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AUTHOR Thompson, Sheila D.; Wallace, Michael B.
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ABSTRACT

This paper reviews the data collection procedures and results from direct observations, interviews, and surveys that are part of the documentation from the District of Columbia Public Schools' (DCPS) effort at ongoing systemic change effort. Using qualitative and quantitative techniques, several professional development activities were examined by Howard University's Center for Research on the Education of Students Placed At Risk (CRESPAR). CRESPAR's project, Broadening the Scope of Assessment in the Schools, was designed to build collaboratives among middle school mathematics and science teachers, focusing on performance assessment. Activities of the DCPS around educational reform contributed to planning for Teacher Assessment Collaborative sessions, which have occurred since 1996. In 1995, a core group of high performing middle school mathematics teachers received training in, and led implementation of the newly adopted mathematics curriculum. They also received training in performance based education (PBE) and performance based assessment (PBA). Results from focus groups, observations, interviews, and questionnaires emphasized the importance of the value of and the dynamics involved in relationships between the public school system and the university. CRESPAR has conducted interactive sessions with teachers regarding PBA for 2 years. Topics have focused on sharing assessment experiences, technical aspects of PBA, large scale PBA, practical classroom applications, and growth-oriented assessment and the talent development model. Teachers' reactions to this type of training are noted. (SM)

Reform Issues: A Review of Methodology and Results

Sheila D. Thompson

Michael B. Wallace

CRESPAR/Howard University

American Educational Research Association

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Introduction

The focus of this presentation is to provide a review of the data collection procedures and results from direct observations, interviews, and surveys which are part of the documentation related to the ongoing effort of systemic change within the District of Columbia Public Schools (DCPS). Using qualitative and quantitative techniques, several professional development activities were examined by the Center for Research on the Education of Students Placed At Risk (CRESPAR) researchers and graduate students. One goal of the CRESPAR project, "Broadening the Scope of Assessment in the Schools" is to build a collaborative among middle school mathematics teachers with an emphasis on performance assessment. The activities of the school district around reform in mathematics (i.e., adoption of performance-based assessment, a performance-based education framework, and the adoption of a new mathematics curriculum) contributed to and informed planning for the Teacher Assessment Collaborative sessions which have taken place in DCPS since the 1996-97 academic year.

Observations of Planning Sessions of "High Implementers"

During the 1995-96 academic year, a core group of high performing teachers of middle school mathematics (n=10) were identified to receive training and to lead the implementation of the newly adopted mathematics curriculum, *Mathematics in Context*. These "Demonstration Teachers" or "High Implementers" also received extensive training in Performance-Based Education (PBE), the reform format of DCPS. A ten-day summer institute for the Mathematics, Science, and Technology Initiative (MSTI) was planned by DCPS. Over a period of four days, High Implementers came together to draw up plans for the six-day institute. The focus for the summer MSTI was to introduce and reinforce concepts of PBE and the new curriculum for all

middle school mathematics teachers in DCPS that were not previously exposed to the reform model. The task of CRESPAR researchers during this time was to document the activities, attitudes and opinions of the High Implementer teachers during their planning sessions.

In addition to standard ethnographic observational techniques, the Classroom Cultural Ecology Model designed by the Cultural Ecology Project of Howard University/CRESPAR (1995) was used to develop areas of observations and procedures. Direct observations were made by trained observers (CRESPAR staff) in five areas as follows:

1. Physical Layout/Environment (furniture arrangement, lighting, ventilation, etc.)
2. Planning Session Organization (preparedness of participants, clear rules, etc.)
3. Attitude & Interpersonal Interactions (attitude of participants, body language, etc.)
4. Language (formal, informal, etc.)
5. Questioning (well stated, relevant, clear, etc.)

The documentation consists of three parts: (1) description, (2) data categorization and (3) data interpretation. There were two independent observers during each of the four days of planning sessions. During the description stage, an accurate verbatim recording of every statement made and activity conducted during the session was produced. The data categorization stage required the observer to categorize the data recorded under the above mentioned areas. This was done by color-coding the different observational categories (Physical Layout = pink, Training Session organization = green, Attitude and Interpersonal Interactions = yellow; Language = blue, and Questioning = orange) and highlighting the recorded description with the appropriate color. In the final stage, interpretation of the data was conducted. The observer/recorder wrote his or her interpretations in relation to the purpose of the observation.

All five observational areas of interest were focused on.

Generally, the results indicated that the physical layout and the organization of the planning sessions were found to be supportive of the planning task. All planning sessions were held in a large learning laboratory that was familiar to participants and at a time that was convenient to the High Implementers. The physical arrangement of the room easily allowed for group interaction. All audio-visual equipment and supplies were provided for their use. The work plan for each day was clearly delineated by the coordinator/facilitator and appropriate text and materials were provided to all participants.

Overall, the attitudes and interpersonal interactions were generally observed to be both positive and task directed. The High implementers were very comfortable with each other and shared their experiences with the new curriculum openly. Language, while informal was friendly and respectful. Questioning was generally directed toward specific information needs such as inquiries about which teacher would be presenting which parts during the planned MSTI sessions.

Observations of MSTI Activities

The first three days of the Institute allowed observers to take a complete look at the operation of all components of the Institute. Mathematics and science teachers were organized into large subject-specific groups. During the sessions, content included details about PBE, rationale for reform, perspectives on the movement away from the outgoing model (Competency-Based Curriculum), and information on the change process. The remaining seven days of the Institute were subject driven (mathematics or science) and presented by the High Implementers based on their involvement in the planning sessions.

The latter sessions allowed for teams of teachers from middle schools across the district to

discuss their feelings about the new emphasis on PBE and the new curriculum. In many cases, actual lesson plans were provided by the High Implementers. Teacher participants were given all necessary supplies, information, and manipulatives for each lesson as well as tips for implementing the lesson in the classroom. Transcripts of these sessions describe in detail the activities of each day of the Institute. The observers noted participants' comments and questions, and described the setting and activities that were conducted.

Teaching Effectiveness In A Climate of Reform

A 50-item questionnaire designed by CRESPAR researchers to assess teacher attitudes and beliefs, classroom practices and climate was completed by 53 participants during the MSTI sessions. The reliability coefficients for four subscales ranged from r = .59 to r = .86. The goal of the survey, *Teaching Effectiveness In A Climate of Reform* was to gather baseline data on the attitudes and opinions of a sample of DCPS middle school mathematics teachers regarding attitudes toward curriculum change, performance-based assessment, and other issues pertinent to curriculum reform. These data provided valuable insight to CRESPAR researchers, in terms of providing information on the specific concerns of teachers about the implementation of new reforms in their classrooms.

Teachers completing the survey were mostly female (68%) and African American (86%). About one-half (51%) had at least 11 or more years experience at the middle school level and as many years teaching mathematics (53%). Nearly all of the teachers responding felt confident in having the necessary skills to implement change in teaching methods (96%) and classroom assessments (92%). Two-thirds (66%) indicated that difficulties in setting up a learning center in the classroom would probably be due to lack of appropriate materials, rather than the teacher not

having spent enough preparation time. Teachers indicated preferences for daily instructional activities that involve small group problem solving (64%), and working and discussing math problems reflecting real-life situations (75%).

Focus Group Interview

The High Implementer teachers were invited to attend a focus group interview session approximately three months following the MSTI Summer Institute. CRESPAR researchers met to decide on what type of information to elicit from the group and the Middle School Mathematics Coordinator collaborated on the development of the interview protocol. A total of twelve focused questions were developed covering four general categories related to (1) the new mathematics curriculum, "Mathematics in Context" ; (2) the role of the MSTI in preparing teachers to effectively implement the new curriculum and PBE; (3) the role of this group of teachers as High Implementers of the curriculum; and (4) the alignment of the curriculum frameworks, instruction, and assessment. A professional moderator led six teachers through the approximately two-hour interview process which was videotaped and held at a neutral site.

Overall, the teachers indicated that they felt as though the new curriculum was consistent with the national thrust toward mathematics reform (e.g., related to NCTM standards), and that their role in helping other teachers use the new curriculum was important. Their own experience in conducting certain sessions of the MSTI Institute helped to more develop their appreciation for the new curriculum. They expressed some concerns regarding the alignment between the curriculum and the assessment in use at that time (the Comprehensive Test of Basic Skills). They were enthusiastic about the interdisciplinary power of the new curriculum, but also concerned about their primary responsibilities for developing literacy, given the limited amount of time for

teaching mathematics and the increased demand for reading in the new curriculum.

Performance-Based Educational Experiences

In addition to the above data, CRESPAR researchers developed the survey instrument, *Performance-Based Educational Experiences* to assist further in the planning of the assessment collaborative. Middle school mathematics teachers (n=19) and university faculty members of education (n=18) were surveyed on the extent to which experiences are important and needed by teachers. These specific experiences were related to performance-based activities (e.g., developing scoring rubrics, portfolios, analysis of alignment, etc.) and grouped under three broad categories depicting the classroom teacher in an age of mathematics reform as a (1) facilitator of change; (2) reflective educator and (3) scholarly researcher.

Many hours of transcripts from one and a half years of documented observations of urban middle school teachers learning about performance-based education and assessment, and a focus group interview were studied in detail. Summaries derived from the transcripts served to provide a primary basis for items composing the instrument. First, statements regarding teachers' needs were categorized as follows by project researchers:

(1) Learning about Concepts of Performance-Based Assessment

a. Introduction to the concepts of performance-based assessment;

b. Knowledge of measurement concepts such as reliability and validity;

c. Understanding of scoring and the development of scoring rubrics;

d. Understanding different types of scores (grade equivalents, percentiles, etc.);

(2) Learning about Classroom Practices and Instructional Strategies

a. Developing skills to use new forms of performance-based assessments;

b. Observation of videotapes of performance assessment tasks;

c. Developing skills in assessing children's skill levels in cooperative groups;

d. Modifying skills in employing a variety of classroom management techniques;

e. Modifying skills in classroom instruction with performance-based education as a requirement;

f. Teaching in a manner such that math concepts are understood as generalizations of problem situations;

(3) Experiencing Professional Development and In-Service Training

a. Experienced teachers perfecting skills by collaborating with less experienced teachers;

b. Continuous professional development;

c. Observation of videotapes of performance assessment tasks;

d. Developing skills in articulating the purpose, goals, and results of performance assessments to students and parents;

e. Developing skills in reading and evaluating the research literature on assessment in the classroom;

f. Developing skills in reporting their own classroom-based research on performance assessments to colleagues;

g. Understanding that the use of performance assessments should be strongly rooted in deep content knowledge;

(4) Development and Implementation of Performance-Based Assessment

a. Developing skills to use new forms of performance-based assessments;

b. Developing and implementing performance-based assessments related to the curriculum;

c. Understanding of scoring and the development of scoring rubrics;

(5) Psychological and Theoretical Principles

a. Understanding how children problem-solve and think critically (using higher-order thinking skills);

b. Using psychological principles in developing performance assessments (i.e., constructivism, learning styles, cognitive development, physiological, psychomotor skills, perceptual and tactile sensations).

The above groups of statements do not represent mutually exclusive elements. The researchers realized that many elements can be a part of one or more categories. The premise for listing these statements was to organize the thinking about what experiences would be required of teachers if they are to assist students with new forms of alternative assessment most effectively.

Next, following further consideration of the categories and statements, teacher roles were examined as (1) Facilitators of Change, (2) Reflective Educators and Practitioners, and (3) Scholarly Researchers. These roles had been previously defined by Howard University School of Education faculty and administrators as part of the self-study process. Validation is supported by analyses of results of previous research activities of the assessment project which indicated that this triad of roles is important as teachers interact with each other; with others interested in teaching such as researchers and school district administrators; and with students in the classroom. These roles can be seen as overlapping and as intricately intertwined for teachers (see Figure 1). For example, as part of the CRESPAR project, the teachers must implement changes in curricula as related to performance-based education, as well as keep notes on the effectiveness of the implementation and then share results with each other, school district officials and with

parents. As with most change processes, a refocusing of ideas which best serve students involves thought processes that allow incorporation of best practices of the past, coupled with new information and recently acquired techniques. This melding of thought processes requires careful planning and time for implementation for teachers. As previously noted, these three roles also mirror the philosophy of the School of Education at Howard University, developed by faculty members.

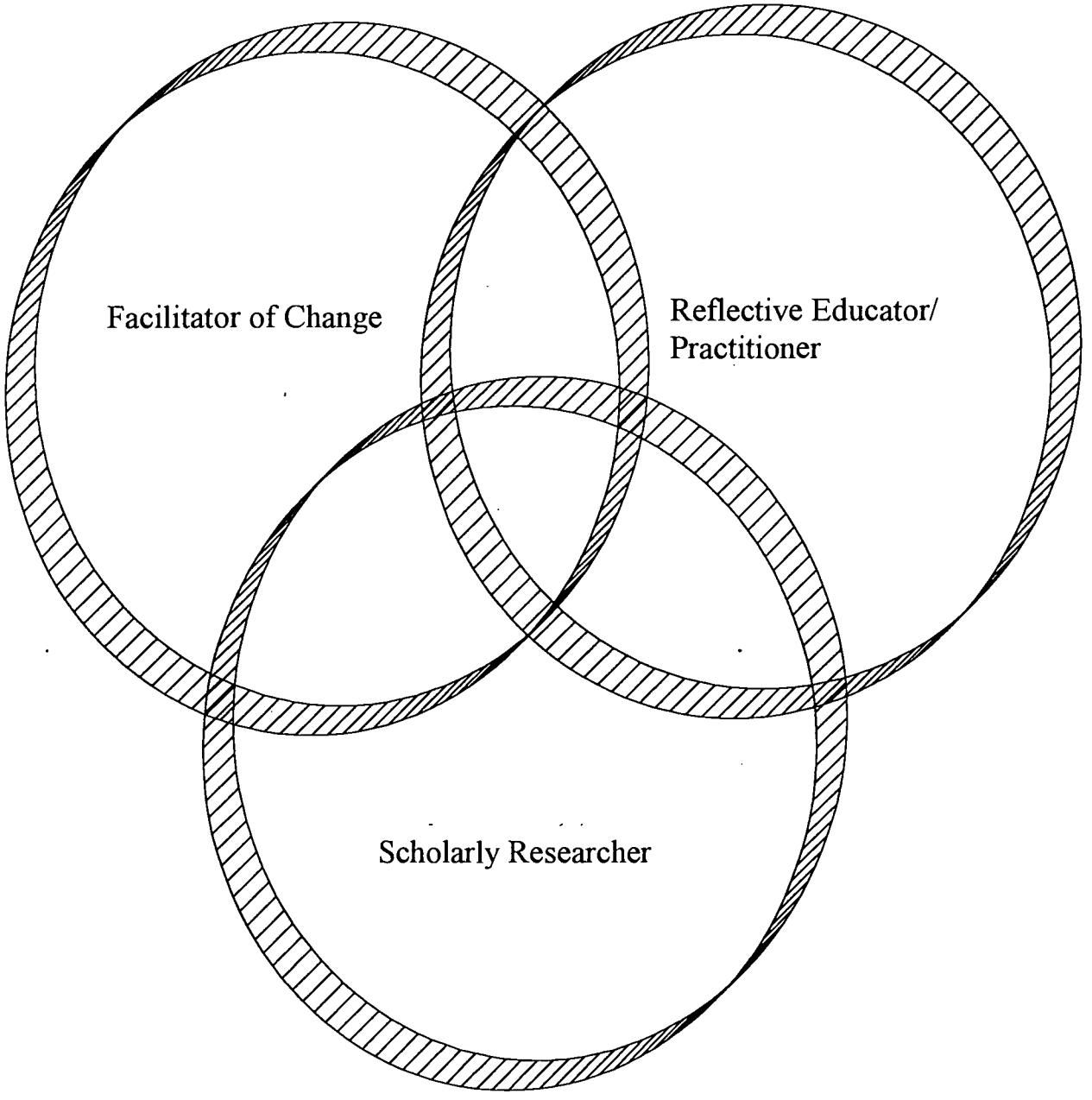

Figure I. Conceptual framework, School of Education, Howard University.

The next phase, that of instrument development, involved the rewording and refinement of statements to be included on the instrument. A final review of transcripts and videotapes of teachers assisted in this task. The instrument survey, "*Performance-Based Educational Experiences*" was developed into a twenty-two item instrument that addresses the extent to which respondents feel assessment experiences are important or needed by teachers. Twenty of the items were rated on a 5-point Likert scale where on the Importance Scale; 1=Not Important; 3=Somewhat Important; and 5=Very Important and on the Need Scale; 1=Not Needed; 3=Somewhat Needed; and 5=Highly Needed. The items deal primarily with performance-based assessment activities. Included are items that address understanding ideas, participating in workshops, and applying various principles and forms of assessments in the classroom. Additionally, there are two open-ended questions where respondents can indicate additional experiences they feel that teachers find important or needed.

The data was retained in categorical form for chi-square analysis. With the small sample size, the five categories were reduced to three. Significant differences in responses by mathematics teachers and university faculty members were observed for three items of the "experiences importance" aspect. Significantly more teachers indicated that understanding different types of assessments such as criterion-referenced and norm-referenced assessments is important to them than did faculty members (chi-square=7.20, df=2, $p < .05$). More teachers indicated that aligning classroom instruction with the goals and objectives of performance-based education is important to them than did the faculty (chi-square = 6.15, df=2, $p< .05$). More teachers also indicated that understanding fundamental concepts of measurement, such as reliability and validity is important to them than did the University faculty (chi-square=6.34, df=2, $p<.05$). Significant differences

were not found on the "experiences needed" dimension..

Teacher Assessment Collaborative

Interactive sessions with teachers regarding performance-based assessment have been conducted by CRESPAR/Howard University over the last two years. The combined information derived from each component of the project contributes to our broader picture of the systemic efforts of the school system. The most recent sessions hosted by CRESPAR were held in the Fall of 1998. CRESPAR researchers planned and hosted six professional development workshops for middle school mathematics teachers in the District of Columbia Public Schools (DCPS). These sessions were held for two and one-half hours each on September 29; October 15 and 27; and November 5, 17, and 19, 1998. With assistance and valuable input from the Secondary Mathematics Content Specialist of DCPS, middle school principals from schools with low Stanford Achievement Test Series, Ninth Edition (SAT9) mathematics scores were invited to encourage their mathematics teachers to attend the sessions.

Twelve teachers were identified for the Teacher Assessment Collaborative. All teachers received a stipend and classroom texts and materials for their participation in the workshops. Additionally, for those teachers attending all of the sessions, the DCPS Certification Branch granted one (1) recertification credit and the School of Continuing Education at Howard University awarded one and one-half (1.5) Continuing Education Units (CEUs). There were five teachers meeting this criteria.

The following topics were presented:

Session 1: "Teacher Talk on Assessment: Sharing Assessment Experiences"Introduction to Performance-Based Assessment

September 29, 1998

Presenters led teachers in discussions regarding their feelings about performance-based assessment. Teachers shared assessments that they have designed to assess student progress in their classroom and discussed rubrics they have used to evaluate student learning.

Session 2: Technical Aspects of Performance-Based Assessment

October 15, 1998

The fundamental concepts of measurement such as reliability, validity and types of assessments were presented. Teachers also gained further understanding of how to interpret different types of scores (i.e. percentiles, grade equivalents, standard scores, etc.) and examined how rubrics are used to assist in scoring. The following skills were also enhanced:

a) articulating the purposes, goals, and results of performance assessments to students and parents; b) reading and evaluating the research literature regarding performance assessment; c) designing classroom-based research on performance assessments; and d) reporting the results of classroom-based research on performance assessments.

Session 3: Large-Scale Performance-Based Assessment

October 27, 1998

Teachers worked through examples of released performance tasks from the National Assessment of Educational Progress (NAEP) archives. They discussed issues related to the content, format

and solutions of the tasks as well as the usefulness of NAEP results.

Session 4: Elaborated and Extended Topics of Performance-Based Assessments

November 5, 1998

Teachers learned how performance assessments, grounded in deep content knowledge, are aligned with local and national curricular content. It is assumed that this knowledge gives the teacher a greater understanding of how to facilitate the training of their peers who may be less experienced in the implementation of performance-based education and assessment.

Session 5: Performance-based Assessment and Practical Classroom Applications–Linking Psychological Theory to the Practice of Assessment

November 17, 1998

The applications of psychological principles (i.e. behaviorism, learning styles, and cognitive development, etc.) in the development of curricular-based performance assessment were discussed. In addition, the session was aimed at developing in teachers a broader understanding of how students solve problems and think critically using higher-order thinking skills.

Session 6: Growth-Oriented Assessment and the Talent Development Model

November 19, 1998

Teachers learned about an accountability and an evaluation system of assessment developed by a CRESPAR researcher which combines ratings of student achievement and progress and is specifically designed for successful use with heterogeneous groups in the classroom, and is very practical

In summarizing the lessons learned that CRESPAR/Howard University and the District of Columbia Public Schools have realized in our collaboration around the critical facet of education

that assessment represents, it is important to emphasize the value of and the dynamics (which can change over time, and sometimes at a moments notice) involved in relationships between the public school system and the University. In this collaboration, at least several lessons have been realized thus far that contribute to and support what we think we already know about what works. First, it is important for all partners or stakeholders in the process to embrace the concept of co-construction in planning and in the development of instruments and procedures. The value of being involved from the outset in conducting observations of the process was key. Information gathered at the earliest stages can, of course, be very useful in formative evaluations, though it has not been particularly used in that manner in this case.

As consistent with sound methodological standards (triangulation), similar data was collected from a number of key sources. Data on identical items presented to the teachers and teacher educators yielded several interesting results. Focus group interview sessions provided a richer appreciation of teacher understanding and concerns around assessment and allowed for cross-validation with other data.

Certain incentives for sustained participation appear to be useful with teachers. Participating teachers and administrators were particularly interested in receiving useful instructional materials that they could take with them back to their respective classrooms. To further respect the professional judgements of the teachers, they were provided with a catalogue from a popular major educational supply company from which they could order those items of their choice, up to a certain cost limit. Another incentive that was appealing to participants was the receipt of recertification and university continuing education credits. Some teachers expressed the importance to them of having the opportunity to meet with their peers to discuss the

important area of assessment, an area of immediate and growing concern.

Follow-up of the group of teachers referred to in this presentation continues. An Assessment Collaborative seminar, scheduled for this summer and to include presentations by these teachers, is presently in the planning stage.

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Signature: Sheila D. Thompson	Printed Name/Position/Title: Sheila D. Thompson, Ph.D. Sr.Research Associate
Organization/Address: CRESPAR/Howard University, Holy Cross Hall, Rm. 427, 2900 Van Ness St. NW, Washington DC 20008	Telephone: (202) 806-8484 FAX: (202) 806-8498
	E-Mail Address: sdt@crespar.law.howard.edu Date: 2-10-00

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