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READING HORIZONS

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Inquiry into Reading Assessment: Teachers' Perceptions of Effective Practices

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Abstract

Teachers confront a number of challenges in assessing children's literacy and one of the most fundamental is the selection of appropriate assessment tools. Teachers also continuously seek meaningful ways to document and assess student performance in formative and summative ways. The purpose of this study was to determine what elementary teachers' believe are the most effective assessment practices for gathering data about the reading performance of their students. Data collection was accomplished through the use of a *Reading Assessment Survey* distributed to 12 elementary schools throughout the greater Chicago area. The survey contained a listing of 38 assessment practices and a four-point Lickert-type scale, ranging from "not effective" to "highly effective," for teacher response. The data were analyzed by simple percentages. A discussion of the findings examines the views of beginning and experienced teachers, as well as primary and intermediate teachers. The conclusions suggest promising research directions.

Reading is one of the most frequently measured abilities (Smith, 1994). "No other component of the curriculum has been subjected throughout its history to such intense controversy over both its basic methods and its content" (Venezky, 1987, p. 159). The current focus of the controversy centers on the best way to assess reading and how it should be accomplished. Policy-makers call for standardized testing as a way to provide valid and reliable summative data on student achievement. Conversely, educators argue for the importance of teacher directed (curriculum-embedded) assessment, shifting the emphasis towards multiple measures that are formative and adaptable to the changing needs of students and instructional opportunities. The tension resulting from this controversy has never been higher in the history of American education. To argue for greater teacher voice in matters of curriculum and assessment does not imply that decisions outlined by district and state policy-makers are without merit. It is evident that education benefits significantly by direction and definition from the greater community at large: but if teachers are not in front of the initiatives, and guiding the decisions, the results will likely lack coherence and power.

Purpose of the Study

The purpose of this study was to determine what teachers believe are the most effective reading assessment practices; ones that yield significant and appropriate information about student reading growth and progress, and help teachers to plan future instruction and make critical judgments about student performance.

Background for the Study

Curriculum-embedded reading assessment refers to the "data gathering that teachers do in conjunction with giving instruction" (Hoffman, Worthy, Roser, & Rutherford, 1998, p. 291). This type of assessment is generally not administered simultaneously to students; rather it is implemented selectively as determined by teachers.

Curriculum-embedded assessment is shaped and reshaped by a process of dynamic complexity. Senge (1990) defines dynamic complexity as the territory of change "when cause and effect are not

close in time and space and obvious interventions do not produce expected outcomes because other unplanned factors dynamically interfere" (p. 365). Thus complexity, dynamism, and unpredictability are not merely things that tend to get in the way, they are perceived to be normal. To view curriculum-embedded reading assessment with such a mindset may allow politicians, educators, business people, and parents to understand more fully the complexity of assessing reading performance.

The reality that so much work has been carried out already on reading assessment emphasizes an obvious fact, that it is extraordinarily difficult to get at what happens when a person is reading (Harrison, Bailey, & Dewar, 1998; Smith, 1994). The term "reading comprehension" is often used as if it refers to a dichotomous knowledge state; a student either does or does not understand a certain passage or text. This is far from the case. Understanding written text is dynamic, fluid, socially and culturally located, and it acquires temporary stability only in goal-related and purposive contexts, which may have little to do with the understandings, which are generated in other contexts (Harrison. 1994). Similar to this dichotomous view of reading comprehension is the preoccupation with word recognition. To determine reading competency solely through measures of word recognition belies a compelling knowledge base, which documents that reading is significantly more than the decoding of words.

In today's classrooms, teachers' choices about what reading curriculum to teach or how to assess student learning are diminishing (Coles, 1998; Hoffman, Rosner, & Worthy, 1998; Stephens et al, 1995). Additionally, decisions that are open to teachers often have fairly rigid boundaries. Elaborate reading curriculum guides with objectives and standards to be taught are not uncommon. In some settings these systems are supported by an array of topical, unit, and semester tests to monitor teacher and student progress through the prescribed reading curriculum. Schools that organize in such a directive manner most often have as the basic premise that they are guaranteeing a basic level of learning for all students by ensuring that all teachers are following a standard system for teaching and assessment. But when followed closely, such efforts tend to place serious limits on learning possibilities for students. Reading in such schools invariably gets reduced to small pieces of knowledge organized by a predetermined sequence with

considerable stress placed on coverage and evidence of performance (Stiggins, 2001). In this process the fullest meanings of the reading process and student learning are reduced to technologies.

Calkins (2001) states that what really matters in reading assessment are things that cannot be mandated; matching readers with books, understanding readers' habits, values, and self-perceptions, determining the strategies and sources of information that individual readers use and do not use, and their problem solving, critical and creative thinking skills. The more that politicians and administrators try to mandate and specify these things, the more narrow the goals become. Assessing readers does not mean simply collecting data. It also means understanding the patterns in readers' behaviors and the logic behind what they are doing so that teachers can make moment-to-moment informed decisions.

Pressure is mounting on educators to show results in terms of achievement and performance (Linn, 2000). And consequently, teachers are looking to find more meaningful

ways to document student performance. For assessment practices to be successful, they most likely will need to be culturally determined, that is from the culture of the classroom. Anything that is too far away from practice is unlikely to succeed. This is evident throughout our nation's schools in the form of standardized testing. Politicians may argue that test scores are rising, but raising test scores does not necessarily demonstrate reading competency. In fact, many of the externally mandated assessments actually displace teaching and learning rather than enhance them (Swope & Miner, 2000). Additionally, they clearly have reduced the decision-making power of teachers in many schools and are negatively influencing the direction of curricular and pedagogical practices (Coles, 1998; Hoffman et. al., 1998; Stephens et. al., 1995). The day-to-day assessments in classrooms require the support of those most closely aligned with it. This may mean modifications of current assessment purposes, priorities, methods, or a completely new paradigm.

Teachers' views about assessment purposes and priorities, such as selection, accountability, and support for learning will be influential in

determining the future of reading assessment practices (Afflerbach,

1998; Neill, 2000; Stiggins, 2001; Tierney, 1998). It is the teacher who must determine the selection, balance, and coherence of assessment practices in classrooms.

Methodology

Subjects and Sampling. Twelve elementary schools participated in this study. A cluster sampling design was used to randomly select the participating institutions from a population of 123 neighboring elementary schools. The settings were K-6 schools classified as urban or suburban, public or private, and were located in the greater Chicago area. The school principals granted permission to place the *Reading Assessment Survey* in the school mailboxes of the K-6 teachers. A total of 312 questionnaires were distributed to all full-time K-6 teachers. One hundred and sixty-three surveys were returned; thus a response rate of 53 percent was realized.

Table 1 reports the data on the demographic characteristics of the teachers and schools in the sample population. The majority of the respondents were working primarily in suburban school settings (68%) and in public schools (89%). Most described their schools as having considerably (5%) or predominately (48%) diverse populations. Primary teachers represented 64 percent of the participants, while experienced teachers comprised 58 percent of the sample.

Data Collection. The data were collected from a survey instrument, *Reading Assessment Survey*, designed and constructed by the author of this study. The survey consisted of two parts; Part I addressed the demographics and Part II listed 38 reading assessment practices with a Likert-type scale. The practices were derived from the literature on reading assessment

(Afflerbach, 1998; Calkins, 2001; Neill, 2000; Stephens et. al., 1995; Stiggins, 2001; Tierney, 1998; Wixon, Valencia, & Lipson, 1994) and the opinions of academics and teachers in the field. The two academics and seven teachers who contributed to the survey were all from the Chicago area and selected by the researcher. The academics were

university reading professors and the teachers included four primary and three intermediate teachers.

The respondents were asked to indicate their opinions of the degree of effectiveness for each listed assessment practice by checking the appropriate box. A four-point scale was used with choices ranging from "not effective" to "highly effective".

Table 1. Demographic Percentages of Sample Population

Characteristics of Teachers and School	Percent
Current Position	
Primary Teachers (K-3)	64%
Intermediate Teachers (4-6)	36%
Classroom Teaching Experience	
5 years or less	42%
More than 5 years	58%
School Setting	
Suburban	68%
Urban	32%
Private	11%
Public	89%
Diversity of School	
50% + minority	48%
30-50% minority	5%
10-30% minority	22%
Less than 10% minority	25%

Data Analysis Procedures. Simple descriptive percentages were used to report the data on the teachers' perceptions about the effectiveness of reading assessments used in classroom-based reading programs. All data received are displayed in Tables 2-4. Based on the observed clustering of data, only those assessments having a percentage value of 40 percent or higher were discussed in the analysis.

Results

Table 2 presents the data from K-6 teachers, regarding the effectiveness of each reading assessment practice. In the first category labeled "not effective", there was no reading assessments identified by teachers as being not effective. Assessments viewed as being "somewhat effective" were, attitude surveys (40%) and metacognitive awareness assessments (50%). Overall, teachers perceived most of the assessments as having value and judged them as being "moderately effective" or "highly effective". The assessments rated to be the most "highly effective" were: *Concepts About Print* (41%), phonemic awareness assessments (51%), phonics assessments (46%), and rubric-based assessments (44%).

Comparisons regarding the perceptions of beginning teachers (5 years or less of experience) and those of experienced teachers (more than 5 years of experience) are reported in Table 3. Neither the beginning teachers nor intermediate teachers judged any of the reading assessments as being "not effective". In the "somewhat effective" category the beginning teachers identified, literacy portfolio assessments (42%), metacognitive awareness assessments (40%), study skills assessments (43%), and state mandated literacy tests (45%). In this same category, the experienced teachers rated interest surveys (43%), attitude surveys (46%), and metacognitive awareness assessments (60%) as "somewhat effective". The only assessment to be rated by both beginning and experienced teachers as "somewhat effective" was metacognitive awareness.

Beginning and experienced teachers rated most reading assessments as being "moderately effective" to "highly effective". The most "highly effective" assessments as perceived by beginning teachers were: phonemic awareness assessments (52%), informal reading inventories (40%), and literature response journals (40%). The most "highly effective" as viewed by the experienced teachers included; *Concepts About Print* (47%), auditory discrimination assessments (43%), phonemic awareness (52%), phonics assessments (59%), running records

(45%), sight word assessments (44%), narrative assessments (48%), conference approaches to assessment (40%), critical thinking

assessments (42%), rubric-based assessments (60%), and essay/short answer assessments (43%).

Table 4 displays the data comparing primary (K-3) and intermediate teachers' (4-6) views regarding the effectiveness of selected reading assessment practices. Primary and intermediate teachers did not identify any reading assessments as being "not effective". There were five assessments that were identified by primary teachers as being "somewhat effective"; auditory discrimination assessments (44%), attitude surveys (43%), metacognitive awareness assessments (47%), study skills assessments (48%), and standardized tests (47%). Similarly, there were five assessments identified in this category by the intermediate teachers; running

records (42%), literacy portfolio assessments (45%), metacognitive awareness assessments (50%), interview assessments (50%), and state mandated literacy tests (46%).

Consistent with the findings from the other teacher groups in this study, primary and the intermediate teachers judged most reading assessments to be "moderately effective" to "highly effective". The most "highly effective" assessments reported by the primary teachers were; *Concepts About Print* (44%), phonemic awareness assessments (59%), phonics assessments (50%), literature response journals (44%), and rubric-based assessments (43%). The most "highly effective" as viewed by the intermediate teachers were; phonics assessments (50%), running records (41%), informal reading inventories (50%), reading miscue analysis (55%), qualitative reading inventories (40%), and rubric-based assessments (59%).

Discussion

The following discussion is offered within the context of the following limitations. The sample size was relatively small (163 returned) with a response rate of 53 percent. Although that is not unexpected in a study of this nature, the resultant unknown type and

extent of response bias is still a limitation. Through the employment of a self-report questionnaire with Likert-type items, it is noted that the extent to which the answers are forthright or to which social desirability occurred is unknown. Furthermore, the *Reading Assessment Survey* instrument was compiled from an extensive process of a review of literature and suggestions and opinions from academics and practitioners. It was not necessarily derived from a robust literature base. Consequently, the 38 items may not represent an exhaustive list of assessments. The results indicate that the instrument has substantial utility, but its exploratory nature invites subsequent revision. Finally, there was no theory selected to undergird the selection of the assessments, rather an eclectic representation of assessments was selected.

Analyses of the data revealed some interesting findings. This study was based on the premise that what is determined about student growth is shaped in large measure by the tools that are used to examine the growth. Selected assessment tools and practices always represent the learner in a particular light; no assessment is neutral in its perspective (Johnston & Allington, 1991). The participating teachers globally perceived value in the majority of the assessment practices that were listed by the author of the study. Of particular note is that four assessment practices were judged as "highly effective" across the majority of categories represented by the teachers. These practices were identified as *Concepts About Print*, phonemic awareness assessments, phonics assessments, and rubric-based assessments.

Concepts About Print (Clay, 1985) Assessment. Assessing early reading literacy skills, serves the critical need of identifying and describing what students possess (or need to develop) as they begin their school reading practices. The *Concepts About Print* (Clay, 1985) assessment, as explained by Afflerbach (1998), provides information related to " students' understandings of story structure, print awareness, and sound-symbol correspondences" (p. 244). The K-6, experienced, and primary teachers, who participated in this study, rated the *Concepts about Print* (Clay, 1985) assessment as "highly effective". These findings support the pioneering work of Marie Clay, as well as other researchers, on the importance of emergent literacy assessment

(Clay, 1985; Ehri & Sweet, 1991; Morris, 1981; Reutzel, Ray, Oda, & Moore, 1989).

Phonemic Awareness Assessments. Assessments of phonemic awareness, as defined by Spector (1995), measure the student's "ability to analyze and synthesize the sound structure of words" (p.8). The findings from this study suggest that beginning, experienced, primary, and the total sample of K-6 teachers judged phonemic awareness assessment as "highly effective". This is consistent with the literature that reports unequivocal support for the critical role of phonemic awareness in learning to read (Adams, 1990; Blachman, 1997; Perfetti, Beck, Bell, & Hughes, 1987; Share, 1995; Spector, 1995; Stanovich, 1992). The research however, does not point the direction towards the best way to assess phonemic awareness. The connection between the development of phonemic awareness skills and how best to assess them in early readers is not evident. Pearson, De Stefano, and Garcia (1998) state that the process of connecting research on instruction with effective assessments is an immensely complex process and one that needs more careful and deliberate consideration.

Phonics Assessments. Phonics assessments require young learners to demonstrate knowledge of print/speech correspondence. The term phonics is defined by Beck (1998) as an "umbrella term for a variety of ways of 'showing' (be it explicit or implicit) young learners how the print-to-speech system works" (p. 21). The print-to-speech mapping system appears to be central to what children need to learn early in their formal school reading programs. This basic premise is supported by empirical research that notes the importance of phonics instruction (especially explicit instruction) as a means of facilitating early reading acquisition (Adams, 1990; Anderson, Hiebert, Scott, & Wilkinson 1985). The teachers in all categories in this study, with the exception of beginning teachers, judged phonics assessments as being "highly effective" for determining the degree to which students have obtained proficiency with phonics skills. Beginning teachers rated these assessments as "moderately effective" (48%). Similar to the research base on phonemic awareness, the literature provides a compelling research base for teaching the orthographic/phonological system to early

readers, however determining the best practices for assessing phonics proficiency needs further exploration.

Rubric-Based Assessments. Rubric-based assessments are intended to be clearly connected to the instructional process, and as Hakel (1998) describes, they are lists of clearly

stated criteria by which student performance will be evaluated. Therefore, the use of rubrics helps to focus the assessment process by informing students about what is expected of them from the onset of their work (Montgomery, 2001). These assessments generally support cognitive learning theory and the constructivist approach to knowledge acquisition, which call for assessment methods that ask students to construct a response instead of recognizing one from a list (Hakel, 1998; Montgomery, 2001). In this study, rubric-based assessments were rated "highly effective" by the K-6 respondents, the experienced, primary, and intermediate teachers. It is interesting to note that beginning teachers did not judge rubric-based assessments to be "highly effective". Beginning teachers usually have recent and substantial experiences with these concepts during their professional studies. Yet the findings of this study suggest that the degree to which knowledge transfers with beginning teachers to practice is uncertain.

Further differences about assessment practices are evident between beginning and experienced teachers. Experienced teachers rated assessments of phonics, word identification, sight-word analysis, self-evaluations, narrative, expository, basal reader, conference, critical thinking, rubric, and essay assessments as being "highly effective" whereas the beginning teachers rated them as "moderately effective". The significant difference where the rating by beginning teachers was "highly effective" compared to a rating of "moderately effective" by the experienced teachers, was on attitude surveys. It is difficult to establish whether these judgements represent actual differences in theoretical underpinnings of the reading process or have been garnered from experience. Further, the data show that the experienced teachers were the only teacher group to judge critical thinking assessments, conference style assessments, and essay/short answer assessments as "highly effective".

At a time when there is strong emphasis in the field on reading as a "process", it was surprising to find that teachers consistently judged metacognitive awareness assessments as "somewhat effective". Baker and Brown (1984) define metacognitive awareness as the "knowledge one has over his or her own thinking and learning, including reading" (p. 353). Assessment of metacognitive awareness is generally done through interviews or questionnaires. Since metacognitive awareness is generally viewed as a theoretical term, perhaps teachers were unfamiliar with the term or did not fully understand the underlying concepts. If terms such as *prior knowledge*, *predicting*, *monitoring*, etc. had been substituted for metacognitive awareness, teachers' perceptions and their judgements may have been different.

On the matter of standardized tests, the data bear out the point that teachers identified standardized testing as being "somewhat effective". Recognizing that standardized tests are generally insensitive to what is educationally important, the results of this study supports Stake's (1979) long-standing argument that it is not necessary to rule out standardized tests; rather, seek to find ways to properly evaluate, prioritize, and monitor the roles of standardized testing.

Putting into practice what is learned from the practice of others is not an end in itself, nor does it guarantee effective teaching. However assessments that are identified by practicing teachers and judged to be effective, create a context for the development of a new knowledge base about practice in the field.

Conclusions

This study began with the question, "What do elementary teachers think are the most effective reading assessments to determine reading proficiency and growth, and to guide future instruction?" The results lead to the conclusion that teachers perceived all reading assessments as having some degree of merit. There were no assessments that were identified as being "not effective" and the majority of reading assessment practices were perceived to be "moderately" to "highly" effective.

The challenge of shifting the emphasis and responsibility for assessment towards the teacher, and even more significantly towards the reader, will take courage and imagination to undertake and to argue for. This kind of assessment, in which professional judgement is central, and which is to have public standing, is important because it offers the possibility of making better use of assessment information to guide instruction and assist the development of individuals.

It is imperative that society acknowledges the importance of teachers' perspectives as being central to assessment decisions. It is also important to develop a wide body of knowledge about teachers' choices of assessment practices and to put in place mechanisms for sharing the information. This sharing could lead to groups of teachers agreeing to implement such assessment tasks over a given period as a way of developing consensus in the assessment of students' reading performance. An agreed upon body of knowledge is essential to a profession. Although an enormous literature base exists on various aspects of reading, this is not so for research about curriculum-embedded reading assessment.

Considerable national attention has focused on reading assessment and its many attendant issues. Without an appreciation and understanding of teachers' beliefs and practices regarding literacy assessments, it is difficult to address the questions that are raised. Therefore, developing a knowledge base about effective literacy assessment practices as identified by teachers, is essential in order to improve assessment practices for teachers and students alike.

Implications for Future Research

This study suggests a promising line of conceptual as well as practical research. Successful assessment of learning to read is not only a matter of choosing the appropriate tools or practices, but it also includes teachers' knowledge of the reading process, knowledge of assessment, knowing what to assess, and the importance of insight and consistency in the process. In this study teachers were not asked to articulate a clear conception of what is to be assessed nor were they asked to determine if these aims are the best ones to strive towards. Further studies are needed to examine the conditions that foster effective

assessment and the correlation between reading assessment and reading achievement. These topics are critical to the process of further exploration regarding reading assessment.

Table 2. Effectiveness of Reading Assessment Practices

Reading Assessment Effectiveness	Percent Response of Opinions of			
	Not	**Somewhat**	**Moderately**	**Highly**
Concepts About Print	8	20	31	41
Auditory Discrimination	0	17	49	34
Phonemic Awareness	0	06	43	51
Phonics	0	12	42	46
Running Records	0	21	43	36
Language	2	27	54	17
Cognitive	2	25	65	08
Word Identification	6	24	44	26
Sight Word	4	17	46	33
Interest Surveys	2	34	49	15
Attitude Surveys	4	40	40	16
Literacy Portfolio	2	34	52	12
Performance-Based	0	24	62	14
Project-Based	3	33	54	10
Student Self-Evaluations	9	32	36	23
Narrative Reading	2	26	40	32
Expository Reading	2	18	53	27
Metacognitive Awareness	7	50	37	06
Study Skills	0	33	50	17
Cloze Procedure	9	30	46	15
Informal Reading Inventories	0	14	47	39
Reading Miscue Analysis	2	15	50	33
Qualitative Reading Inventory	8	20	44	28
Basal Reader	6	27	50	17
Literature Response Journals	2	20	39	39
Literature Group Discussion	5	17	45	33
Conference-Style	7	27	38	28
Interview	6	28	39	27
Standardized Tests	9	32	43	16
State Mandated Literacy	10	37	48	05
Critical Thinking	2	24	48	26
Objective Test	2	30	56	12
Authentic	2	27	41	30
Rubric-Based	0	12	44	44
Essay/Short Answer	0	24	51	25

Emergent Literacy	2	26	50	22
Listening Comprehension	0	14	59	27
Fluency	2	20	56	22

Table 3. Responses by Years of Experience

Reading Assessment	Percent Response of Opinions of Effectiveness							
	Not		Somewhat		Moderately		Highly	
	B	E	B	E	B	E	B	E
Concepts About Print	14	0	27	12	23	41	36	47
Auditory Discrimination	0	0	22	13	52	44	26	43
Phonemic Awareness	0	0	8	4	40	44	52	52
Phonics	0	0	16	8	48	33	36	59
Running Records	0	0	27	13	46	42	27	45
Language	4	0	28	23	56	55	12	22
Cognitive	4	0	24	23	64	68	8	9
Word Identification	11	0	30	19	44	46	15	35
Sight Word	8	0	15	19	58	37	19	44
Interest Surveys	4	0	25	46	54	44	17	13
Attitude Surveys	4	4	35	46	35	46	26	4
Literacy Portfolio	0	4	42	25	47	58	11	13
Performance-Based	0	0	18	27	73	55	9	18
Project-Based	0	6	27	38	64	44	9	12
Student Self-Evaluations	9	5	27	38	55	19	9	38
Narrative Reading	4	0	33	17	46	35	17	48
Expository Reading	4	0	21	14	58	48	17	38
Metacognitive Awareness	13	0	40	60	40	33	7	7
Study Skills	0	0	43	21	44	58	13	21
Cloze Procedure	8	9	25	33	54	38	13	20
Informal Reading Inventories	0	0	20	9	40	57	40	34
Reading Miscue Analysis	4	0	21	9	46	52	29	39
Qualitative Reading Inventory	10	6	15	22	45	44	30	28
Basal Reader	8	4	24	27	64	39	4	30
Literature Response Journals	4	0	8	33	48	29	40	38
Literature Group Discussion	9	0	9	29	52	35	30	36
Conference-Style	15	0	25	30	45	30	15	40
Interview	12	0	29	26	35	42	24	32
Standardized Tests	12	7	33	32	38	46	17	15
State Mandated Literacy Tests	5	16	45	32	45	47	5	5
Critical Thinking	4	0	18	26	64	32	14	42
Objective Test	4	0	30	26	57	58	9	16
Authentic	0	5	26	30	48	30	26	35
Rubric-Based	0	0	11	12	58	28	31	60
Essay/Short Answer	0	0	13	33	78	24	9	43
Emergent Literacy	4	0	20	30	60	40	16	30
Listening Comprehension	0	0	7	17	63	57	30	26
Fluency	0	4	23	13	58	57	19	26

B = Beginning Teachers (5 years or less); E = Experienced Teachers (More than 5 years)

Table 4. Responses by Teaching Level (i.e. Primary/Intermediate)

Reading Assessment	Percent Response of Opinions of Effectiveness							
	Not		Somewhat		Moderately		Highly	
	P	I	P	I	P	I	P	I
Concepts About Print	4	25	17	12	35	50	44	13
Auditory Discrimination	15	0	44	30	41	40	0	30
Phonemic Awareness	0	0	0	25	41	42	59	33
Phonics	0	0	7	25	43	25	50	50
Running Records	0	0	11	42	52	17	37	41
Language	0	8	26	31	59	46	15	15
Cognitive	4	0	26	17	63	75	7	8
Word Identification	7	0	28	29	52	36	13	35
Sight Word	3	0	20	21	53	43	24	36
Interest Surveys	0	0	33	38	50	54	17	8
Attitude Surveys	0	8	43	38	48	31	9	23
Literacy Portfolio	0	9	33	45	54	27	13	19
Performance-Based	0	0	22	23	61	61	17	16
Project-Based	0	8	35	31	59	46	6	15
Student Self-Evaluations	4	8	35	33	39	33	22	26
Narrative Reading	4	0	24	23	44	46	28	31
Expository Reading	4	0	17	15	54	62	25	23
Metacognitive Awareness	0	12	47	50	47	25	6	13
Study Skills	0	0	48	15	43	54	9	31
Cloze Procedure	0	8	36	25	56	33	8	34
Informal Reading Inventories	0	0	8	28	60	22	32	50
Reading Miscue Analysis	0	9	15	18	59	18	26	55
Qualitative Reading Inventory	0	10	16	30	63	20	21	40
Basal Reader	7	7	31	21	45	57	17	15
Literature Response Journals	0	8	17	31	39	31	44	30
Literature Group Discussion	0	8	21	15	47	46	32	31
Conference-Style	5	8	25	33	40	42	30	17
Interview	0	8	17	50	56	25	27	17
Standardized Tests	10	7	47	14	30	57	13	22
State Mandated Literacy Tests	10	0	35	46	55	46	0	8
Critical Thinking	0	8	25	15	55	46	20	31
Objective Test	0	8	26	8	59	67	5	17
Authentic	0	0	32	23	32	54	36	23
Rubric-Based	0	0	11	7	46	36	43	57
Essay/Short Answer	0	0	19	29	57	36	24	35
Emergent Literacy	0	9	20	36	52	46	28	9
Listening Comprehension	0	0	11	14	65	57	24	29

Fluency	0	0	24	21	64	43	12	36

P=Primary Teacher (K-3); I=Intermediate Teachers (4-6).

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Brain Surfing: A Strategy for Making Cross-Curricular Connections

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Abstract

Many educators believe that teaching an integrated curriculum should help students develop cross-curricular connections. Often, however, students do not make connections between subject areas even when they are in classrooms with integrated units. This article presents a strategy called Brain Surfing that teachers can use to facilitate connections to subject areas during classroom discussions.

Jodi, a third-grade teacher in a large midwestern city, was frustrated. She had been integrating subject areas for years, but her students seemed to resist using their knowledge from different subjects in discussions about literature. She wondered why. Jodi knew that integrated instruction can lead to a more seamless curriculum and better learning (Beane, 1995) and which students learn concepts more effectively when instruction is integrated (Lipson, Valencia, Wixon, & Peters, 1993). However, Jodi was questioning the effectiveness of an integrated curriculum in helping her students make intertextual connections during discussions about literature. It just was not happening.

Because Jodi was a proponent of an integrated curriculum, she believed that her third-grade students could make cross-curricular connections. She believed with Shanahan (1997) that "integrated instruction works best when it makes children conscious of the

connections being made" (p. 18). So Jodi decided that she would look for better ways to encourage her students to make connections between the subjects, especially during literature discussions. To do this, Jodi asked me, a university professor, to help her conduct a study that would critically analyze her discussions about literature. I was eager to assist since I was in the process of working on strategies to help students make intertextual connections.

Jodi and I developed a research study using a formative experiment design. A formative experiment is neither a quantitative study nor a qualitative study. Instead, in a formative experiment an intervention is introduced and described. The intervention, then, is modified in response to data analysis (Jacobs, 1992; Reinking & Watkins, 1998). We thought that a formative experiment design would help us analyze the students' discussions about literature and yet would provide the flexibility to develop an instructional strategy.

We began the study with the question: To what extent can teacher questioning influence the cross-curricular intertextual references of students during discussions about literature? I introduced Jodi to a strategy I had developed, and she used the strategy to develop a questioning framework for discussions about literature. Jodi led the discussions while another teacher and I took field notes and audio taped and videotaped the sessions. After each session was concluded, the audiotape was transcribed for data analysis. Message units analyzed the data, and the message units were categorized using the procedures of inspection, categorization, and interpretation (Bogdan & Biklen, 1992).

After the data were coded, the three of us met to discuss our perceptions of the sessions and to reread the transcriptions. From those meetings, we discussed ways to change the intervention so that Jodi's students would make even more intertextual links (Lenski, in press). We conducted a total of seven sessions that began in October of 1997 and ended in March 1998.

The Evolution of Brain Surfing

We began our study on a warm Thursday morning in October. The students in Jodi's class had read *The Courage of Sarah Noble*

(Dalgiliesh, 1954) that week, and Jodi was going to use that story for the discussion session. Jodi called her third-graders to a colorful rug at the back on the room. Jodi sat in a rocking chair and proceeded to ask the students about the story.

As the discussion leader, Jodi developed questioning prompts that we hoped would help students make rich intertextual connections, especially to school subjects. The questioning prompts Jodi used were based on the Directed Reading-Connecting Activity (DR-CA), a questioning strategy designed to promote intertextual connections (Lenski, 1999). The DR-CA questioning strategy was designed to elicit intertextual connections from students. The DR-CA was based on Hartman's (1995) work that suggests that comprehension can be deepened through three types of intertextual links: intratextual links (links within a text), intertextual links (links across texts), and extratextual links (links beyond the text). Using DR-CA questioning, Jodi begins with questions about the text and then moves to questions across texts and questions beyond the text. The DR-CA can be considered a questioning framework that teachers adapt to individual texts. The DR-CA questioning prompts follow: How did this event in the story relate to another event? How did an event in the story remind you of another story? How is this story like your life? How did an event in the story make you think of something else you learned?

The discussion that ensued was rich in connections, primarily to the students' lives. After coding the transcription of the first discussion, we found that 47 percent of the utterances were coded as intertextual references. However, in only three instances did students refer to connections to class learning. Jodi made no connections at all to other school subjects.

After we read and coded the transcripts from the first session, we discussed Jodi's interpretation of the story and asked her how it related to the content subjects that she taught. There we had a revelation. Jodi had not thought of any specific connections between the text and the other subjects. She had asked students how they could connect the text to subjects, but that seemed to be insufficient. Jodi needed to have specific cross-curricular questioning prompts. Therefore, we decided to change the DR-CA strategy to make it specific to the subjects that Jodi taught.

We did this by developing a mind map to help Jodi, and ultimately her students, understand the possibilities of connections that could exist within their knowledge structures. Because Jodi would be actively looking for connections in different knowledge areas in her brain, Jodi dubbed the strategy Brain Surfing.

The Brain Surfing strategy that we developed is an intertextual cognitive strategy that helps readers integrate subject matter and expand intertextual thinking. Brain Surfing is a metaphor for actively searching for ways to connect knowledge that is stored in different areas in the brain. Like surfing the Internet, when students surf through knowledge domains, they locate knowledge that they can then combine in various ways. When actively applied, Brain Surfing is an individual cognitive process. However, Brain Surfing is more than a mind map for thinking. Brain Surfing is a discussion strategy that teachers can use to help their students experience different combinations of knowledge.

Brain Surfing as an Intertextual Cognitive Strategy

As students read, they constantly construct meanings from text. The meanings that readers create are intertextual; they are composed of the past and future texts in the reader's life (Bakhtin, 1981). Texts that are stored in a reader's memory can be constructed from print or other visual or auditory sources (IRA/NCTE, 1996). Intertextuality, therefore, is a cognitive strategy that enables students to construct meaning from the text that is currently being read and with other texts in the reader's experience.

The intertextual links that readers make are idiosyncratic and unique. A reader can construct meaning from a text in different ways, depending on the reader's purposes (Mackey, 1997). For example, a student who is reading *The Underground Railroad* (Bail, 1995) for pleasure would most likely read quickly gathering ideas and facts. The same student reading the same book for a research report would read more slowly and take note of the facts embedded in the story. With both types of reading, however, the student reading is changed. The knowledge gained from the current reading is stored in memory to be used in future constructions of meaning (Rosenblatt, 1978).

Knowledge is a multi-faceted prism. Each reflecting surface is a small piece of what is possible. Although brain research is in its infancy and applications to teaching are not fully tested, brain research suggests that information is stored in different areas of the brain that makes the transfer of knowledge difficult (Sprenger, 1999). Certain cognitive strategies, however, can increase the likelihood of transfer of knowledge (Jensen, 1995). Brain Surfing may be one of those strategies that can increase cognitive flexibility.

Brain Surfing as a Discussion Strategy

Discussions about literature help teachers and students deepen their understanding of the text and the ways in which the story connects to their lives. During discussions, participants offer their interpretations of the text. As they discuss the story, participants listen to alternative perspectives and decide whether to abandon, adapt, or confirm their initial thinking. The dialogue that takes place, then, helps students develop their individual constructions of meaning about the story (Almasi, 1995).

Discussions about literature are pervasive in the culture of postmodern classrooms. Interpreting texts, however, is an acquired social practice (Gee, 1988). Students are socialized to construct meaning in ways that have been accepted in the school culture. One tradition in literature discussions in schools is to construct meaning from a single text (Hartman, 1995) rather than from multiple texts. As a result, students tend to resist making cross-curricular connections. However, instructional activities can influence students' ability to create multi-dimensional links (Beach, Appleman, & Dorsey, 1990).

As students and teachers discuss texts and are encouraged to reach for a variety of intertextual links, they create more possibilities for new constructions of meanings (Bakhtin, 1981; Vygotsky, 1978). Making new intertextaul links is especially powerful when students and teachers have shared experiences, such as in school learning. For example, Jodi's third-grade class studied bats in one integrated unit. However, each student experienced the subject differently, based on his or her own background knowledge. Jodi, too, experienced the subject in a different way from her students. The shared, yet different, perspectives

on bats were the impetus for some interesting discussions that helped students make more cross-curricular connections and possibly to increase their overall learning.

Mapping the Territory

After Jodi and I developed Brain Surfing, we held a brainstorming session to make connections to the subjects Jodi taught in her classes. Jodi's students had recently read *Molly's Pilgrim* (Cohen, 1983), so we based the lesson on that story. Jodi and I reviewed her list of integrated units and thought about ways the units could connect with *Molly's Pilgrim*. Our final product took the shape of a graphic organizer with questions in different subject areas (See Figure 1).

Figure 1. Brain Surfing Connections to *Molly's Pilgrim*

Social Studies

1. What do we know about holidays that tell us about the setting of the story?
2. You've studied about communities. What size town do you think Molly lived in?
3. What is your clue in the story?

Science

1. With what you know about bats, would Molly have heard of bats before coming to America?
2. What information about bats would have been familiar or unfamiliar to Molly?

Math

1. When we look at Molly's day, what connections to math can you make?
2. When do you think social studies class was for Molly?
3. What time do you think Molly did her homework?
4. Was that A.M. or P.M.?

Language

1. Molly had trouble reading the word "Thanksgiving." What might she have done to figure out the word?
2. Could Jodi have done anything before giving this assignment to help Molly and protect her from the mistake she made?

Music, Art, Physical Education

You know about the country of Russia. How would you design a dress for Molly's pilgrim?

Other Stories

1. We just read the book, *The Statute of Liberty*. With all you learned in that book, do you think the Statute of Liberty would have been an important part of Molly's life?

2. Molly's mother said they could not return to Russia. Knowing what we read in *Since 1920*, why may it be hard to go back to Russia?

Jodi began this discussion session telling her students about Brain Surfing. She told her students that she had actively searched her brain for connections to the subjects that they had learned in class. She then encouraged her third-graders to make their own connections to subjects they had learned in school. To facilitate the discussion, Jodi created a bulletin board with subject areas headings. With each connection students made, she had them attach a space figure to that area.

The second discussion session using Brain Surfing was rich in intertextual links to other subject areas, increasing to 25 percent of the connections Jodi made and 8 percent of the students' links. Jodi was happy with the discussion and intended to model Brain Surfing during the third session.

Students' Self-Questioning

Jodi modeled Brain Surfing for the third session. After this discussion session, we met again and talked about whether students could create their own cross-curricular questions. We knew that even young children can be taught to ask questions (van der Meij, 1993), and we believed that Jodi's third-graders could Brain Surf on their own. Therefore, we asked the students to generate questions for the story *Justin and the best biscuits in the world* (Mildren, 1986). Figure 2 has a sampling of the questions the students generated.

Using Brain Surfing in Discussions

From these sessions using Brain Surfing we found that students were making more cross-curricular connections. As we read through the transcriptions of the discussions, we found that Jodi used Brain Surfing as an organizational framework but that she also used additional questioning strategies. The additional questioning strategies that emerged from the data were not preplanned. Instead, Jodi intuitively used different strategies for each of the seven sessions based on her knowledge of the text, her beliefs about the students' knowledge, and her perceptions about the needs of the students. Six primary questioning strategies used in conjunction with Brain Surfing were identified: casting a wide net, testing the waters, developing a concept, clarifying complex issues, living the story, and stretching ideas.

Casting a wide net. One of the questioning strategies that Jodi found useful was to develop a number of questions that she felt captured her interpretation of the story. Jodi developed intertextual questions that "cast a wide net." As Jodi asked a wide variety of questions, she was able to identify additional intertextual references that the students made, areas of interest to the students, and areas for future discussions. Jodi wrote that the variety of questions helped her "expand my interpretations of the children's responses" (teacher's memo October 28).

As Jodi created an overview of the story by her questions, she was able to determine the students' construction of meaning. In session 2, for example, Jodi asked a variety of questions. One question was, "What time of day do you think it was when her mother made the pilgrim for Molly?" Several of the students and Jodi agreed that the time was 8:30 P.M. Periodically throughout the session, a few students returned to this question and tried to convince Jodi that another perspective fit the facts of the story. The conversation that ensued was filled with references to the text, to the students' lives, and to multi-dimensional references. Furthermore, the students persisted in trying to develop their own meaning to fit the story. One student said, "It couldn't be 8:30 because her mom said go out and play and it would be dark at 8:30." After a lengthy discussion, Jodi stated, "I had pictured it later at night in my head when I read it, but you are right."

In this case, Jodi had constructed meaning from the text using her background knowledge. During the discussion, Jodi told the students, "When you read a book each of you picture the time differently, don't you, because of your background." However, the knowledge that Jodi constructed was at odds with some of the students' construction of meaning. Because Jodi cast a wide net of questions, she was able to identify an interpretation she had that differed from her students' interpretation of the text. After probing about the issue, Jodi realized that the students were correct, and she modified her own interpretation.

Figure 2. Questions Generated by Third-grade Students: Justin and the Best Biscuits in the World

Social Studies

1. Thinking about what we've learned in social studies, how was Justin's community different from his grandfather's?

2. From looking at the pictures of Grandpa's house in our story, what type of home do you think he lived in?

3. With what you know about our past, why do you think Justin's grandpa lived in an older house?

4. The story tells us that Justin's grandpa was a slave when he was a boy. What have we learned that would have allowed us to guess that if the story hadn't told us?

5. You know a lot about communities. Since Justin was from the city, do you think he should have known how to do the chores his grandfather gave him?

6. We have learned a lot about ancestors. How would Tia Rose's ancestors be different from Justin's?

7. What part of the word does Justin's grandpa live in? What hemisphere?

8. Justin's ancestors traveled from Tennessee to Missouri. What states did they travel through? What was the countryside like? If you don't know, where could you find out?

Science

1. From what we see in our story, what kind of surface water was on Grandpa's farm?

2. Think about our hedgehog, Reggie. Would the animals Justin took care of be more or less work that Reggie is?

Math

1. What math skills do you think Grandpa and Justin used when they made biscuits?

2. You have learned a lot about time. Tell some things that happened in the story and tell me if it is A.M. or P.M.

3. Estimate whether more people thought Justin could do things right or that he couldn't.

Language

1. With what you know about building fires, do you think Justin's fuel was unusual? How can you figure out what the word *unusual* means?

2. Was the house Justin's grandpa lived in big or small? Is your answer a fact or an opinion?

3. Think about when you have been alone outside. Why would Justin think the winds were whispering in the trees?

Music, Art, Internal to story

1. You read that Justin's sisters said he couldn't do very much. How does it make you feel when you read that?

2. Justin's grandpa lives out in the open. If he didn't know how to do any work, what would happen to him?

3. Pretend you don't know where this story takes place. You know there are diamondback rattlers here. What book would you use to find out where the setting might be?

4. Why did Grandpa say, "Want to see how a man makes a bed?"

5. How would Justin describe "women's work" and "men's work"?

Other Stories

Before winter break we read a story called *A Gift for Tia Rosa.* How are these two stories similar?

Testing the waters. A second questioning strategy that we identified was termed "testing the waters." Occasionally, Jodi tried to determine whether the students understood a topic. Jodi asked several intertextual questions just to see what the students would say. If students showed little interest in the subject or if they had no questions, she moved on. If students had opinions to share, she allowed time to probe more deeply. If the students' responses indicated that they needed more information, she structured the questions to help students understand what they did not know.

In session 4, for example, Jodi did not know if the students were familiar with the kind of knitting that Tia Rosa was doing in the story *A Gift for Tia Rosa* (Taha, 1986). Therefore, she asked a question that related to another subject (math) that would let her know whether students understood the term "knitting." Jodi asked the following question, "What would have happened if Carmela forgot part of her pattern when she was knitting?" Then Jodi asked the students whether they were familiar with knitting needles. They did not know what a knitting needle was, so Jodi held a lively discussion probing the students' knowledge related to knitting. She asked questions about their personal experiences, things they had read or seen on TV, and further questions about the story that could shed light on students' understanding. By "testing the waters," Jodi was able to determine whether to use additional intertextual references to add to students' knowledge.

Developing a concept. During at least one session, Jodi identified a concept essential to the meaning of the story. At times, students do not understand a central concept of a story that hinders their construction of meaning. To develop a concept, Jodi used intertextual references to build on students' knowledge, and then she incorporated new information, and scaffold students' learning so that they had a clearer understanding of the central concept of the story.

In session 3, Jodi wanted students to understand that being blind did not mean total dependence on others. From previous class discussions, Jodi did not think that the students had a very good understanding of the concept. Therefore, she asked the following question, "Can blind people fix their own dinners?" Students answered that they could not. Jodi referred the students to the story, *Through Grandpa's Eyes* (MacLachlen, 1980), and asked what students read in the story that would answer the question. However, the students used a different type of connection to form their conclusion. One student said, "It reminded me of that home mission where they deliver all the food to people who can't cook who are old." Jodi then used the student's reference to ask a second question. "We're making cards for Home Sweet Home Mission and we deliver them to senior citizens. Is there a difference between being a senior citizen and being blind?" From this question, Jodi found out that these third graders did not understand the concepts of "blind" and "senior citizen." For example, Jodi stated, "If I tell you that I'm going to be a senior citizen in a few years, will I be different from being blind?" The students said she would not. Another example is a student who asked, "Why don't they (blind people) just get glasses?" Jodi continued to develop the concepts throughout the session referring to the text, to students' experiences, and to other texts.

Clarifying complex issues. At times complex issues surfaced during discussions. Interestingly, some of the issues Jodi thought were simple turned out to be difficult for students. As students connect knowledge in new ways, the cognitive restructuring that takes place can lead to misconceptions. For example, in session 2, Jodi asked, "What is it we know about holidays that will tell us a little bit about the setting of the story." Students discussed the idea that the celebration of Thanksgiving (as it was described in the story) is an American holiday. However, the students has also learned in social studies that pilgrims were one of the immigrant groups that came to North America and that the pilgrims celebrated the first Thanksgiving. This led one student to ask, "Doesn't England celebrate something like that because someone in that country found the United States, so don't they celebrate something similar?" This question led to a number of additional questions such as, "Does Hawaii celebrate Thanksgiving?" and "Do the people who move from American still celebrate Thanksgiving?"

The discussion then turned to the importance of the Statue of Liberty to immigrant groups. The students, however, had difficulty understanding why immigrants would see the Statue of Liberty as they came to the United States. One student asked, "If they [immigrants] came from Russia to Florida, would they pass the Statue of Liberty?" The students in this class, who were much more familiar with airplane travel than travel by ship, used their background to make sense of the story. Jodi, however, was able to use the discussion to clarify the issues that were complex for students.

Living the story. Students can use a variety of intertextual links to put themselves in the story. One questioning strategy that Jodi used was termed "living the story." For this strategy, Jodi had students call on past experiences and their knowledge of the world to enter into the story they were reading. For example, in session 1, Jodi asked, "If you were in the woods with Sarah and her father, what type of things would you be frightened of?" Students answered with a variety of ideas. A short interaction between Jodi and one student follows:

Student: Sounds, because I'd think someone was following us or watching us.

Teacher: Has that happened to you before?

Student: When were camping out at Yogi Bear Park, we kept hearing sounds and I had to keep telling myself it was OK.

Stretching ideas. A final questioning strategy Jodi used was "stretching ideas." Part of reading is stretching ideas to think abstractly and differently. Understanding and imagining are part of the experience of reading literature. As students read, they not only construct meaning from understanding the story, but in thinking beyond the plot. Jodi in this study asked questions to encourage students to stretch ideas as they constructed meaning from text. Students used their personal experience and knowledge outside the text to stretch their ideas as in the following example:

Teacher: What color would you color courage?

Student: Red, like the flag because it's like the courage of the people of the army and the blood that was spilled.

Student: Brown, that's the color of my dog. It's not a real dog, a stuffed animal, and I was embarrassed to ask for it.

Versatile Decision-Making

Of the six questioning strategies that Jodi used in this study, some were planned by Jodi before the discussion, but most were used in response to the discussion. As Jodi led the discussion, she was consciously trying to encourage students to use intertextual references to construct meaning. She wrote discussion questions in advance and believed that her preparation allowed her to respond to student needs during the discussion. Jodi wrote, "Having them (questions) written down ahead of time allowed me to relax with the children and also helped me know that I was ready with the next direction if we drifted too far off shore." (Teacher's memo October 28)

As Jodi responded to students' needs, she made decisions about whether to pursue her original path or to journey down paths set by students. As Jodi said in one session, "I see a lot of answers out there." One of the decisions Jodi made was whether to follow up on off-subject responses. Off-subject responses can, at times, indicate students' construction of meaning. For example, Jodi queried in a memo, "Does it matter that they go off in other directions? They enjoy it and doesn't it just lead to connections that I, as a teacher, wouldn't have thought of?" (Teacher's memo October 28) Jodi continued, "Some of the things the children brought up, I tended to pull them away from. Later, as I thought about how wild the connections were, I realized that they were really necessary for the children to understand." (Teacher's memo October 28) Jodi's versatile decision-making allowed her to continue to encourage intertextual links yet blend her purposes with student responses.

Conclusions

Students can make connections from literature to their school subjects. One way to facilitate cross-curricular connections is through the use of Brain Surfing. Brain Surfing is an organizational tool that

integrates topical knowledge with literature-based knowledge. In this study, the third-grade students made more cross-curricular connections when Jodi had prepared the discussion using the Brain Surfing mind map. The third-grade students were also able to use the Brain Surfing organizer to ask themselves questions about the story that connected to school subjects. The Brain Surfing framework was used in a variety of ways to elicit more connections. These questioning strategies, along with the Brain Surfing framework, became part of Jodi's teaching routine. As the year progressed, Jodi began noticing that her students consistently made cross-curricular connections in class discussions. Through using the strategy Brain Surfing, Jodi found that her integrated teaching was becoming integrated in her students' minds.

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Early Language Learning With and Without Music

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Abstract

Eighty students who spoke Spanish at home were randomly assigned one of four teachers. Two of the teachers used a great deal of music in their classrooms while the other two did not. The students and their teachers remained together for two years – kindergarten and first grade. Literacy achievement data suggests that music had a positive effect on oral language and reading scores. Differences focused on the use of music for morning opening, music and signing while working with words, and the use of music during listening stations.

Method

Participants

The researcher purposely selected the school. This school has been a professional development school for three years thus allowing the researcher significant access to teachers, students, and classrooms. The school consisted of over 1450 elementary age students in grades K-5 and operated on a year-round calendar. All students in this urban elementary school qualified for free or reduced lunch and 45 percent of the students participated in bilingual education programs.

Of the 160 kindergarten students who enrolled in bilingual classes, 80 students were randomly selected for participation in this study. All of the students spoke Spanish at home and qualified for free lunch. Each student was randomly assigned to one of four classroom teachers. Each of these teachers was credentialed and had tenure with the school district. None of them played an instrument at home, but each had taken a three-unit music education class as part of her preservice credential program. Each teacher maintained her students for two full years through kindergarten and first grade. Each of the four teachers implemented the three-hour literacy block consistent with the district framework. The literacy block was divided into read aloud, guided reading, writing, independent reading, and working with words. Two of the teachers used music as an instructional material during the literacy block while the other two did not. The two who did not use music did not have CD players in their classrooms and used the tape recorder for playing books on tape. All four teachers planned together and aligned their curriculum so that they were teaching the same thematic units at the same time.

Data Sources

Reading achievement assessments. Each of the 80 students was assessed at the beginning of kindergarten (September) and again toward the end of first grade (April). Thus, 19 months elapsed between the initial and final assessments. Students were given the Student Oral Language Observation Matrix [SOLOM] (California Department of

Education, 1981), the Yopp-Singer Test of Phoneme Segmentation (Yopp, 1995),
and the Developmental Reading Assessment [DRA] (Beaver, 1997). The SOLOM assessment provides a numeric score based on oral language proficiency and is judged by the teacher. The Yopp-Singer test also provides a numeric score based on the number of correct phoneme segmentation activities the student correctly produces. Finally, the DRA is a criterion-referenced assessment in which students re-tell information from the text after reading it. Each of the four teachers participated in district-level training focused on implementing each of these assessments.

Classroom observations. Classroom observations were conducted in two of the classes each week, one class that used music and one that did not. Thus, each classroom was observed twice per month over the 19 months of the study. The observations were unannounced and occurred during the literacy block of time and typically lasted between 60 and 100 minutes. Field note forms (LeCompte & Preissle, 1993) were used to create a record of classroom events and conversations.

Analysis

Reading achievement scores were quantified and compared using t-tests and chi-square tests. Observational data were categorized using a constant comparative method (Bogdan & Biklen, 1992). Three areas of difference were identified following multiple reviews of the data (LeCompte & Preissle, 1993) including the morning opening, the ways children completed their word study, and the use of listening stations. Each of these categories was identified and samples from the observational data that typified the category were identified. In addition, direct quotes were obtained during the observations.

The four teachers also participated in a member check to review the draft findings (Creswell, 1997). A copy of the written "findings" section was provided to each of the teachers and a meeting was scheduled to discuss these findings. The member check discussion lasted approximately 40 minutes and was tape-recorded. No significant changes were made to the findings as a result of the member check, but additional quotes from the teachers were obtained. The teachers worked

closely together and understood the purpose of the study and that their teaching philosophies were different.

Findings

The present study focused on four classrooms at the same elementary school. Students in these classrooms were randomly assigned their class in kindergarten and the students remained with the same teachers for two years. Each class had 20 students, all of whom qualified for free and/or reduced lunch and all of who spoke Spanish at home. None of the 80 students demonstrated oral fluency in English at the initiation of the study and no significant differences in SOLOM, Yopp-Singer, or DRA were identified. At the end of the 19 months, 71 of the 80 (89%) students remained at the school.

In terms of the student's oral language development, students with experience with music averaged 13.2 on SOLOM compared with 8.4 for students not exposed to music at school ($t=5.5$, $p<.001$). Similarly, students performance on the Yopp-Singer Test of Phoenemic Segmentation seem to improve based on music in the classroom ($t=2.1$, $p<.04$) (see Table 1). In terms of the DRA, ten students in the music rich classroom read at grade level in English and Spanish whereas only one student in the non-music classroom read at grade level in English and Spanish ($X^2=6.7$, $p<.03$). It is clear that the students in the two classes that used music as part of the language arts curriculum outperformed students in the two classes that did not. Thus, the question remains, what did these two teachers who used music in their classrooms do? How did they structure their language arts time in such a way that it resulted in significant gains in early literacy achievement?

Classroom Similarities

Much of the time these four teachers engaged their students in similar lessons and activities. For example, during a unit on farms, they all read aloud the same books each day; they added farm related books to their classroom libraries; they took a field trip together to a farm, and they all invited their students to create a diorama of life on the farm. Despite their differences in the use of music and song texts, each of these four teachers implemented a three-hour literacy block and divided this

time into read aloud, guided reading, writing, independent reading, and working with words. For the most part, the print materials they used were the same. These four teachers met with the rest of their grade level team weekly (about 16 teachers in all) to plan curriculum. While there were clearly several similarities, there were also a number of differences revealed during the classroom observations.

Table 1. Summary of Post-Test Findings Using t-test

	SOLOM Mean (SD)	Yopp-Singer Mean (SD)
Non-Music	8.4 (2.45)	17.1
Music	13.2 (4.93)*	19.5**

*p<.001
**p<.04

Classroom Difference #1: Morning Opening

One of the differences between the classes was the way in which teachers started their day. In two of the classrooms, the day started with a song. During classroom observations, students sang every morning and the songs typically focused on self-esteem, pride, and feeling good. During kindergarten, students seemed to like to sing morning songs in Spanish such as De Colores and En Las Pulgas De San Jose. In first grade, students seemed to especially like the songs by Linda Lungren (1996) for their opening. In particular, they liked to sing I Feel Good About Myself, I Can Dream Dreams, and Only The Best. The two teachers who incorporated music into their classrooms consistently allowed the student leader for the day to select the morning song. In the control classrooms, the morning typically began with a review of the calendar and the weather.

When asked about the difference, Ms. Benito said, "I like to start off in a good mood. I think that many of these children have difficult lives and that my job is to make sure that they are ready to learn. Singing about pride in the morning gets them ready for the other things that I do." Ms. James responded, "I really don't have time to do a lot of

singing in the morning. They get that in the music class. They are behind in their work and I need to focus them on their lessons."

Classroom Difference #2: Working with Words

All four of the teachers in this study used part of her literacy block for working with words activities (Cunningham & Hall, 1994). Two of the classroom teachers used word lists generated by commercial programs while two of them used words from song titles. Thus, all of the students were required to create one-letter words, two-letter words, and three-letter words and so on until all the letters were used to create the mystery word. In the two classes that used music, the mystery word was always a word in a song title that the students sang following their work with words. For example, 12 weeks into first grade, the letters were "SDNIAORU." The students identified one-letter words (I, A), two-letter words (e.g., IS, OR, NO), three-letter words (e.g., SUN, SON, RUN), and four-letter words (e.g., SAID, SUNS, RUNS). When it was time for the mystery word, one student excitedly reported "DINOSAUR." At that moment, Ms. Rodriquez played the CD version of The Dinosaur Dance in which the students all participated.

When asked about the difference in implementing working with words activities, Ms. Salazar said, "I think it is important that students combine and re-combine letters to see the various words they can make. It isn't a game to me, it's very serious work for our students." Ms. Benito commented one morning in her classroom, "See how they love to find the mystery word? They know we're going to sing a song and that the CD with the words will be available in the classroom library after we learn it. The connections they make are great. They know the words because we sang together. On their own, they get to see the words in print and hear them over and over again."

Classroom Difference #3: Listening Stations

A third difference in the use of literacy time was the choices for listening stations. In all four classrooms, listening stations were used during center time. Between four and six students sat together and listened to books on tape while looking at the pages. This resembled a small group read aloud. During some weeks, students were allowed to

select the book they wanted to listen to while other weeks the teacher based on the social studies or science theme determined the listening selection. In the classrooms in which music was used, student choices included several books that came with song CDs. For example, during the middle of their kindergarten year, students were asked to listen to What A Wonderful World by George David Weiss and Bob Thiele (1995) while listening to Louis Armstrong's song that matched the words exactly.

At the beginning of first grade, the teacher used the song I Can't Spell Hippopotamus at the listening station. The words of this song introduce students to various onset and rhyme patterns such as "I can spell hat, h-a-t, I can spell cat, c-a-t, I can spell fat, f-a-t, but I can't spell hippopotamus." Each student had a recording sheet and recorded each of the words that were spelled during the song and then added additional words with the same spelling pattern to the list.

Toward the end of first grade, during a unit of study on respect, the teachers used the book No Mirrors in My Nana's House (Barnwell, 1998) that comes with a CD. The CD includes two different singing versions of the text as well as a spoken version of the text. Classroom observations during this unit of study indicate that students re-read the book at least three times as the CD played. In addition, students were observed on the playground singing the song from the book.

When asked about materials selection for the listening stations, Ms. Rodriquez noted the importance of quality read aloud. She said, "I want my students to hear lots of different voices read to them, not just me. Like the other teachers here, I read aloud every day to my students. They need to hear more than just me. I think that the variety, including the use of books with CD songs, keeps them interested in that particular center and allows me to focus on my guided reading groups."

Conclusions and Implications

The findings from this study suggest that music can be used in an elementary school classroom to benefit students' language development. Thus, this study adds to the growing database that suggests that musical listening activities do in fact influence literacy development (Douglas &

Willatts, 1994; Fisher & McDonald, in press; Lamb & Gregory, 1993). While long-term outcomes from these four classrooms cannot yet be determined, the evidence thus far suggests that teachers should integrate music into their literacy instruction. A follow-up study on these 80 students to determine if and when these effects diminish would be interesting.

The findings also suggest that music can be used in specific ways. While the teachers in this study differed in three ways, there may be more ways to use music in the classroom. However, it seems reasonable to suggest that teachers of young students might consider using music during their morning opening, for listening stations, and for sustained word study activities.

Many variables were held constant for two years in this study, including the teachers, the students, the curriculum, the teaming structures, and the socio-economic environment. However, teacher rapport with students and the climate that is created is difficult, if not impossible, to control. The two classes in which music was used consistently had a low buzz of student talk, general excitement about school on the part of the students, and students were often observed humming along as they worked. The two classrooms in which music was not part of the instruction were consistently more quiet and reserved. Students worked in groups, but talked softly. It may be that the teachers' personalities played a significant role in the outcomes of this study. However, the two teachers who used music in their classroom both report that music helped them maintain their enthusiasm and demeanor.

Perhaps the most important lesson learned from this study was the ways in which teachers infused music into their literacy instruction. The two teachers who used music in their classroom did so as part of their overall literacy effort. The songs they selected were, by and large, based on the curriculum themes or language structures being taught. The music complemented the instruction rather than detracted from it. It seems reasonable to suggest that the addition of music to a classroom must be planned. It is unclear if the addition of music to language arts instruction that is not tied thematically or developmentally would positively impact student achievement.

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Using Thematic Units to Decrease Problematic Behavior in Students

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Abstract

Many students in general education classrooms exhibit problematic behavior at some point during their academic careers. These students often have special learning needs in reading instruction and instructional emphasis on appropriate behavior. Using thematic units for reading and language arts instruction can improve these students' reading skills and help students with problematic behavior learn more appropriate standards of conduct at the same time.

Nationwide, teachers are noticing an increase in the number of students who exhibit problematic behavior in general education classrooms. Often teachers seek outside assistance to address problematic behavior. However, reading teachers have at their hand pedagogy that can address both reading instruction and teach appropriate behavior and emotional control at the same time. One such instructional method is the use of thematic units. Thematic units can be developed around behavioral themes that address students' behavioral needs. In addition, picture books can be included in thematic units for all grade levels as a valid resource to meet a variety of reading levels. Thus, reading instruction can address many students' reading levels as well as teach all students additional behavioral responses to difficult situations.

Why should reading instructors be concerned about students with problematic behavior?

Many children exhibit problematic behavior at some time in their lives. Most students with problematic behavior are never identified for special education services and are educated in general education settings (Kauffman, 2001). General education teachers recognize that these students have special needs, but they often do not realize that low academic skills and run-of-the-mill teaching and ineffective classroom management techniques can bring out the worst in students' behavior (Kauffman, 2001).

Academic deficits that students with behavior problems bring to the classroom affect their educational performance and behavior. Specifically, many students who have behavioral problems perform poorly in reading, functioning at least one year below grade level (Epstein, Kinder, & Bursuck, 1989). These students perform significantly lower on achievement tests and intelligence tests while exhibiting poor communication and problem solving skills (Kauffman, 2001). Low academic achievement is a strong correlate of emotional and behavioral problems. While it cannot be said that low academic skills cause behavior problems they often go hand in hand. Academic tasks that are out of these students' zone of proximal development (Vygotsky, 1978) lead to frustration, often a precursor to inappropriate classroom behavior.

A second factor limiting the academic success of students with behavioral problems is history of poor prior educational experiences. Isolation, tyranny, and limited scaffolding often characterize the educational history of students with problematic behavior. Further, these students respond poorly to ridged or inflexible instruction as well as to learning activities that are externally controlled by teachers (Kauffman, 2001). Lack of individualized instruction and flexibility, coupled with passive teaching, also interferes with these students' learning. When students without coping skills are asked to perform tasks with insufficient background information or scaffolded instruction they become confused about tasks and procedures and their compliance decreases (Gunter, Shores, Jack, Denny, & DePaepe, 1994).

What type of learning environment do students with problematic behavior need to succeed academically and socially?

Effective instruction is the key to improving reading skills and successfully bettering student behavior. Instruction should focus on student self-control, decision-making, and importantly, the improvement of academic deficits. These students respond to instruction that is constructivist and content rich, and promotes the autonomy of learners (Kaplan, 1995, Kauffman, 2001, Marshall, 1998).

Constructivist teaching is one avenue reading teachers have to combat the reading needs and educational barriers experienced by students with problematic behavior. Constructivist teaching promotes independent thinking, understanding, and self-control for students with emotional and behavioral disorders (Marshall, 1998). Effective constructivist instruction is at the heart of successful education and

behavior can be a powerful teaching tool that is often neglected (Kauffman, 2001). With the appropriate content rich environment, students may be guided through reading instruction to develop literacy skills while also learning more appropriate standards of behavior.

Third, these students respond to autonomous learning situations. Providing students a choice of learning activities is a long accepted strategy for educating students with behavioral problems (Kaplan, 1995, Munk & Repp, 1994). Marshall (1998) recommends using authentic activities, promoting student responsibility and ownership for inquiry, and promoting a democratic learning environment when working with students who exhibit challenging behavior.

An empirically based educational method, thematic units meet the academic needs of students and provide behavior instruction in a non-threatening manner. Deliberate planning and use of explicit teaching techniques, within thematic units, leads to improved reading skills as well as reducing inappropriate student conduct (Munk & Repp, 1994). Thematic units may be used at any grade level or content area and are effective when used to instruct students with problematic behavior.

How can I address the reading needs of older students with low reading skills?

One approach to ensure success when implementing thematic units is the promotion and use of picture books related to daily lessons within thematic units. Daily use promotes the acceptability and validity of picture books as an art form and an appropriate medium for information at any grade level. Literature written for younger audiences is successfully used with older students (Cassady, 1998). However, prior to use with older audiences, teachers should provide background information concerning the appropriateness of the book. It may beautifully express a point of history or personal experience or it may simply be one of the teacher's favorite stories. Discussion could continue with dialogue identifying students' favorite picture books. After establishing an environment accepting the validity of picture books for students of all ages, thematic units incorporating picture books as instructional tools offer potential for great success to older students who have experienced limited academic growth in the past. Validating

picture books allows teachers to use material on an appropriate reading level for students with academic needs and low tolerance for frustration. The use of picture books in thematic units frees teachers to plan a variety of learning activities meeting the needs of a range of students from the slow learner to the gifted student.

How do I develop a thematic unit that addresses behavior?

Seven planning stages lead to a well-developed thematic unit. These stages include: (1) Identifying an organizing theme, (2) Determining instructional objectives, (3) Identifying topics within the thematic unit, (4) Identifying resources and activities, (5) Planning for student evaluation, (6) Gathering resources and materials, and (7) Designing instruction.

Identifying an Organizing Theme. Begin by identifying an organizing theme. Thematic units may be built around social skills, problem behaviors, acceptable behaviors, empathy building, or managing emotions. Organizing themes addressing behavior may be determined by identifying the behavioral needs of specific classes or groups of students. In fact, reading teachers are encouraged to consult with special education teachers for information about goals and benchmarks outlined in behavior improvement plans (BIPs) or individual education plans (IEPs) should they have special education students in their reading classes. Brainstorming with students may also provide potential topics while allowing students control over their learning environment. Meaningful themes may be selected by observation or from behavioral goals.

Determining Instructional Objectives. Thematic units should be built around instructional objectives. Before developing the unit, make a list of objectives that will be addressed instructionally. Identify objectives in the areas of listening/speaking, reading vocabulary, reading comprehension/response, writing, writing/connections, and visuals. Objectives may be posed as questions or as statements. Refer to Table 1 for an example of a working list of language arts objectives that may be addressed in a thematic unit on emotions.

Table 1. Instructional Objectives for Thematic Unit: Emotions of Many Colors

LISTENING/SPEAKING/AUDIENCES
Student listens actively and purposefully to solve problems and appreciate.
Student speaks clearly and appropriately to present dramatic interpretation of experiences, stories, and poems to communicate.

READING/VOCABULARY/COMPREHENSION/RESPONSE
Student reads to discover models for own writing.
Student develops vocabulary by listening to selections read aloud.
Student distinguishes denotative and connotative meanings.
Student uses personal knowledge and experiences to comprehend.
Student establishes and adjusts purpose for reading to understand, interpret, and solve problems.
Student interprets text ideas through journal writing, discussion and enactment.
Student analyzes characters including their traits, conflicts, points of view, relationships, and changes they undergo.

WRITING
Student writes to express, discover, record, develop, reflect on ideas, and to problem solve.
Student selects and uses voice and style appropriate to audience and purpose.
Student generates ideas and plans for writing by using prewriting strategies such as brainstorming, graphic organizers, notes, and logs.

WRITING/CONNECTIONS
Student corresponds with peers or other via e-mail.

VISUALS
Student selects, organizes or produces visuals to complement and extend meanings.

Identifying Topics within the Thematic Unit. Make a list or web of topics related to the theme that was decided upon in stage one. Freely jot down as many topics as you can identify. Next, refer to the list of objectives and eliminate and topics that fail to address objectives. Should great topic be identified for which there are few/no objectives identified, add appropriate objectives to your working list.

Identifying Resources and Activities. For each topic within the unit, resources need to be identified in the areas of printed materials, non-print materials, and instructional activities. Make a chart of resources in the three areas for each of the remaining topics (refer to Table 2). In printed materials include, magazine articles, picture books, chapter books, poems, essays, web sites etc. In non-print materials include videos, field

trips, possible speakers, etc. In instructional activities include instructional activities, center activities, and games.

Table 2. Resources and Activities

Resources & Activities	Introduction	Recognizing Emotions	Exploring Emotions	Responding to Emotions	Culmination
Print	Hailstones & Halibut Bones	My Many Colored Days Chrysanthemum	When Sophie Gets Angry-Really, Really Angry The Pain and the Great One	Feelings Where the Wild Things Are EPALS.com	I Like Me Hooray for Me
Non Print	Various music selections	kidshealth.org/kid/	lightspan.com	Emotion Ball (a bouncing ball with emotions written on it)	ed.gov/pubs/parents/index.html
Instruction	Drawing Emotions Brainstorm: Examples of emotions	Read Aloud Journal: "I am this color today because..." Mapping: Emotions and their color representation	Read Aloud Writing: Coping with Anger Shared Reading: Individual writing products to younger class Journal: "When I'm angry I ..."	Read Aloud Brainstorm: When was a time you were angry? Role-Play: Appropriate responses to emotions Web Discussion Board	Read Aloud/Chorus Reading Brain Dump/Think Tank*: "I'm Phat" (I'm Great) Writing/Illustrating: I'm "Phat"! Authors Chair with Invited Guests

*In groups of 5-9 students, students begin their own descriptions on a piece of paper. Then they pass paper to another student to continue the description. Then pass to another (in a circle), until a variety of thoughts about each student is recorded on students' individual papers.

Planning for Student Evaluation. Review the objectives and activities that have been included in the unit. Evaluation should directly relate to the thematic unit's objectives. Determine which activities may easily provide evaluative information about mastery of the objectives. Balance evaluation materials including daily work, special projects, tests, and observations and determine the value of each towards the unit grade. Decide how much value will be placed on effort and how individual grades will be determined during group activities/projects. Finally,

determine who will evaluate work products, the teacher or a joint effort between teacher and student. Evaluations should be planned before you begin teaching the unit.

Gathering Resources and Materials. Collect resources and materials from a variety of sources. Utilize school personnel such as fellow teachers, media specialists, curriculum specialists, and librarians. In addition, parent and teacher organizations, parents and students can be a valuable resource. Request donations of magazines, books, and other materials that will be needed.

Two additional resources for gathering materials include public libraries and private businesses. Public libraries are useful for three reasons. First, librarians are great reference persons. Second, public libraries may have books, magazines, and videos that the school library may not have, and third, public libraries may be willing to donate deleted materials that may still be appropriate for school projects.

Private businesses are a final resource for materials. Many school districts are matching up schools with business sponsors that support the school in educating students. If your school does not have a formal business sponsor, seek out a sponsor for your class. Many businesses are more than willing to donate supplies or volunteer time to support the public schools.

Designing Instruction. After materials have been collected, formalize instructional plans and activities (refer to Figure 1). Outline lesson plans referring to the list of objectives to ensure that they are all addressed during instruction. If at this time an objective is eliminated from the thematic unit, make sure to eliminate it from the evaluation procedures as well. Unit introduction, an instructional phase, and unit culmination comprise the three phases of thematic units (Moore, Moore, Cunningham, & Cunningham, 1998).

During unit introduction utilize an attention grabber that will motivate students and identify personal connections with the material to be explored. Activate prior knowledge and assess what special knowledge individual students bring to the unit. Orient students to the

expected learning outcomes (instructional objectives). Schedule at least one day for these activities.

The instructional phase includes the majority of instructional activities. At the start of each individual lesson, plan an attention grabber, assessment of background information, and orientation to the instructional objectives. For each lesson, provide ample instruction and scaffolding for students to master procedures for instructional activities and learning outcomes. Provide for guided and independent practice and re-teaching activities. Successful instruction for students with behavioral problems requires that students understand why the lesson is meaningful and of practical relevance. Authentic activities capitalizing on student interests and providing students with choices will increase involvement and mastery of objectives. Most students with behavioral problems require instruction beginning at a concrete level, but also require direct instruction of higher order questioning, cognitive flexibility, and problem solving (Marshall, 1998).

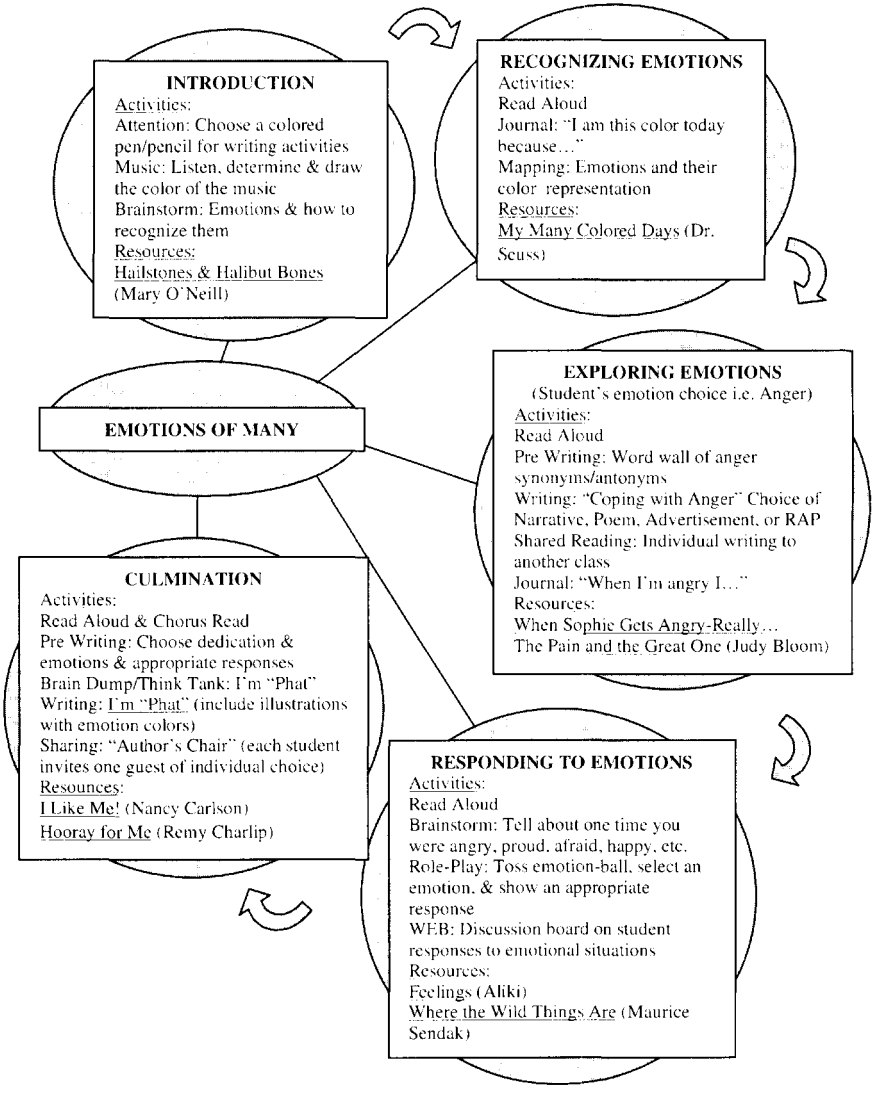
At the end of the thematic unit, the third phase of unit culmination, takes place. During this time, include activities that allow students to tie together information and explore generalization to other situations. Provide opportunities for students to showcase their academic accomplishments. This phase is extremely important for students with problematic behavior because it provides closure and a cue for transition to something new. In addition, it provides an opportunity to receive positive regard for their accomplishments from their peers, parents, and school personnel. Although evaluation has been ongoing throughout the instructional phase, it may be finalized during culmination if there are long-term projects or tests.

Conclusion

Using thematic units for reading or language arts instruction can minimize the underlying causes of inappropriate behavior, reading skills and spurious learning activities. Thematic units provide the content rich learning environment needed by students with problematic behavior and academic needs. By capitalizing on a variety of student perspectives and focusing on behavioral themes, thematic units provide a valid

instructional vehicle for all students to learn and participate in instructional activities.

Figure 1. Thematic Unit: Emotions of Many Colors



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