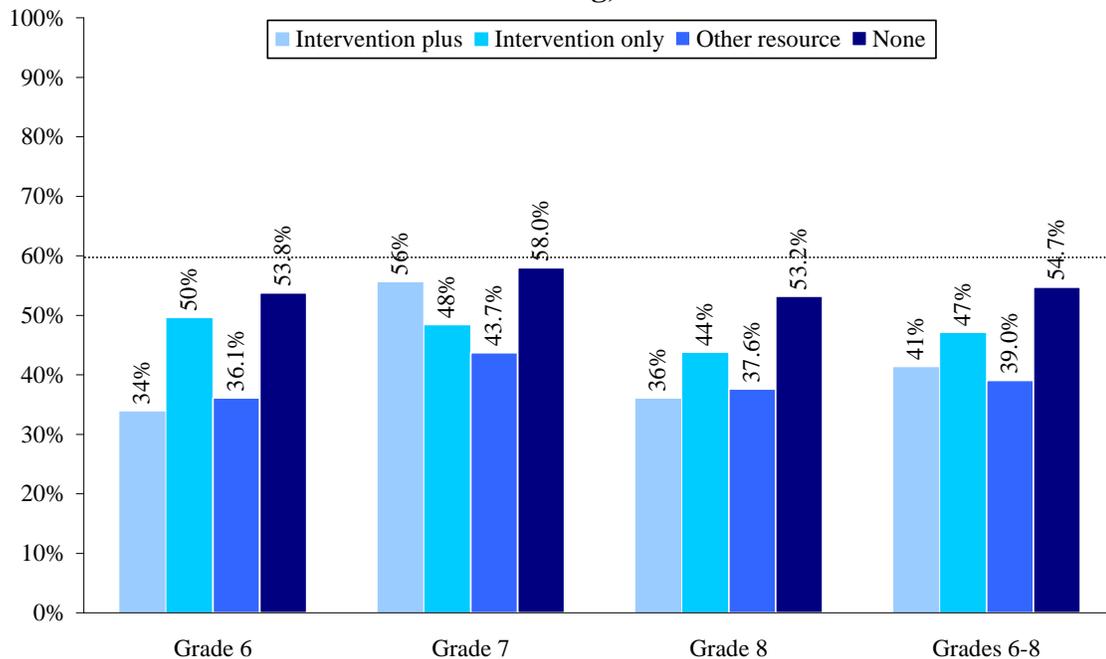
Interpretation Example: Among intervention only students, of those who scored a Level I in 2007-08, 21.4% remained at Level I, 52.0% received a Level II, 26.6% received a Level III, and 0.0% received a Level IV in 2008-09.

Academic Growth

Figures 5 and 6 display the percentage of students enrolled in 2008-09 who met North Carolina’s ABCs growth target (grades 6-8 for reading and mathematics). The state’s ABCs growth formula reflects approximately one year’s growth for one year of instruction for each student. Increasing the percentage of students reaching growth targets is another way to gauge success in improving achievement, and can reflect student gains where growth was not sufficient to change level scores. A higher percentage of students who received no known support met reading growth than did other student groups which may indicate that they did not need additional support.

All middle school grade levels were below the 60% target for high growth. Overall and in two of the three grade levels (grades 6 and 8) examined, students who received only the intervention elective had higher gains than students who either participated in an elective and an additional resource or only received another resource but did not participate in an elective. Indeed, students who received another resource, regardless of their participation in the intervention elective, had similar gains overall and in grades 6 and 8. Among grade 7 students, those who received an intervention plus another resource, had higher gains than those who received the intervention only or students who did not participate in the intervention elective but received another resource.

Figure 5
Percent Meeting Growth Target, by Grade
Grades 6-8 Reading, 2008-09



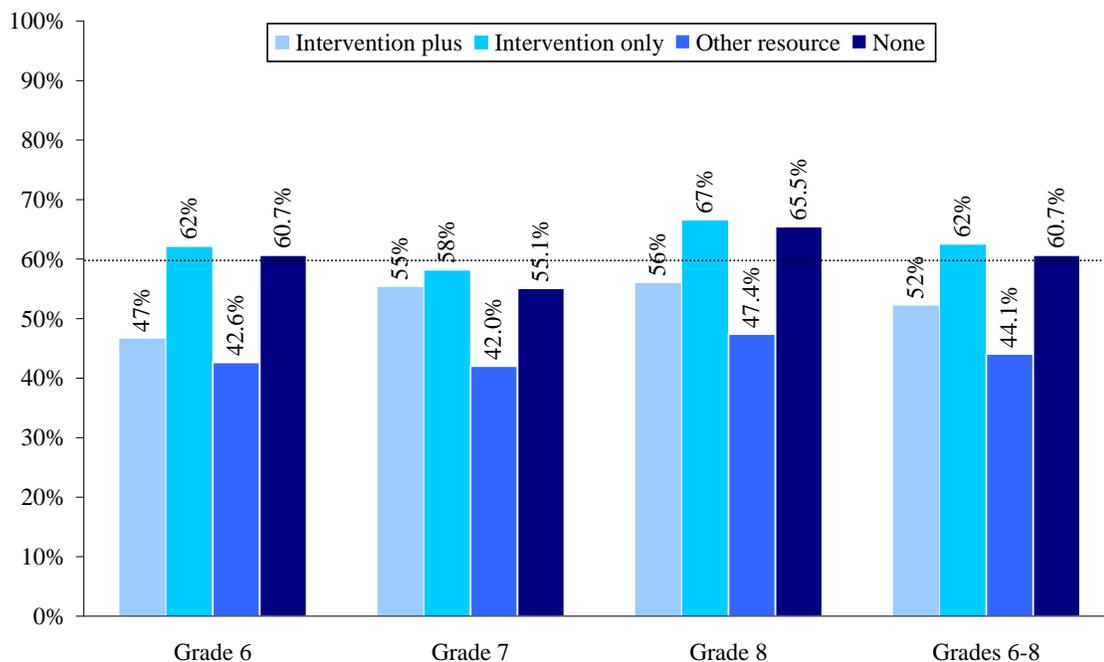
- Note:
1. Intervention plus other resource, n=348; intervention only, n=866; comparison students who received another resource, n=3,719; and comparison students who received no known resource, n=6,418
 2. Figure includes only students with valid pretests and 140 days in membership

Data Source: 2008-09 End-of-Year Middle School Student Rosters

Interpretation Example: Among grade 6 students, 50% of intervention elective only participants met growth, compared to 36.1% of comparison students who did not participate in the intervention course but received another resource.

The mathematics results showed a higher percentage of students who participated both in the intervention elective and another resource met growth than did other student groups considered. Overall and in grades 6 and 8, students who either participated in only an intervention elective and those who received no known resource met high growth (60% of students met growth). A higher percentage of students who received an intervention elective and another resource met growth than did comparison students who received another resource.

Figure 6
Percent Meeting Growth Target, by Grade
Grades 6-8 Mathematics, 2008-09



Note: 1. Intervention plus other resource, n=480; intervention only, n=1,295; comparison students who received another resource, n=3,130; and comparison student who received no known resource, n=3,606
 2. Students with valid pretests and 140 days in membership
 Data Source: 2008-09 End-of-Year Middle School Student Rosters

Academic Change

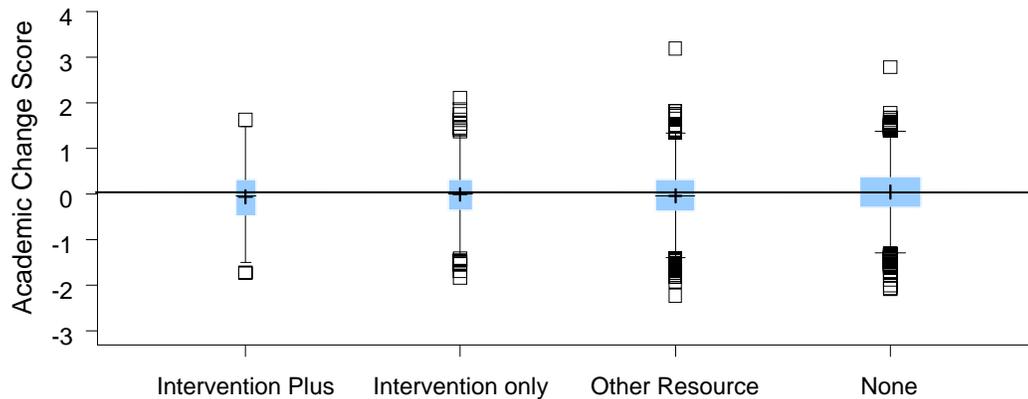
The state ABCs academic change score reflects whether students as a group grew more or less than the target projection. A growth score of zero means the target was met exactly. Figures 7 and 8 utilize a boxplot to depict the mean, median, and range of the academic change score for students enrolled in 2008-09 (grades 6-8 for reading and mathematics). The box represents the majority of student scores (25th to 75th percentile). The “whiskers,” or vertical lines, extending from the box represent the range of scores, with the most extreme scores denoted by small boxes. Within each box, the mean is signified by a plus sign and the median by a horizontal line in the middle of the box.

For all student groups the average academic change scores in reading hovered close to zero, indicating performance close to what was expected (Figure 7). While there were slight

differences in the mean academic change score between student groups examined, these differences were not statistically significant. Thus, in actuality, the results should be considered approximately the same. Additionally, there were fewer students who participated in an intervention elective (indicated by the narrower blue box); thus, it is not surprising there was a smaller range of scores than for comparison students.

A one-way analysis of variance was performed. The F-value was 18.6 ($p < .0001$). There was a significant difference across student groups. Since it cannot be determined from the ANOVA alone which group was significantly different in terms of mean score, a post hoc test (Dunnnett) was run. The post hoc test showed that the students who received no known resource had significantly higher academic change scores than the other groups of students. Due to unequal group sizes increasing the likelihood of finding a significant difference when there is none (Type I error), the one-way analysis was rerun on randomly selected groups of equal size. No significance differences in academic change scores were evident across student groups; thus, the difference found in the original analysis was most likely due to unequal group sizes (see Appendices A and B). Therefore, statistical tests demonstrated that all students groups had similar average academic change scores in reading.

Figure 7
Reading Academic Change Score
Grades 6-8, 2008-09



	Intervention Plus	Intervention only	Other Resource	None
Min	-1.7	-1.8	-2.2	-2.1
Mean	-.07	-.00	-.04	0.04
Max	1.62	2.10	3.18	2.78
Std Dev	0.59	0.54	0.56	0.50
N	311	819	3086	6447

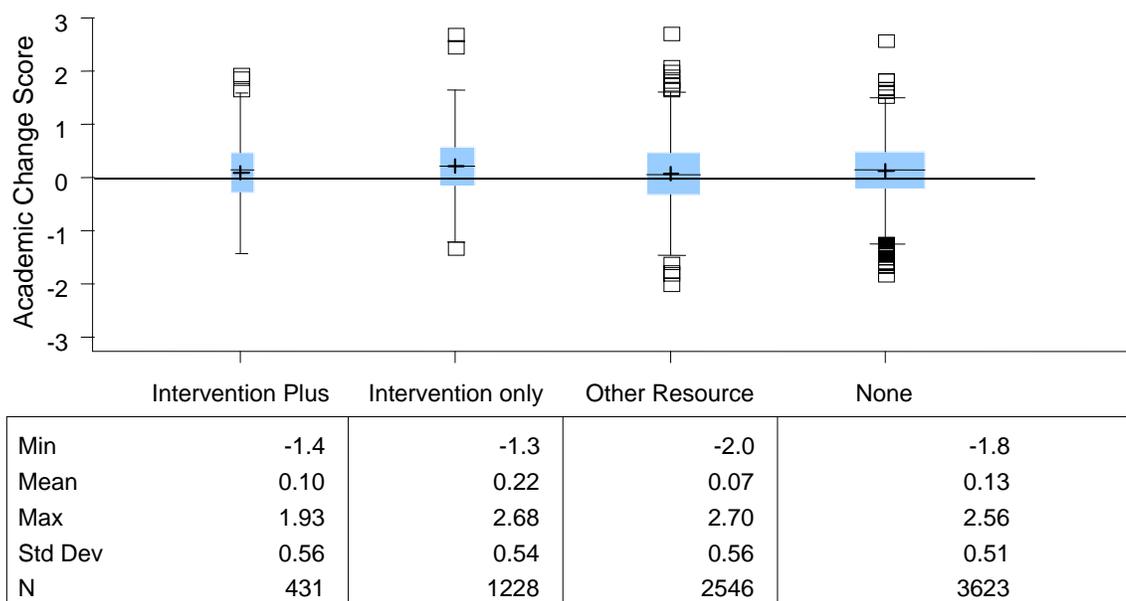
Note: Wider boxes indicate more students in the group.
 Data Source: 2008-09 End-of-Year Middle School Student Rosters
 Interpretation Example: Both intervention elective participants and comparison students who received help from another resource had an average academic change score of less than zero (signified by plus sign on blue bar).

As Figure 8 shows, for mathematics, results were positive for all student groups, indicating that on average students performed slightly better than expected. Students who participated in the intervention elective on average had higher academic change scores than comparison students. While results remained close to zero (target met exactly), students who participated in an

intervention elective only had a statistically significant higher mean academic change score than all other groups.

A one-way analysis of variance was performed. The F-value was 22.7 ($p < .0001$). There is a significant difference across student groups. However, it can not be determined from the ANOVA alone which group was significantly different in terms of mean score. Therefore, a post hoc test (Dunnett) was run. The post hoc test showed that the Intervention Only students had significantly higher academic change scores than the other groups of students. Due to unequal group sizes increasing the likelihood of finding a significant difference when there is none (Type I error), the one-way analysis was rerun on randomly selected groups of equal size. Both methods found that students who participated in an intervention elective only had significantly higher academic change scores than all other student groups.

Figure 8
Mathematics Academic Change Score
Grades 3-8, 2008-09



Note: Wider boxes indicate more students in the group.
 Data Source: 2008-09 End-of-Year Middle School Student Rosters

Question 7: Is there a difference by school in the effect of intervention elective on students’ academic achievement?

Given academic achievement is the primary goal of an Intervention Months elective, the percentage of students enrolled in an intervention elective who scored at or above grade level is of interest. Overall results, however, often hide the variance across schools. Thus, Tables 7 and 8 display by school results showing the percentage of students enrolled in an intervention elective who scored at or above grade level in reading and mathematics before and after participation in an intervention elective in 2008-09. Tables 7 (reading) and 8 (mathematics) show the percentage of students who scored at or above grade level in 2007-08 and 2008-09, and the percentage point change between these two years. Overall, the percentage of students at or above grade level increased more for mathematics than reading. In reading, the average

percentage point change increased 15 while for mathematics there was an average percentage point increase of 27. There was, however, a large variance in the percentage point change across schools ranging by school from -3 to 30 percentage points in reading and from 0 to 73 percentage points in mathematics. Schools with a higher percentage of students at or above grade level in 2007-08 were least successful in moving additional students to grade level.

Table 7
Percentage of Students Enrolled in an Intervention Elective in 2008-09
Who Scored At or Above Grade Level on Reading EOG by School
2007-08 and 2008-09

	2007-08		2008-09		Percentage Point Change
	Number	Percent	Number	Percent	
Apex	10	33%	16	53%	20%
Carnage	30	18%	51	30%	12%
Carroll	14	18%	25	32%	14%
Daniels	12	13%	28	30%	17%
Dillard	30	29%	41	39%	10%
Durant	10	22%	17	38%	16%
East Cary	12	36%	22	67%	30%
East Garner	36	19%	61	32%	13%
East Millbrook	72	20%	105	29%	9%
Fuquay-Varina	23	23%	36	36%	13%
Heritage	11	13%	36	44%	30%
Holly Ridge	28	16%	79	46%	30%
Leesville	33	29%	40	36%	6%
Ligon	14	70%	14	70%	0%
Martin	9	11%	17	21%	10%
North Garner	32	18%	72	41%	23%
Reedy Creek	11	14%	23	30%	16%
Salem	38	79%	39	81%	2%
Wake Forest	30	23%	39	30%	7%
Wakefield	16	28%	27	47%	19%
Wendell	17	50%	16	47%	-3%
West Cary	4	20%	5	25%	5%
West Lake	61	32%	105	55%	23%
West Millbrook	27	14%	42	21%	8%
Zebulon	7	9%	25	34%	24%
Total	587	22%	981	37%	15%

- Note:
1. Blue font indicates one standard deviation above the mean and Red font indicates one standard deviation below the mean.
 2. Centennial Middle, Davis Drive Middle, East Wake Middle, and Lufkin Middle did not provide intervention through an elective, thus data are not included.
 3. Moore Square Middle data are not shown due to unavailable student participation data.

Data Source: 2008-09 End-of-Year Middle School Student Rosters

Interpretation Example: Of the students who participated in an intervention elective at Wendell Middle, 17 were at or above grade level in 2007-08 compared to 16 in 2008-09; thus, one less student was proficient in 2008-09.

Table 8
Percentage of Students Enrolled in an Intervention Elective in 2008-09
Who Scored At or Above Grade Level on Mathematics EOG by School
2007-08 and 2008-09

	2007-08		2008-09		Percentage Point Change
	Number	Percent	Number	Percent	
Apex	11	37%	22	73%	37%
Carnage	51	31%	79	48%	17%
Carroll	14	18%	30	39%	21%
Daniels	30	32%	45	48%	16%
Dillard	35	35%	53	52%	18%
Durant	1	2%	34	76%	73%
East Cary	12	38%	23	72%	34%
East Garner	11	6%	79	43%	37%
East Millbrook	62	17%	146	39%	23%
Fuquay-Varina	33	33%	55	56%	22%
Heritage	30	37%	63	77%	40%
Holly Ridge	41	24%	105	61%	37%
Leesville	12	11%	40	36%	25%
Ligon	15	75%	15	75%	0%
Martin	18	22%	31	38%	16%
North Garner	55	31%	100	57%	26%
Reedy Creek	13	18%	43	58%	41%
Salem	44	92%	48	100%	8%
Wake Forest	39	31%	79	62%	32%
Wakefield	2	4%	41	72%	68%
Wendell	0	0%	18	55%	55%
West Cary	8	42%	9	47%	5%
West Lake	86	44%	139	71%	27%
West Millbrook	43	22%	70	35%	14%
Zebulon	20	27%	45	61%	34%
Total	686	26%	1412	53%	27%

- Note:
1. Blue font indicates one standard deviation above the mean and Red font indicates one standard deviation below the mean.
 2. Centennial Middle, Davis Drive Middle, East Wake Middle, and Lufkin Middle did not provide intervention through an elective, thus data are not provided.
 3. Moore Square Middle data are not shown due to unavailable student participation data.

Data Source: 2008-09 End-of-Year Middle School Student Rosters

DISCUSSION

The primary goal of Intervention Months 6-8 is to improve student academic performance. The first step toward improving student achievement is ensuring the students who need support are participating in the interventions offered. Based on 2007-08 EOG performance, the students who participated in an intervention elective demonstrated academic need with the vast majority (<95%) of students with a valid test score having scored a Level I, II, or low III on their 2007-08 reading or mathematics EOG (>91% scored a Level I or II).

Students with similar EOG levels, but who did not participate in an intervention elective were offered as a comparison, but not matched one-to-one based on achievement or demographic characteristics. While the vast majority of students who participated in an intervention elective scored similar to the students used as a reference, there is a greater concentration of intervention elective participants distributed toward the lower levels which could have impacted overall results. These differences were mitigated by examining student achievement by EOG level and in terms of academic change.

Overall, findings showed that participation in an Intervention Months elective did not have a positive impact on reading achievement as measured by EOG proficiency or growth. Generally, the percentage of students at or above grade level increased more for mathematics than reading. The stronger results of participation in a mathematics intervention elective may be due to the fact that mathematics involves more discrete skills than does reading and thus mathematics interventions may be more successful. A higher percentage of students who participated in a mathematics intervention elective experienced growth compared to students who received assistance from another resource. Furthermore, those students who participated in a mathematics intervention elective had higher academic change scores than other student groups considered (which were statistically significant).

There was a large variation across schools in their ability to move students to grade level (-3 to 30 percentage points in reading and 0 to 73 percentage points in mathematics). It should be noted that schools which served a higher percentage of students at or above grade level prior to an intervention elective were least successful in moving additional students to grade level. Furthermore, among students who participated in the intervention elective only, those who scored below grade level appeared to benefit more from the intervention elective than did those who had scored a low Level III.

Schools utilized a variety of resources in the intervention electives. Follow-up calls to schools that showed the greatest success in moving students to grade level indicated that they used a variety of resources in the mathematics elective including the *Academy of Math*, *Ladders to Success Mathematics*, *Passing the North Carolina EOG in Mathematics*, *DynaMath Scholastic* classroom magazines, *Voyager Mathematics*, and *V-Math*. In reading, schools with the greatest success in moving students to grade level reported using the resources recommended in the Intervention Guidelines: *AMP and Academy of Reading*.

RECOMMENDATIONS

Under the North Carolina Student Accountability Standards 2009, targeted intervention must be provided to “all students who do not meet statewide student accountability standards” (i.e. scoring a Level I or II on 3-8 EOGs). The level of funding for middle schools Intervention Months elective, the most common intervention, appeared to reach only 23% of the Level I and II students (this percentage does not include students served with other intervention models) although allotments are made per student. This suggests either a problem with the capacity of the model used, the number of students actually included, or the total allotments provided. Even with other programs serving an additional 34% of Level I and II students, 4,669 (43%) of all Level I and II students received no known support. While mathematics results were positive, on average the results for reading were not; thus, both the level of funding and the results of the resources provided should be considered, for limitations on resources are of no consequence if the support provided does not generate positive student achievement beyond normal instruction. At this point, we have the following recommendations for improvement.

- ***Availability and appropriateness of recommended literacy resources should be examined.*** Given the reading EOG results were not positive, suggested literacy resources should be examined to determine whether they are providing students with the best type of support to increase academic success in the classroom and on summative measures. Furthermore, given that recommended resources are not currently available to all middle schools, approaches used should be examined to either increase the availability of recommended resources or explore alternative support delivery models (school level results should be used to inform these decisions). Consultation and guidance from Curriculum and Instruction Department staff are recommended. Student performance on formative assessments and grades could also be examined as another measure of students’ academic progress.
- ***Recommendations of mathematics resources included in Intervention Months guidelines.*** Since there are currently no resources recommended for mathematics at the middle school level, it is recommended that program staff continue to work with Curriculum and Instruction staff to develop and incorporate into the intervention guidelines mathematics resources aimed at middle school intervention. Again given the school level results, the process of selecting recommended resource materials should consider schools with the greatest success in moving students to grade level.
- ***Schools with the strongest results should be used as exemplars.*** Given the large variation across schools in terms of their ability to move students to grade level, the schools with the greatest success in moving students to grade level should be used as exemplars (positive deviants). The intervention elective provided by these schools should be investigated by staff. Content materials used, student selection, and structural considerations should be determined. These practices should be compared to schools that did not have strong results. The differences in practices between the schools with stronger versus weaker achievement results can help isolate which key strategies have the greatest likelihood of impacting student success.

- ***Students served through Intervention Months should be documented more closely.*** The elective intervention model utilized course codes to indicate student participation in a reading and/or intervention elective. Intervention elective codes were given to schools to use for reading and mathematics; however, not all schools utilized these codes. Increased consistency across schools in the use of these codes would simplify record keeping, improve accuracy of centrally recorded data, and allow more reliable analysis of results. This report was unable to examine student results for the other intervention models due to a lack of consistent record keeping. Thus, student participation must be recorded and reported centrally for all intervention models utilized by schools.

Four thousand six hundred and sixty-nine students who scored Level I or II on the reading and/or mathematics EOG were not served by the intervention elective or another known resource. Some of these students may have been served by an alternate intervention model or a school-based intervention; however, due to unavailable data the percentage of these students receiving some type of assistance is not clear. Centrally reported data could identify the actual number of students who are struggling academically and have not received assistance.

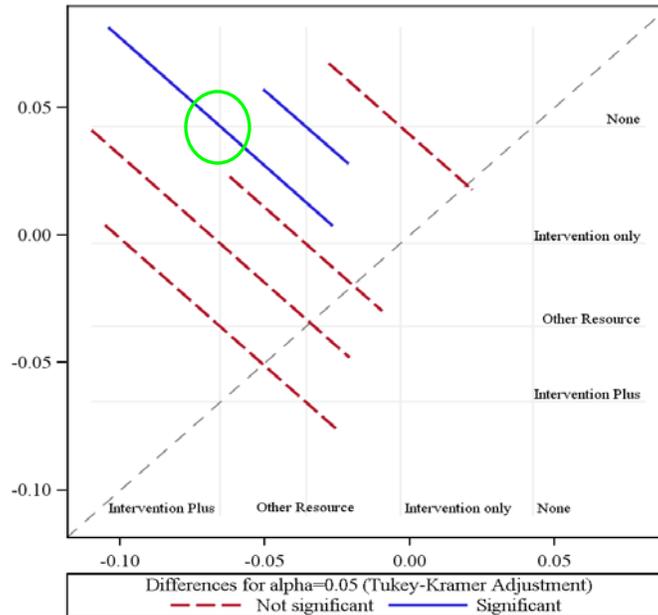
- ***Examine student selection process.*** While the vast majority of students with a valid test score had scored a Level I or II (>91%) on their prior reading or mathematics EOG, it should be noted that among intervention only participants, students who scored below grade level prior to the elective appeared to benefit more from the intervention than did those who had scored a low Level III. Moreover, staff should focus on the variation of student selection across school. While overall less than 9% of students with a valid test score were served by an intervention elective, there was a large variance in this percentage by school. Schools with the highest percentage of students at or above grade level had the greatest difficulty moving additional students to grade level. Thus, the selection process may need to be refined to ensure only students who demonstrate academic need participate in an intervention elective. Given this reports findings, program and school staff should revisit the selection process at the school level to ensure a high level of participation of Level I and II students at all schools.

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APPENDIX A

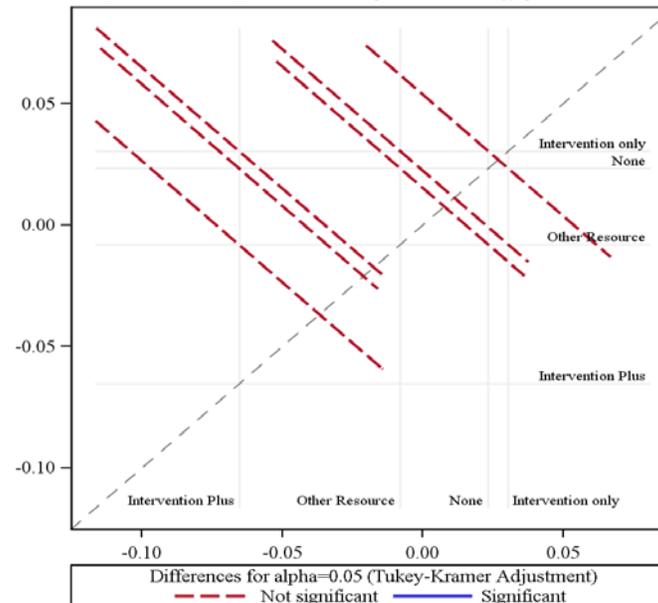
**Significance of Group Differences for Reading Academic Change Score
Total Groups, Grades 6-8, 2008-09**



Data Source: 2008-09 End-of-Year Middle School Student Rosters

Interpretation Example: Students who received no known resource had a significantly higher mean academic change score than students who received both an intervention elective and another resource.

**Significance of Group Differences for Reading Academic Change Score
Equal Group Sizes, Grades 6-8, 2008-09**

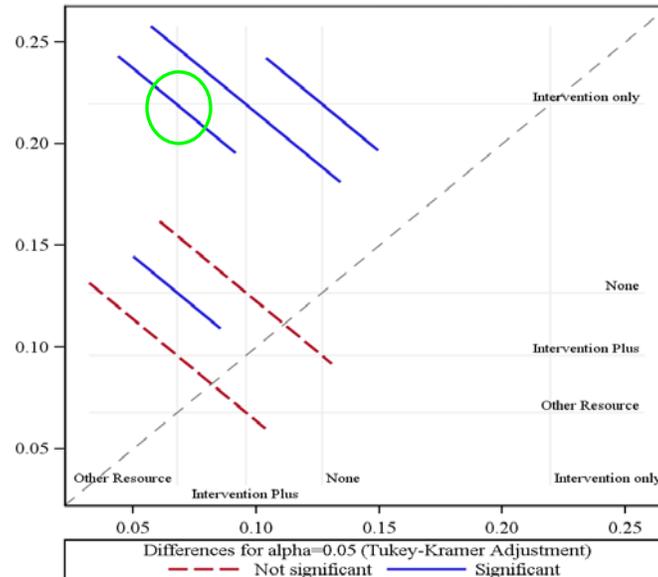


Data Source: 2008-09 End-of-Year Middle School Student Rosters

Interpretation Example: When group sizes were equal, students who received no known resource no longer had a significantly higher mean academic change score than other student groups.

APPENDIX B

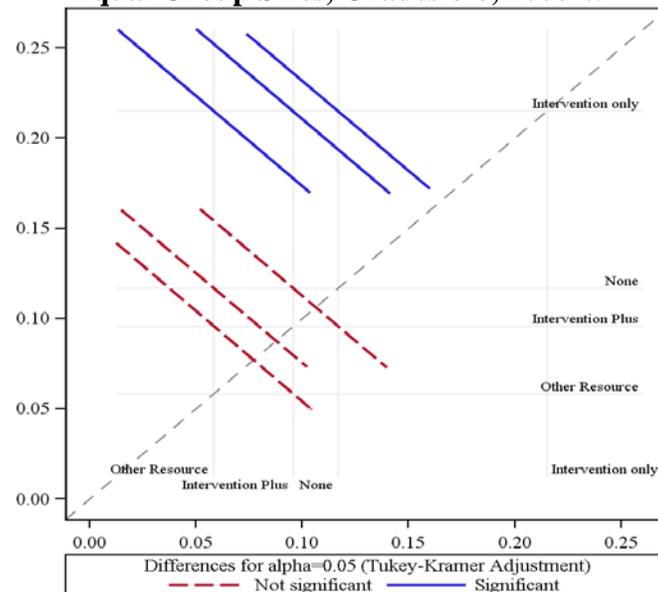
Significance of Group Differences for Mathematics Academic Change Score Total Group, Grades 6-8, 2008-09



Data Source: 2008-09 End-of-Year Middle School Student Rosters

Interpretation Example: Students who participated in an intervention elective only had a significantly higher mean academic change score than students who received another resource.

Significance of Group Differences for Mathematics Academic Change Score Equal Group Sizes, Grades 6-8, 2008-09



Data Source: 2008-09 End-of-Year Middle School Student Rosters

Interpretation Example: When group sizes were matched, students who participated in an intervention elective only continued to have a significantly higher mean academic change score than other student groups.