A SENSE OF URGENCY:

BEGINNING THE HARD WORK OF CHANGE

THROUGH AN ACTION RESEARCH PROJECT

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Teaching as a profession, by its very nature, encourages the isolation of teachers and classes who are actually enrolled in the same course. This action research project that was conducted at a middle school of a large urban school district focuses only within that school. Science teachers at the middle school, while on an interdisciplinary team, may not either have the opportunity or take the opportunity to engage in quality professional dialogue with other science teachers at the same grade level (horizontally) or with teachers who teach older or younger students (vertically). Department meetings held monthly traditionally focus on procedural information and logistics that concern the department's needs, the annual science fair, and what purchases can be made. Prior to this study little to no time had been allotted for either vertical or horizontal discussions related to curricula or student work.

One exception in scheduling occurred one planning day several years earlier when the members of the science department gathered in the media center and color coded videos to be aligned with the current curricula. This example of both horizontal and vertical articulation had not recurred again in a formal setting until the ESTL asked for and received permission to lead the department in looking at student work during the professional development session on a district wide scheduled early release day. Released anchor papers from previous FCAT tests were scored by teachers working in small groups. The scores that the teachers gave were compared to the scores the reviewers had awarded. Teachers were also given the opportunity to share actual responses that their own students had written in response to FCAT style short response question. The questions shared showed great variety with respect to the requested question style.

With the onset of high stakes testing in science the need for vertical articulation becomes evident. After all, the Science FCAT will help determine our state school grade and since we do not wait until the students are in 8th grade to begin their preparation for FCAT Writing we should plan accordingly in science. As a teacher of both Comprehensive Science 1 (6th grade) and Comprehensive Science 3 (8th grade) I was surprised by what my younger students knew and what my older students did not. The older students would often ask what the younger students were doing and comment that they hadn't done that. The curriculum for Comprehensive Science 1 has undergone some revision since the 8th graders were in the course, but the content standards have not changed very much. Discounting the attempts to compare the value of specific activities that they had completed as 6th graders and what the current 6th graders were expected to complete led me to examine content specific data. An example of this was when my older students did not know some basic information about waves: crest, trough, wavelength, amplitude that the younger students were learning. The older students also had difficulty responding to both long and short response – FCAT style questions and with basic lab skills like measuring with a triple beam balance. Comments that had been made by teachers about the difference in the knowledge base of students in both seventh and eighth grade and the informal observations indicated to me that there is also a need for horizontal articulation. My current older students had not had the same preparation that my former students, their peers, had received. As the embedded science teacher leader at the school I saw a need to open the lines of horizontal professional dialogue between teachers of the same grade level so that we could later open vertical lines from a common knowledge set.

Another indication that there was a need for professional dialogue was the Implementation Rubric Score for the school. This score measures the Framework for Implementation of Standards in the county public schools. The rubric is on a scale of Phase 1: *Preparing* to Phase 4: *In Place*. The score for 1.2 Assessment under Target 1: Academic Performance was at the *Preparing* level. This score provided a point to begin our horizontal articulation.

The Framework for Implementation of Standards in Duval County Public Schools (2004) identified 5 target areas and was aligned with the district's strategic plan. Target 1 is Academic Performance. Target 4: Learning Communities includes forming study groups by grade level and content area. Bringing teachers together in horizontal subject area curriculum meetings provides the opportunity to review expectations of student performance by developing and scoring common assessments. High expectations for all students are important because of their impact on student performance (Hrabowski, Maton, & Greif, 1998). Quality assessments that are rigorous and standards based maintain the academic press that will result in increased student achievement (Mitchell, 2005).

According to DuFour and Eaker (1998), since voluntary collaboration doesn't work, time must be found within the actual work day for curriculum meetings. Not only will that preclude teachers from not finding time but will also demonstrate a commitment by the school to the establishment of learning communities. Schmoker (2004) makes the point that there must be a clear focus for learning communities. Professional development for content area teachers usually focuses on content (Scribner, 1999) or classroom management not pedagogy. By focusing on the common assessments teachers will have

the opportunity to begin some change in practices to meet the expectations of the district. Working collaboratively and sharing strategies makes challenging tasks possible (Strahan, 2003). Developing and using authentic assessments based on the standards will help teachers really know what students know and by developing a common scoring guide or rubric all students will be held to the same standards (Doran, Boorman, Chan & Hejaily, 1993). This will ensure a "guaranteed, viable curriculum"… "which increases students' opportunity to learn" and according to Marzano (2003) OTL has the greatest impact on student achievement.

Teachers were grouped into horizontal learning communities by course level taught. The entire science department consisting of 10 teachers teaching 11 sets of science classes was divided into horizontal groups. One member taught 2 grade levels and was included in both groups for data gathering purposes. There were four teachers who taught Comprehensive Science 1 (CS1), three who taught Comprehensive Science 2 (CS2), and four who taught Comprehensive Science 3 (CS3). The embedded science teacher leader (ESTL) was officially a member of both   CS1 and CS3 and an ad-hoc member of CS2. The standards coach was an ad-hoc member of all three. The gender distribution of the members for each community is shown in Table 1. One teacher in CS1 was new to the school during the current school year. One teacher in CS2 was new to the school as a permanent teacher this school year. He had previously substituted for another science teacher. Two teachers in CS3 were new to the curriculum, both having taught other levels of Comprehensive Science.

Core area teachers in the school had two planning periods scheduled one after the other. One of these periods (the duty period) was blocked out for the meetings on each of three days. No conferences were scheduled for science teachers on this day so teachers were available to meet together as scheduled.

The independent variable in this study was that of teachers working in horizontal learning communities. The dependent variable for questions 1- 4 is the implementation rate. The dependent variable for questions 5 and 6 are scores on the Implementation Rubric. The following questions were studied.

1. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment at the completion of Unit 4 in Comprehensive Science 1?

2. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment at the completion of Unit 4 in Comprehensive Science 2?

3. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment at the completion of Unit 4 in Comprehensive Science 3?

4. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment for all grade levels?

5. What is the effect of teachers working in horizontal learning communities on the Implementation Rubric Score for the use of district unit assessments in the core subject areas (1.2.c)?

6. What is the effect of teachers working in horizontal learning communities on the Implementation Rubric Score for Professional Learning (4.1.b)?

No baseline data was available for questions 1-4 so the descriptive statistics for rate of implementation will be considered baseline data for the Action Plan.

The baseline score on the Implementation Rubric for the use of district unit assessments in the core subject areas (1.2.c). was established at Phase 1: Preparing.

The baseline score for 4.1.b of Professional Learning was also established at Phase 1: Preparing.

Each learning community was tasked with either reviewing and refining the suggested common assignment or selecting a common assignment. Each community also needed to develop a rubric or scoring instrument that all teachers agreed upon. Upon completion of the unit each teacher would engage the students in the common assignment. At the final meeting for the school year each teacher would bring several samples of student work so that everyone could analyze them and determine if the scores for each were similar. This would also provide an opportunity to debrief about the actual assessment and to plan its inclusion for the upcoming school year or determine if a better assessment was available.

Prior to the first meeting I attempted to file for IRB approval from the district. Originally, I intended to collect data through a survey and written reflections. Unfortunately, the IRB approval to collect data from participants was delayed so even though some participants agreed to participate if/when approval was granted I disposed of the data without considering it. I did not believe it would be ethical to collect data without firm IRB approval. I have since learned that if the School Standards Coach (SSC)

administers a survey as part of her job then no IRB approval is needed. Other preparations included an informal discussion about the study with the principal of the school, several meetings with the SSC to deal with the logistics of the meetings, approval to free up the meeting times from conferences and class coverage, and an informal meeting with the Assistant Principal who worked with science teachers. Paperwork was filed to receive professional development points and approval was secured. The approval meant several phone calls to the District Science Supervisor who had just presented a new workshop description for school board approval the previous night. The filing for points was very time consuming. Although I did receive excellent assistance from the Science Supervisor I received very little assistance from the school based professional development facilitator. A notice of the meeting dates, times, and location was printed and a copy put into each teacher's mailbox. A handwritten notice was written on the weekly (white) notice board. For the 3rd and 4th meetings e-mail notices were sent to each teacher's school e-mail address.

For the first meeting I bought refreshments (drinks, snacks, and candy) and paper products and set that up prior to the meeting. The school security officer filled the cooler with ice. A folder with an agenda and the survey along with info about Understanding by Design was prepared for each participant. A District Science Resource teacher came to the first meeting of each community. The principal attended the CS3 meeting. The assistant principal attended also. The coach attended all of the first sessions as did I (the ESTL). We met in the SSC's office at the conference table. It was a little crowded the first session but that was not a problem at any other session.

The meetings were held on March 16th and 28th, April 20th, and May 16th. Not every teacher attended every day. Only I attended each of my grade level sessions. I also attended the CS2 sessions. The data to be collected would be a count of how many assessments were prepared, how many teachers had their students complete the assessment, and the updated Implementation Rubric Score. Additional data would be mined from copies of the final exams that teachers were asked to bring to the final meeting.

The data for ach research question was interpreted individually before an Action Plan was developed.

1. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment at the completion of Unit 4 in Comprehensive Science 1? There was no baseline data available prior to the inception of horizontal learning communities. The teachers worked collaboratively to review and revise the assessment for the end of the fourth unit of study. They also developed a scoring rubric (Table 2). Three of the four teachers of CS1 implemented the assessment (Table 3). This resulted in an implementation rate of 75% which will be considered the baseline for implementation. If a grade was assigned using the current grading scale the teachers of this course would receive a grade of "C" for implementation.

2. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment at the completion of Unit 4 in Comprehensive Science 2? There was no baseline data available prior to the inception of horizontal learning communities. The teachers worked

collaboratively to review and revise the assessment for the end of the fourth unit of study. They also developed a scoring rubric (Table 2). No teacher of CS2 implemented the assessment (Table 3). This resulted in an implementation rate of 0% which will be considered the baseline for implementation. If a grade was assigned using the current grading scale the teachers of this course would receive a grade of "F" for implementation

3. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment at the completion of Unit 4 in Comprehensive Science 3? There was no baseline data available prior to the inception of horizontal learning communities. The teachers worked collaboratively to review suggestions for a common assessment for the end of the fourth unit of study. They also developed a scoring checklist (Table 2). Two of the four CS3 teachers implemented the assessment (Table 3). This resulted in an implementation rate of 50% which will be considered the baseline for implementation. If a grade was assigned using the current grading scale the teachers of this course would receive a grade of "F" for implementation

4. What is the effect of teachers working in horizontal learning communities on the implementation of a common assessment for all grade levels? There was no baseline data available prior to the inception of horizontal learning communities. The teachers in the science department worked collaboratively complete the task (Table 2). Five teachers in the department implemented the assessment for an implementation rate of 45.45%. If a grade was assigned using the current

grading scale the teachers of this course would receive a grade of "F" for implementation

5. What is the effect of teachers working in horizontal learning communities on the Implementation Rubric Score for the use of district unit assessments in the core subject areas (1.2.c)? On the August Implementation Rubric this was considered to be in Phase 1: *Preparing*. It is anticipated that the end of year Implementation Rubric Score will be Phase 2: *Getting Started* (Table 4). The move from Phase 1 to Phase 2 indicates forward momentum in this area. By focusing on this target the horizontal learning communities have contributed to this movement. Additional studies will need to be conducted to determine how much of the movement can be attributed to the work of the science department.

6. What is the effect of teachers working in horizontal learning communities on the Implementation Rubric Score for STANDARDS BASED INSTRUCTION: Classroom/Student Work (1.3.b)? On the August Implementation Rubric this was considered to be in Phase 1: *Preparing*. It is anticipated that the end of year Implementation Rubric Score will be Phase 2: *Getting Started* (Table 4) . The move from Phase 1 to Phase 2 indicates forward momentum in this area. By focusing on this target the horizontal learning communities have contributed to this movement. Additional studies will need to be conducted to determine how much of the movement can be attributed to the work of the science department.

7. What is the effect of teachers working in horizontal learning communities on the Implementation Rubric Score for Professional Learning (4.1.b)? On the August Implementation Rubric this was considered to be in Phase 1: *Preparing*. It is

anticipated that the end of year Implementation Rubric Score will be Phase 2: *Getting Started* (Table 4). The move from Phase 1 to Phase 2 indicates forward momentum in this area. By focusing on this target the horizontal learning communities have contributed to this movement. Additional studies will need to be conducted to determine how much of the movement can be attributed to the work of the science department.

When viewed through the lens of the school, there are indications that progress is being made towards meeting the expectations on the Framework for Implementation of Standards in the County Public School (Figure 2). When viewed through the lens of the science department there is a need to continue the work of horizontal learning communities. Only one horizontal learning community showed average success in implementing the end of unit assessment. The chart in Figure 1 illustrates the impact of the low rates of implementation by the different grade levels on the success of the entire department.

An Action Plan that has emerged from this project will include the continuation of horizontal learning communities. Time for the meetings during the school day will be requested. The focus of the communities will continue to be on student progress through examination of student work and assessments. Teachers in each course should be teaching the same curriculum. By continuing horizontal dialogues about delivery of instruction (pedagogy) and content teachers will provide all students with the same OTL no matter if the class consists of all gifted students or a combination of multi-level ability students. This challenges all children with the same high standards and high expectations which should result in an increase in student success across the entire school population.

The design and implementation of this Action Research project provided new challenges to me. Previously my Action Research had been focused on my own professional practice and my own students. In this project I have viewed the science department as a subsystem of a larger system. Each learning community can also be seen as a smaller part of the subsystem. A change in one part of the system can cause a change in the entire system. In addition, I have become more aware of what is happening in other classrooms through our shared professional dialogue. This awareness helps me to identify an agenda for professional development as the SSC and I plan for the next school year. Two other departments began to have grade level meetings during the school day subsequent to the meetings that science began holding. They too began working collaboratively with a focused agenda.

The resistance of some of my peers surprised me. They do not seem to have a sense of urgency. The results of the FCAT Science do not indicate that a change is needed in how science is taught or tested, yet. I would like to see our department do an analysis of the FCAT data and then explore the indications that the data may present. By working together perhaps we can have a common goal. I was also surprised at the reluctance of many of my peers to participate in the original study that I proposed. Although I tried to clearly express why we were beginning to meet by grade level they seemed to think it was a waste of time. I would like to find a way to share the results of this study without finding fault. That will need to be part of the framework for the next cycle of research. In fact I would like to use our final scores on the Implementation Rubric as an entry point of our discussion. Perhaps if we set the agenda together it will help us to reach a common goal.

I underutilized the electronic networking tools of the MURMSI project because the idea of blogging out in public is very new to me. I did continue to have professional conversations with other researchers who I had worked with previously on other projects. The professional networking opportunities (f2f) that the meetings provided were invaluable. I was just not comfortable with the blog idea yet because this project did not gel until late April and early May and I did not want to submit something that then wasn't correct. Now that I have a finished product I am more comfortable with posting it – almost. I enjoyed meeting new people from the university. It was quite an experience to meet the graduate student who assisted with statistical analysis. I knew her when she was in high school and participated in science fairs. Seeing where she has gone with her life helped remind me why I want to be the best science teacher that I can be and why I want my school to be the best it can be. Through projects like the MURMSI project I am stretching and growing in order to become a better teacher. Today's students are tomorrow's future. I teach to touch the future.

Table 1

Regular Members of Learning Communities by Gender

LEARNING COMMUNITY	FEMALE	MALE
COMPREHENSIVE SCIENCE 1	3	1
COMPREHENSIVE SCIENCE 2	2	1
COMPREHENSIVE SCIENCE 3	3	1

Table 2

TASK COMPLETED by GRADE LEVEL

LEARNING COMMUNITY	ASSESSMENT	SCORING TOOL
COMPREHENSIVE SCIENCE 1	Reviewed and revised assessment printed in the curriculum to make it more rigorous.	Rubric
COMPREHENSIVE SCIENCE 2	Reviewed the assessment printed in the curriculum.	Rubric
COMPREHENSIVE SCIENCE 3	Selected an assessment from district workshop materials	Developed a checklist

Table 3

COMPLETION OF ASSESSMENT

LEARNING COMMUNITY	NUMBER OF TEACHERS WHO ASSIGNED ASSESSMENT	NUMBER OF TEACHERS WHO DID NOT ASSIGN OR NO DATA AVAILABLE
COMPREHENSIVE SCIENCE 1	3	1
COMPREHENSIVE SCIENCE 2	0	3
COMPREHENSIVE SCIENCE 3	2	2
TOTAL	5	6

Figure 1
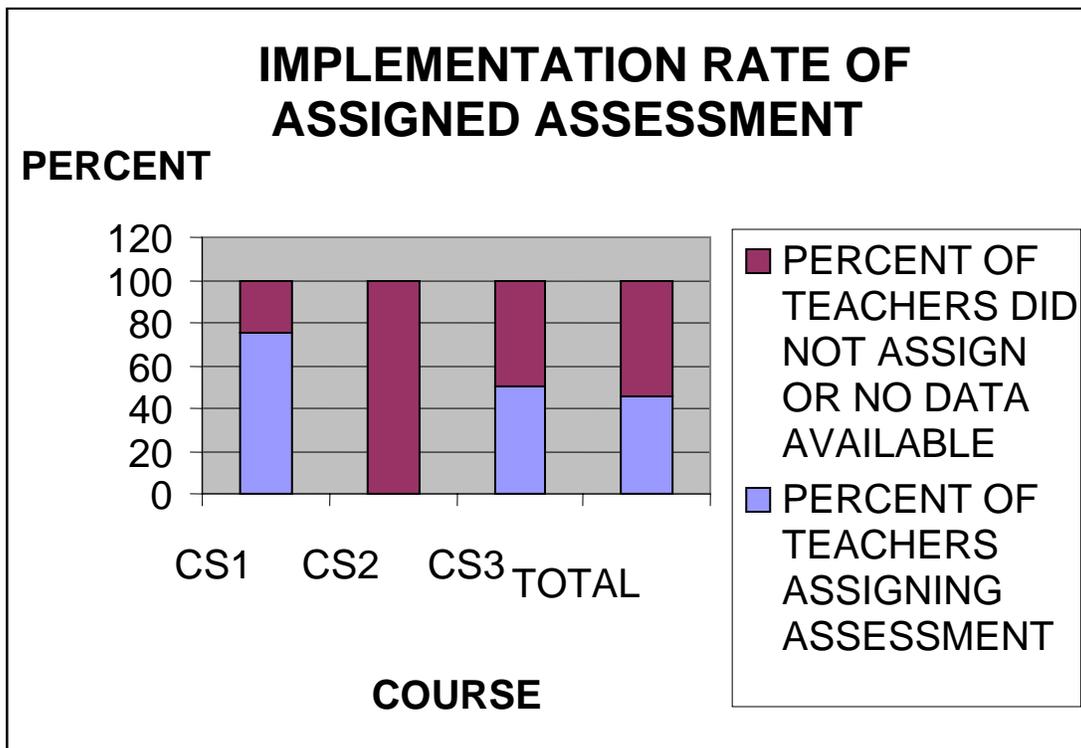
Table 4

IMPLEMENTATION RUBRIC SCORES

TARGET	1.2.c	1.3.b	1.4.a
August Phase	1	1	1
May Phase	2	2	2

Figure 2

IMPLEMENTATION RUBRIC SCORES
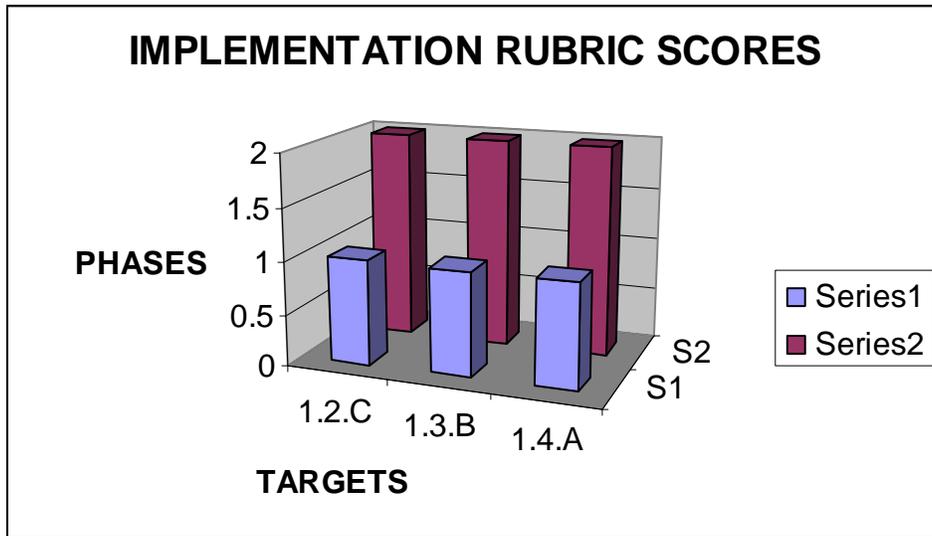
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