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Using a Theory-Based Model for Professional Development: Implementing National Common Core Curriculum

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Using a Theory-Based Model for Professional Development: Implementing a National Common Core Curriculum

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Abstract

Nationally, states are searching for the most effective model for integrating the National Common Core Curriculum (NCCC) at the local level. This article describes the training methods and learning model used to address this challenge in two low performing school districts in West Virginia. Pre and post data are presented which validate the effectiveness of the model in improving teacher content knowledge and teaching. Lessons learned and recommendations for school/district administrators charged with implementing the NCCC are also provided.

Introduction

The movement toward the National Common Core Curriculum (NCCC) poses many challenges for school administrators, the most significant of which may be those associated with providing effective professional development opportunities for in-service teachers, particularly in rural school districts/schools so common in the Appalachian region. This article describes a model for providing such professional development in the Reading/Language Arts (R/LA) area including articulating the underlying theory of change, describing intervention strategies, and presenting participant performance data validating the effectiveness of the model.

Literature Review

This review of literature examines the emergence and purpose of the NCCC and assesses the importance of professional development in the implementation of the NCCC. The adoption of the NCCC will not only have an effect on student achievement, but also dramatically change the professional development of in-service teachers.

Emergence of the National Common Core Curriculum

Historically, all 50 states had their own content standards and objectives leading to the notion of "50 states, 50 standards" (Quay, 2010, p.2). This has led to numerous individual state standards so comprehensive in nature that teachers cannot possibly cover them at an appropriate depth (Quay, 2010). The inherent inconsistency in the standards across the states and the resulting variation in levels of rigor contribute to poor student performance.

There is a significant achievement gap between American students and students from other developed countries, with American students ranked 35th out of 40 in math and 29th out of 40 in science (Cleaver, 2011). Nationally, only 24% of students who took the ACT in 2010 scored within the range considered *college ready*. The inconsistencies in standards and rigor are believed to have been major contributing factors in the less than desirable performance of the United States when compared to many other nations on international tests (Quay, 2010). The goal of the National Common Core Curriculum Standards (NCCCS) is to improve student achievement by addressing these inconsistencies (Cleaver, 2011).

In response to such performance indicators, the Council for Chief State School Officers and the National Governors Association began the move away from individual state standards for reading and math toward a set of core standards that would be common to all the states (Cleaver, 2011). The NCCCS, "anchored in college- and career-ready expectations, will ensure that students graduate from high school ready to enter and succeed in entry-level, credit-bearing college courses without the need for remediation" (King, 2011, p. 2). The NCCCS are intended to prepare students for college and career readiness, with the Common Core initiative defining college and career readiness as the ability to "succeed in entry-level, credit bearing academic college courses, and in workforce-training programs" (Griffith, 2011, pp. 5). NCCC will

provide a framework for developing teaching tools and assessments that align with college preparedness.

The NCCC provides flexibility for each state to meet the needs of their unique student populations by allowing the states to decide the manner in which to teach the standards. All states will be working from the NCCC. Consequently, states will have the ability to share ideas, and students from each state will receive the same level of education and be taught to the same standards, thus "creating a system of education that is cohesive and coherent" (Phillips & Wong, 2010, p. 37).

The NCCCS are designed to be *fewer, clearer, and higher* (Phillips & Wong, 2010). The new standards are more advanced in the area of content and require students to demonstrate higher level thinking skills (Griffith, 2011). The standards focus on the specific content needed to help students be college-ready and provide a uniform curriculum from state to state, yet retain some flexibility within the curriculum. For example, instead of offering a specific reading list, the NCCC provides numerous sample texts from which states, school districts, and teachers can choose, thus allowing teachers to prepare lessons and give parents and students an idea of what types of materials they will be working with during the school year (NGA Center for Best Practices and the Council of Chief State School Officers, 2010).

The standards have fewer repetitive ideas and are more cohesive, threading content together, thus helping students apply what they learn between contexts and in a global society, therefore, leading to standards based teaching that allows teachers to be flexible and creative (Phillips & Wong, 2010). Brenda J. Overturf, International Reading Association (IRA) board member, believes that "the NCCC will provide an understanding across states regarding what students should know and be able to do at each level to be ready for the next" (Reading Today, 2010, pp. 17), and that she "loves the fact that student discussion is so prominent in the standards and that the use of technology is naturally embedded" (Reading Today, 2010, pp. 17).

States adopting the NCCC will be involved in change. Current assessments will no longer be applicable. Instead of simply changing current assessments, the NCCC will provide states with the opportunity to totally "redesign their assessment systems, using the standards and college-ready goals as guides" (Phillips & Wong, 2010, p. 39). Phillips and Wong also suggest that these new assessments must be high quality and, instead

of being used to measure student achievement and teacher effectiveness as current assessments do, new assessments should help teachers improve instruction by providing them with examples of formative assessments and tools they need to prepare students to be college-ready (Phillips & Wong, 2010).

NCCC as Professional Development

A framework for professional development is provided by the NCCC. The framework is designed to help educators design advanced assessments and adapt, modify, or replace existing learning experiences with ones that are more conceptually advanced and complex (Common Core State Standards and Gifted Education, 2008). Effective professional development must train teachers to implement the NCCCS by applying differentiated instruction and acceleration strategies, encouraging critical and creative thinking, and developing problem solving skills through inquiry. Content specific professional development is best and should offer instruction on creating and implementing product based pre and post assessments (Common Core State Standards and Gifted Education, 2008, pp. 31).

Carrkeker, Joshi, and Boulware-Gooden (2010) discovered that teachers with 120 hours of professional development were able to correctly identify more phonemes and morphemes, and demonstrated the ability to identify appropriate instructional activities to a greater extent than those teachers with 0, 30, or 60 hours of professional development. They discovered that while 30 and 60 hours of professional development increased the number of correct responses, 120 hours of professional development increased teacher knowledge by the greatest percent. "What attracts teachers to professional development, therefore, is their belief that it will expand their knowledge and skills, contribute to their growth, and enhance their effectiveness with students" (Guskey, 2002, p. 382). Lutrick and Szabo (2010) found that effective professional development is 1) on-going, 2) interactive, 3) collaborative between teachers, 4) driven by data, and 5) driven by teacher interests.

The NCCCS were developed in order to create a common curriculum that prepares students for college and career readiness. The need for an updated version of professional development that addresses standards based teaching has been amplified with the emergence and adoption of the NCCC. Preliminary data suggest that professional development aids teachers in expanding their knowledge and teaching skills,

therefore, allowing them to work toward closing the achievement gap that exists between students in the United States and those in other developed countries. Ultimately, we should see an increase in student achievement.

The Professional Development Model

In spring 2011, Marshall University's Graduate School of Education and Professional Development (GSEPD) was awarded funding for two United States Office of Education Improving Teacher Quality Grants. The grants were collaborative initiatives with the Boone County and Clay County school districts and were focused on providing targeted professional development in teaching comprehension and vocabulary development for middle and secondary teachers.

The overall goal of each project was to improve the strategies of classroom teachers in delivering effective NCCCS based instruction to diverse learners, thus improving achievement of middle and secondary students in two rural school systems in central West Virginia. The specific objective was to increase the achievement in Reading/Language Arts with a focus on vocabulary development and comprehension skills for middle and secondary students in the two school systems.

The need for this project was well documented with student performance data from each school system. In 2009, the reading proficiency rate was 39.76% for high school students in the Clay County School System while the state-wide reading proficiency level was 41.94%. Clay County High School ranked 375 of 669 schools in proficiency for Reading/Language Arts and the district ranked 53rd of 55 counties in the percentage of classes not taught by highly qualified teachers (15.30% compared to the state average of 8.40%) in that same year (Huxley, 2009).

The needs in Boone County were similar. For the school year 2009-2010, the Boone County School System was ranked 41st of 55 counties in West Virginia for reading proficiency (54.12%). For 6th grade students, the reading proficiency was 43.69%, with females scoring at a 45.10% rate and males scoring at 37.44% rate. For 8th grade students, the overall reading proficiency level was 33.64% with females scoring at a rate of 43.13%, and males scoring at a rate of 24.22%.

The theory of change used to guide this intervention was based on the theory-based approach to program development and evaluation as articulated by Rossi,

Freeman, and Lipsey (2004). This model is a causal model in which pertinent resources (inputs) are used to support carefully selected interventions. The assumption is that the process will result in the achievement of proximal (short-term) outcomes which, when achieved, will result in accomplishment of the distal (long-term) outcome(s).

The project used selected inputs, including public school faculty, higher education faculty, Improving Teacher Quality (ITQ) grant resources, and the NCCC to create intervention strategies. These interventions included content focused standards-based professional development combined with formal follow-up sessions, peer review/feedback, and access to instructional materials. This combination of interventions was designed to facilitate the achievement of the short term (proximal) outcomes of enhanced teacher knowledge in Reading/Language Arts, enhanced teacher skills in standards-based teaching, and increased use of standards-based classroom instruction. Achievement of these short-term outcomes should then result in achievement of the long-term (distal) outcome, increased student achievement in Reading/Language Arts. This professional development model is graphically depicted in Figure 1.

The Summer Institutes were weeklong professional development sessions that lasted from 8:00am to 3:00pm daily. The daily schedule involved participants rotating between different stations. The focus of the professional development was to increase participants' knowledge and teaching ability in the Reading/Language Arts content areas by allowing them to work collaboratively with one another and the presenters as they learned hands on strategies for teaching R/LA. Teachers were able to take the materials they received during the professional development back to their schools in order to support implementation of the teaching strategies they learned in their own classrooms.

Evaluation Design

The evaluation design used in the project consisted of distributing and collecting three separate instruments. At the beginning of the Summer Institute, participants were asked to complete the ITQ Program Survey (ITQPS). This six item instrument used a self-report and checklist format to solicit information about participant characteristics, including gender, years of experience, grade level taught, number of students taught, school name and location, and the socioeconomic level of the students at their school.
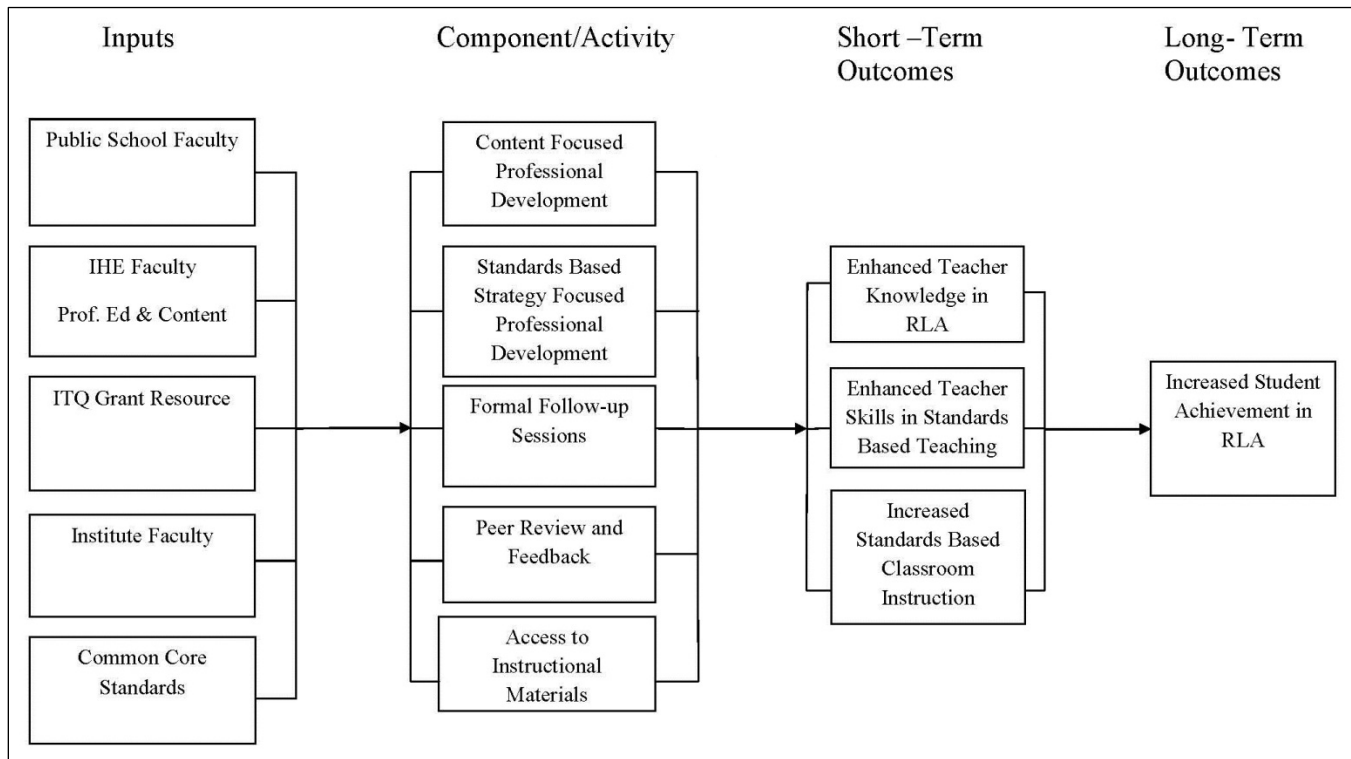
Figure 1. Theory of Change: Professional Model for Implementing Common Core Standards

The second instrument, the Participant Self-Assessment Survey (PSAS), highlighted 20 reading strategies and solicited participant perceptions of their content knowledge and teaching ability before and after the professional development. The PSAS was administered as a pretest at the beginning of the Summer Institute, and again as a posttest at the completion of the institute. The PSAS consisted of two separate sections in which teachers rated their a) content knowledge regarding specific standards in R/LA, and b) their ability to teach these standards. Teachers were also asked two open ended questions which asked them to describe the impact of the workshop on their overall knowledge and skill levels.

The third instrument, the eight item Summer Institute Assessment Questionnaire (SIAQ), solicited participant perceptions about various operational aspects of the Summer Institute. In addition, the SIAQ provided an opportunity for participants to provide a preliminary assessment of how much their content knowledge and teaching ability had increased as a result of participating in the professional development and, how applicable the increased content knowledge and teaching ability would be in their classroom.

Participant Characteristics
The institutes were open to middle and secondary level general classroom and special education teachers in the two participating school districts. Priority was given to teachers of grades 6–9 and any remaining slots were allocated to teachers of grades 5, 10, and 11.

There were 26 participants in the Boone County Institute. Of the 26 participants, 24 were female. Seven participants taught at the elementary level and 19 taught at the middle school level. Ninety-two percent (92%) of the respondents classified the schools in which they taught as high poverty (poverty levels above 50% and below 75%).

There were 24 participants in the Clay County Institute. Twenty-three participants were female. Fifteen of the respondents taught at the middle school level and nine taught at the high school level. More than half (55%) of the respondents classified their schools as very high poverty (poverty levels above 75%), and 33% classified their schools as high poverty (poverty levels above 50% and below 75%).

Findings

Overall Reaction to Model

Participant reactions to the professional development institutes were positive as indicated by their responses to the items on the SIAQ. The overall mean score for participant satisfaction with the various elements of the professional development sessions (Part I of the survey), including instructional leaders, content, material, and facilities, was 4.9 out of 5.0 for the Clay County Institute and 4.0 out of 5.0 for the Boone County Institute. Clay County participants rated the preparation/organization of the instructional leaders as 5.0 out of 5.0, the effectiveness of the instructional leaders' communication as 4.9 out of 5.0, the instructional leaders' effectiveness at motivation as 4.9 out of 5.0, the pacing of the instructional leaders as 4.8, and the class management as 5.0 out of 5.0. The quality of the content was rated 4.9 out of 5.0, 4.9 out of 5.0 for usefulness, and 4.9 for grade level appropriateness. Clay County participants rated the material quality as 4.9 out of 5.0, the material adaptability as 4.9 out of 5.0, and the material diversity/variety as 4.9 out of 5.0. Facilities were rated 4.8 out of 5.0 (refer to Table 1).

Boone County participants rated the preparation/ organization of the instructional leaders as 4.8 out of 5.0, the effectiveness of the instructional leaders'

communication as 4.8 out of 5.0, the instructional leaders' effectiveness at motivation as 4.8 out of 5.0, the pacing of the instructional leaders as 4.5, and the class management as 4.8 out of 5.0. Institute content was rated 4.7 out of 5.0 for the quality, 4.8 out of 5.0 for usefulness, and 4.7 for grade level appropriateness. Boone County participants also rated the material quality as 4.8 out of 5.0, material adaptability as 4.8 out of 5.0, and material diversity/variety as 4.8 out of 5.0. Facilities were rated 3.7 out of 5.0 by the participants (refer to Table 1).

Further evidence of the positive impact of the institute can be found in participant responses provided to two additional SIAQ survey questions. The mean score for the question on how well the workshop increased their knowledge related to the topics presented was 3.73 out of 4.0 for Boone County participants and 3.96 out of 4.0 for the Clay County teachers. The mean score for the second question which asked participants to rate how well the workshop increased their skills related to the topics presented was 3.76 out of 4.0 for Boone County and 3.91 out of 4.0 for Clay County. This indicates that the workshop increased both knowledge and skills for the teachers who participated. These data are provided in Table 2.

Table 1

Participant Evaluation of Boone and Clay County Summer ITQ Institute: Summer 2011 (n = 40)

	Boone County		Clay County	
Survey Question Part I	M	SD	M	SD
General Impression of Institute	4.61	.49	4.95	.21
Instructional Leaders				
Preparation/Organization	4.88	.32	5.00	.00[a]
Effectiveness/Communication	4.80	.40	4.96	.21
Effectiveness/Motivation	4.80	.40	4.91	.29
Pacing	4.53	.50	4.87	.46
Diversity of Teaching Strategies	4.57	.50	4.83	.58
Class Management	4.84	.36	5.00	.00[a]
Content				
Quality	4.73	.45	4.96	.21
Usefulness	4.88	.32	4.91	.29
Grade Level Appropriate	4.73	.53	4.96	.21
Material				
Quality	4.88	.32	4.91	.29
Adaptability	4.88	.32	4.96	.21
Diversity/Variety	4.84	.36	4.91	.29
Facilities	3.76	.48	4.83	.39

Scale: 1/poor, 2/fair, 3/average, 4/good, 5/excellent

Table 2

Participant Responses to Knowledge and Skill Questions from Boone and Clay County Summer Institutes: Summer 2011

Part II	Boone County		Clay County	
	M	SD	M	SD
Did the workshop increase your knowledge relative to the topic(s) presented?	3.73	.53	3.96	.21
Did the workshop increase your skills relative to the topic(s) presented?	3.76	.51	3.91	.29

Scale: 1 = not at all, 2 = somewhat, 3 = moderately, 4 = very well

Perceptions of Knowledge and Use

Twenty reading comprehension and vocabulary strategies were used as a basis to evaluate teacher knowledge and ability to teach Reading/Language Arts before and after participating on the summer institutes. The self-reported data were analyzed using a paired samples t-test.

Pre and post test data for Boone County indicated that there was a statistically significant increase in teachers' perception of their knowledge in reading comprehension and vocabulary development between pre and post assessment in 16 out of 20 reading strategies assessed (refer to Table 3). Pre and post test data for Clay County teachers indicated that there was a statistically significant increase in teachers' perception of their knowledge in reading comprehension and vocabulary development in 11 out of 20 reading strategies assessed (refer to Table 4). Although Boone county participants demonstrated an increase in 16 of the 20 reading strategies assessed, compared to 11 out of 20 for Clay County, the initial perception of knowledge and skills reported on the pretest by Clay County participants were higher than those reported on the Boone County pretest.

Table 3

Comparisons of Boone County Summer Institute Participant Pretest and Posttest Responses for Current Knowledge and Ability (Summer 2011)

Reading Component Strategy	Pretest Current Knowledge		Posttest Current Knowledge			Pretest Ability		Posttest Ability		
	M	SD	M	SD	p	M	SD	M	SD	p
1. Recognizing sight word vocabulary	3.79	1.02	4.33	.86	.056	3.55	1.09	4.35	.67	.009*
2. Recognizing reading/content vocabulary	4.00	.83	4.58	.58	.004*	3.90	.78	4.60	.59	.007*
3. Using meaning clues to comprehend text	4.00	.83	4.54	.77	.020*	3.63	.83	4.52	.61	.001*
4. Determining author's purpose	4.12	1.03	4.37	.71	.341	4.00	1.02	4.40	.68	.176
5. Using graphic organizers	4.41	.65	4.91	.28	.003*	4.20	.83	4.85	.36	.004*
6. Identifying the main idea/supporting details	4.04	.80	4.62	.49	.007*	4.00	.85	4.50	.60	.066*
7. Using literary techniques to interpret literature	3.75	.79	4.50	.65	.002*	3.47	.90	4.36	.68	.002*
8. Using a variety of literary passages to interpret literature	3.70	.75	4.37	.64	.002*	3.40	.75	4.35	.67	.001*
9. Determining a purpose for reading	3.95	.90	4.66	.63	.005*	3.85	.98	4.70	.57	.005*
10. Selecting poetry that uses inversion/rhyme/rhythm	3.29	.99	3.83	.86	.039*	3.15	.87	3.90	.78	.007*
11. Making inferences	3.91	.82	4.41	.71	.056	3.57	.83	4.47	.69	.004*
12. Analyzing text	3.83	.76	4.54	.58	.005*	3.42	.83	4.36	.76	.001*
13. Identifying the elements of literature	4.08	.88	4.62	.57	.025*	3.68	.67	4.73	.56	.000*
14. Identifying figurative language	3.95	1.02	4.52	.59	.056	3.85	.93	4.45	.60	.030*
15. Making text connections	3.79	.77	4.45	.65	.003*	3.42	.96	4.42	.692	.001*
16. Using connotation/denotation for understanding	3.62	.82	4.11	.81	.045*	3.10	.64	4.25	.78	.000*
17. Using a variety of strategies to comprehend text	3.83	.56	4.79	.50	.000*	3.35	.74	4.75	.55	.000*
18. Identifying word parts (root words, prefixes, suffixes)	3.75	.94	4.58	.50	.003*	3.70	.92	4.45	.68	.007*
19. Using context clues to establish word meaning	4.04	.85	4.54	.58	.043*	3.73	.93	4.47	.61	.007*
20. Forming predictions/opinions	4.20	.65	4.70	.46	.015*	4.05	.75	4.60	.58	.024*

*p< .05   n=26   Knowledge Scale:1/poor, 2/fair, 3/average, 4/good, 5/excellent   Ability Scale: 1/poor, 2/fair, 3/average, 4/good, 5/excellent

Table 4

Comparisons of Clay County Summer Institute Participant Pretest and Posttest Responses for Current Knowledge and Ability
(Summer 2011)

Reading Component Strategy	Pretest Current Knowledge		Posttest Current Knowledge		p	Pretest Current Ability		Posttest Current Ability		p
	M	SD	M	SD		M	SD	M	SD	
1. Recognizing sight word vocabulary	4.09	.87	4.64	.58	.036*	3.64	.95	4.5	.80	.013*
2. Recognizing reading/content vocabulary	4.00	.80	4.70	.64	.006	3.77	.87	4.68	.65	.003*
3. Using meaning clues to comprehend text	4.09	1.0	4.57	.73	.053	3.96	.93	4.57	.66	.019*
4. Determining author's purpose	3.91	.95	4.52	.73	.016*	3.50	1.2	4.45	.86	.010*
5. Using graphic organizers	3.67	1.1	4.54	.66	.001*	3.48	1.2	4.65	.57	.000*
6. Identifying the main idea/supporting details	4.08	.78	4.58	.72	.020*	3.61	1.1	4.57	.59	.001*
7. Using literary techniques to interpret literature	3.70	1.2	4.22	.74	.090	3.23	1.5	4.27	.70	.008*
8. Using a variety of literary passages to interpret literature	3.73	1.1	4.32	.72	.067	3.20	1.3	4.10	.72	.020*
9. Determining a purpose for reading	4.35	.89	4.74	.62	.119	3.95	1.0	4.68	.57	.010*
10. Selecting poetry that uses inversion/rhyme/rhythm	3.43	1.2	4.04	.77	.027*	2.95	1.3	3.91	1.0	.008*
11. Making inferences	3.79	1.1	4.42	.78	.032*	3.43	1.2	4.30	.70	.007*
12. Analyzing text	3.88	.90	4.63	.58	.002*	3.48	1.2	4.39	.58	.002*
13. Identifying the elements of literature	3.74	1.3	4.26	.81	.103	3.23	1.5	4.09	.97	.029*
14. Identifying figurative language	3.91	1.1	4.52	.73	.031*	3.55	1.2	4.32	.84	.026*
15. Making text connections	4.04	1.1	4.63	.65	.055	3.65	1.3	4.48	.73	.018*
16. Using connotation/denotation for understanding	3.61	1.2	4.26	.81	.029*	3.36	1.1	4.09	.81	.020*
17. Using a variety of strategies to comprehend text	3.96	1.0	4.75	.53	.003*	3.61	1.3	4.65	.71	.002*
18. Identifying word parts (root words, prefixes, suffixes)	4.21	.72	4.5	.72	.200	4.00	.85	4.48	.67	.053
19. Using context clues to establish word meaning	4.08	.88	4.67	.57	.016*	3.87	1.0	4.57	.66	.017*
20. Forming predictions/opinions	4.42	.72	4.63	.58	.347	3.91	1.0	4.48	.59	.034*

*p< .05   n=26   Knowledge Scale:1/poor, 2/fair, 3/average, 4/good, 5/excellent   Ability Scale: 1/poor, 2/fair, 3/average, 4/good, 5/excellent

Implications

Quality, needs-based professional development can make a difference in teachers' knowledge and skills. The adoption of the National Common Core Curriculum is a reality in West Virginia as well as other states, and administrators and teachers must be prepared to implement new instructional strategies aligned with the standards in order to ensure all students receive the maximum benefit.

Based on the data collected from this professional development initiative, implications for administrators include providing quality, content focused, and needs based programs that are delivered in a manner that is suitable to adult learners. The professional development model that was a basis for this study can be used as a guide for administrators to begin implementing standards based instruction. Administrators should use multiple data points to evaluate the effectiveness of the professional development, as well as provide teachers with follow up sessions. Continuing onsite support should also be made available to teachers. In addition, professional development sessions should be offered to ensure all teachers in the district receive similar training and materials in order for all students to receive equal educational opportunities. Supplemental materials should also be provided and made available as indicated in the professional development model (Figure 1). A summary of these implications is provided in Figure 2.

> Appropriate/Quality Professional Development provides the following elements:
> - Content focused
> - Needs based
> - Delivery suitable to adult learners
> - Follow up sessions
> - Onsite support (e.g. qualified instructors are available, technical support, consultation)
> - Offered to all teachers in district
> - Supplemental materials must be provided

Figure 2. Implementing the NCCC for Professional Development

Conclusion

Teachers' perceptions of their knowledge and ability to teach reading comprehension and vocabulary development increased significantly after participating in the targeted professional development. These data, combined with the responses to the open ended questions, provide evidence that professional development can make a difference in developing teachers' knowledge and skills related to vocabulary development and comprehension. A focus on providing quality professional development is essential to successfully implement the NCCC Reading/Language Arts standards in the classroom.

The professional development model used in this study was effective in helping reach the short term outcomes of increased teacher knowledge and teaching skills in Reading/Language Arts. A formal follow up study is planned to determine if the professional development based on the Theory of Change was successful in reaching the additional short term goal of increased use of standards based instruction in the classroom. Teacher responses from the open-ended questions found on the SIAQ survey were a positive indicator regarding the implementation of the instructional strategies and use of materials provided. Many respondents were excited about implementing the strategies they learned. This positive reaction indicates that it is likely the follow up study will find that the long term goal of increased student achievement in Reading/Language Arts has been met through implementation of NCCCS and the increased use of standards based instruction in the classroom.

Teachers need to be prepared to use more differentiated instruction, problem solving, and cooperative learning strategies, and an inquiry based model of instruction, thus altering their current instructional styles in order to align instructional methods with the National Common Core Curriculum. The professional development model used in this project was a positive step toward helping meet the challenges involved with implementing standards based instruction in small rural school districts.

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