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**Manuscript Preparation.** Manuscripts should be prepared according to the guidelines set forth in the 6th edition of the *Publication Manual of the American Psychological Association* (APA), should be approximately 15-25 pages in length, and must be accompanied by an abstract no longer than 200 words. A short biography of 2-3 sentences per author is requested. Manuscripts should be formatted for 8½” x 11” paper with 1” margins on all sides, and double-spaced using 12-point type. Manuscript files, and any accompanying files, should be in MS Word format: PDFs will not be accepted.

**Manuscript Submission.** Email an electronic copy of your manuscript and a cover letter to gauthier@olemiss.edu. Please do remove all names and other information from the manuscript which could potentially identify the author(s). The cover letter should contain the name(s) of the author(s), institutional affiliation(s), and contact information (email, phone number, address). The cover letter should also include a statement explicitly indicating that the manuscript has not been published, or is not under consideration, elsewhere.

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FORWARD

It is a pleasure for me to write this Forward for the inaugural issue of the *Journal of Contemporary Research in Education*. This journal is the result of a collaborative effort of the leadership of the University of Mississippi School of Education, the faculty members who provided input into the organization, format, and Mission of the journal during its initial phases, and the Editorial Review Board who have provided their valuable time to serve the profession.

This issue contains six articles ranging from data-based investigations to philosophical perspectives within the field of education. While the articles differ greatly in their content and orientation, all reflect the Mission of the *Journal of Contemporary Research in Education* and the perspectives of those who serve in both editorial and review capacities, to provide a platform for scholarly work which involves “the application of current philosophy, theory, and practice to address issues of social importance.” Indeed, each of the articles contained herein addresses issues which have significant implications for our society and schools. This is our goal and vision for the *Journal of Contemporary Research in Education*.

J.M. Blackbourn, Co-Editor
A few years ago I participated in a trouble-shooting meeting in a school district. Teachers, principals and School Board members were terminally deadlocked over an extremely thorny curriculum issue, with three absolutely incompatible views on what to do. Each group had presented its viewpoint and rationale, and opened themselves to questioning from the others (keeping that from turning into bloody warfare had been challenging). To conclude this round of information sharing, the facilitator asked each group to answer one question: “At the bedrock level, what do you believe makes your solution the right solution?”

All three groups responded without hesitation: “It best serves our customers.” All three had different “customers” in mind.

For a moment I wondered if we had stepped into the Twilight Zone. Then the thought flashed through my mind: “Welcome to the wonderful world of the ‘on-behalf-of’ organization!”

Our economy is filled with on-behalf-of organizations, and their number is growing. An on-behalf-of organization is one which provides services to a group of people who have little say about the nature of the services provided to them (that’s determined by a second group), and who do not directly pay for the service themselves (often payment is made by yet a third group). Sound familiar? Education is provided by on-behalf-of organizations in the USA, as are all government services and, increasingly, health care. Less obviously, virtually all internal service organizations in large organizations are on-behalf-of organizations. For example, testing organizations in the automotive industry perform tests for parts and systems engineers; they are paid from an overall budget within the product development division: and the standards for the tests they perform are established by, among others, the quality office. An all, of course, are striving to “satisfy the customer.”

But who exactly is the customer? Simple market-based organizations have customers to whom they provide goods and services. These same customers make their own decisions about what to purchase, and they themselves pay for what they get. Satisfying the customer of a simple market-based organization is—if not easy—at least conceivable. “On-behalf-of” Organizations, on the other hand, don’t have it so easy. Depending on how you look at it, they have multiple customers — or no
customers at all. The requirements of these different groups almost certainly do not align neatly; indeed, they frequently conflict with each other, as do the views and efforts of the people within the “on-behalf-of” organization, who champion with tiger-like ferocity different “customers” as “the real customer” of our organization. Welcome, indeed, to the wonderful world of the “on-behalf-of” organization!

How does one lead such an organization? As with anything having to do with tigers, the wise leader proceeds carefully and with great respect for the teeth and claws. The good news about “on-behalf-of” organizations is that these passionate members will work tirelessly to achieve the organization’s mission. The bad news is, if they see a leader ignoring or selling short their customers, they will work equally passionately to resist the mission or get rid of the leader.

A great deal of our common lore and academic theories about leadership comes from “command and control” organizations like the military, or from the experience of simple market-based organizations. Since neither is a particularly good match for on-behalf-of organizations, we should not be surprised to find that these leadership approaches notoriously yield disappointing results in education, health care, and the like. But, lacking an alternative formulation of leadership that fits their reality, leaders in on-behalf-of organizations continue to do what they know how to do and live with the less-than-optimal outcomes.

Descriptive Psychology may offer us some help with this dilemma. An intellectual discipline founded by Professor Peter G. Ossorio at the University of Colorado in the mid-1960’s, Descriptive Psychology has a substantial track record of articulating complex concepts in ways that substantially improve pragmatic results.
command-and-control practice of labeling this person the “follower.”

3. **The participant’s action was significantly dependent on the leader’s action** – without the leader’s action, the participant’s action might not have occurred or might not have been successful.

4. **The leader knew that the participant’s action depended on the leader’s action and, in fact, knowing this provided one of the leader’s primary reasons for acting.**

5. **Both the leader and participant are participating in a social practice** – an intentional pattern of interaction – **as members of a particular community.** In other words, they are engaged in a mutual endeavor and their actions reflect that.

To put the matter succinctly: *Leadership is deliberately making it possible for someone else to make their contribution to the mutual endeavor.*

We should also note some things we are not committing ourselves to in calling something “leadership.”

1. **We are not saying that the leader occupies some special place in the organizational community that makes what they did leadership.** What makes an action leadership is its intent and its outcome, not the place from which it was performed. Many roles explicitly or implicitly require the person in that role to lead — Chairperson, Principal, Teacher, Superintendent, Coach, etc. all come immediately to mind. But Jan (for example) being in one of these roles does not automatically make whatever Jan does an act of leadership, nor does the fact that Kim occupies no “official” role mean that Kim cannot lead. Again, to belabor the point a bit, it’s the intent and outcome that makes it leadership, not the role.

2. **We are not saying that any particular type or style of action was performed.** Familiar mass-media images of leadership often involve passionate exhortation or crisp commands followed by an immediate scrabble to follow. These are clearly examples of leadership, but leadership in the “on-the-behalf-of-organizations” is rarely so dramatic (and media seldom show crisp commands that are roundly ignored, which is not infrequently the case in real life). Decades of research have shown what common sense tells us: leadership is not a matter of any particular style.

What we have done so far is to articulate the concept of “leadership” we started with as speakers of the English language. While conceptual clarity is in itself useful, the real benefit of this articulation lies in its implications for those who would lead. Let us turn our attention to some of those implications now.

**What Can a Leader Do?**

Since leaders concern themselves with making it possible for others to make their contribution to the mutual endeavor, leaders obviously must pay attention to the mutual endeavor at hand and how it is progressing. A maxim of Descriptive Psychology states: *Behavior goes right unless it goes wrong in one of the ways it can go wrong* (Ossorio, 2006). Therefore, leaders must pay careful attention to ways in which the mutual
endeavor at hand can go wrong, and act to prevent or alleviate that.

The Intentional Action (IA) paradigm of Descriptive Psychology (Ossorio, 1981) provides a succinct framework for seeing how behavior can go right – or go wrong. A full IA analysis of leadership is well beyond the scope of this paper, but here are some cogent points for leaders of on-behalf-of-organizations. When it comes to contributing to our mutual endeavor, a participant’s contribution can go wrong if:

- **The participant does not have reason enough to act.** Persons who have reason enough to make their contribution, do; persons who do not have reason enough either do not act or do something else. Leadership in this case can focus on extrinsic, “carrot and stick” reasons – providing rewards for acting or punishments for not acting – or on intrinsic reasons, such as structuring the endeavor to allow participants opportunities for achievement, problem solving, teamwork, or service.

- **The participant does not have the requisite skills.** Improving quality of products and services has been “top-of-mind” for many organizations over the past few decades. “Six sigma” is a well-known, proven method for quality improvement which requires, among other things, skill in systematic process analysis and statistical methods. Leadership of “six sigma” endeavors requires, among other things, developing these skills among the participants.

- **The participant lacks experience in this endeavor to know what to do.** Planning methods which include interactive “futuring” have been shown to create significantly superior results (Lippitt, 1989). Many participants in planning exercises, however, have never been involved in interactive futuring and have no clear idea how to do it. Leadership in this case involved step-by-step facilitation and behavior modeling.

- **The participant’s contribution requires coordination with the contribution of others.** Orchestra members are all highly skilled musicians. They don’t typically need anyone to tell them how to play their parts. But their parts are played while other musicians are playing their parts, and they do need leadership from the orchestra conductor to make sure their playing is coordinated into a musical whole. Peter Drucker (1982) pointed out that “knowledge workers” require leadership that resembles the orchestra director and, indeed, most significant endeavors in on-behalf-of organizations
require leadership in the form of coordination.

- **The participant is not eligible to act.** Any organization has a complex set of formal and informal eligibilities. Courts of law have many roles and activities, but only the presiding judge is eligible to pass sentence. Anybody can suggest a new work method, but only certain old-timers’ suggestions will be taken seriously. Advice may be welcome, but only from people who have demonstrated that they share the core concerns. Leadership may require giving a participant formal eligibility to act – authorizing a level of expenditure, for example – or discerning when participants in their own minds lack eligibility to act. (Peer mentoring programs, for example, often fail when the “mentors” do not feel they have the informal standing to comment on their peer’s performance.)

- **The participant is contributing to a different endeavor.** Here we come to the distinctive leadership challenge of the on-behalf-of organization. An organization is a community with a mission (Putnam, 1990). The organization’s mission is to make a specific beneficial difference in the lives of a particular group of people. In the simple market-based organization our mission is to serve one particular group over and above anyone else – the group we identify as our customers. Any mutual endeavor in the simple market-based organization will be an attempt to benefit our customers, and participants strive to contribute to the endeavor. But an on-behalf-of organization has multiple “customers” – that is, its mission is to make a beneficial difference in the lives of more than one distinct group. Participants strive to contribute to endeavors that make a difference in the lives of the “customers” they identify – and the more passionately they believe in the mission, the more passionately they strive - like “tigers.”

This is not a mere problem, to be solved by keen analysis. It is a true dilemma, and as with all true dilemmas, it requires one who would lead to acknowledge the reality of the dilemma and find a path – not around it nor through it – but including it. The path forward must make it possible for all participants to contribute to their endeavor while at the same time contributing to a mutual endeavor. What can a leader do?

**Leading the “On-Behalf-Of” Organization**

Let’s return to the trouble-shooting meeting mentioned at the beginning of this paper. For the teachers, the ultimate customers were the students; the ultimate customer for the principals were the state and district administrators who set policy and guidelines; and the School Board members took as their ultimate customers the parents and other local taxpayers who ultimately paid everyone’s salaries. With such diverse “customers,” it is not surprising that the best curriculum looked very different to the three groups. As one observer remarked, they might as well have been living in three different worlds.

While “living in three different worlds” may be a bit extreme, we can straightforwardly take it that we are dealing with three distinct views of the world. This situation is depicted in Figure 1.
Each circle represents the set of good answers to the question, “What should our curriculum be?” from the viewpoint of (a) teachers, (b) principals, (c) School Board members. The best answer from each group’s viewpoint is represented as A*, B*, and C*, respectively. Note the obvious:

- The best answers are not the same from group to group.
- The best answer from the School Board’s point of view, C*, is not even among the good answers for the other two groups.
- No “best answer” is a good answer for all three groups.
- Any answer that does not fall into the “good answer” category for one group will not receive commitment and participation from that group.

Notice also that there is a small area, D, which falls within the “good answer” category for all three groups. Based on our above understanding of leadership, one who would lead in this situation will direct the group’s attention and help them choose a path from among the D answers – because all three groups can commit to and participate in D. And note that not just any answer will do – it must be one that looks good to all three.

**This strategy**—looking at the issue from all viewpoints and searching only for answers that look good from all viewpoints – can give all the tigers what they need. With hard work and good will, it enabled the curriculum trouble-shooting session to come to an unexpectedly productive conclusion. Indeed, this strategy has been used to such good effect that an eminent Descriptive Psychologist in his work with medical leadership coined the useful slogan: “Take a three-world view” (Peek, 1994).

**A Final Caution**

We should be careful here to avoid confusing this strategy with two seemingly similar but actually very different strategies: “compromise” and “least common denominator.” **Compromise** – if it works at all – requires each group to give up something they believe is important in order to get something else they believe is more important. Notoriously, compromise often results in “solutions” which nobody sees as a good answer, but which each group sees as the best they can get. For example, if you wanted pizza and salad for lunch while I wanted egg-drop soup and General Tso’s chicken, our compromise lunch might be either an artery-clogging combination of pizza and General Tso’s chicken, or perhaps a mind-boggling General Tso’s chicken pizza.

“Least common denominator” takes all the elements in common in each groups position and proposes a “solution” that includes them all. Based on our lunch
preferences above, our “least common denominator” lunch would be something like a few ounces of oil with a generous pinch of salt and a glass of water.

Both compromise and least common denominator solutions fail to recognize the true complexity of people’s views of the world. They take A*, B*, and C* as given and try to give each group something, not recognizing that the task is to find a solution that every group sees as a good solution (so everyone can commit to it), and that getting only part of our best solution is probably not a good solution. If you and I just keep talking about lunch, we may discover that we would both be pleased with taco salads.

Summary and Conclusion

The “on-behalf-of” organization presents some difficult leadership challenges. Using the conceptual power of Descriptive Psychology, we can see leadership as “deliberately making it possible for someone else to make their contribution to the mutual endeavor,” and can see a number of specific strategies for successful leadership.

[NOTE 1]: These statements may appear to be inferences or theoretical statements, but they’re actually nothing so grand. They are simply writing down – articulating – a part of what we commit ourselves to in using the common, everyday term “leadership.” As a mental exercise, try assuming the contrary. For example, “We call it leadership, but know nothing about what the leader did nor about the effects of what the leader did “or “We call it leadership, but nobody did anything in response.” etc. It seems apparent that we would be inclined to respond: “That’s not really what we mean when we call something leadership.”

References


Don’t I Know You? A Misstep in Teaching Mathematics with and for Social Justice in a Rural Context

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Abstract

In this paper, I document my own struggles and insights in moving toward a pedagogy of teaching mathematics with and for social justice within a rural high school. Teaching mathematics for social justice has been presented as a way to address the inequities present in the classroom, and the world at large, by having students work with mathematics to question and analyze inequities in their world (Gutstein, 2006). Inclusive education has been presented as a means for providing all students, regardless of their needs, abilities and interests, access to engaging content in the classroom (Villa & Thousand, 2005). These approaches to education can be summarized as teaching with and for social justice (Wager, 2008). I offer teaching mathematics with and for social justice as a way to make mathematics meaningful within a rural setting.

Teaching mathematics for social justice has been presented as a way to address the inequities present in the classroom, and the world at large, by having students work with mathematics to question and analyze inequities in their world (Gutstein, 2006). Inclusive education has been presented as a means for providing all students, regardless of their needs, abilities and interests, access to engaging content in the classroom (Villa & Thousand, 2005). These approaches to education can be summarized as teaching with and for social justice (Wager, 2008). Although these approaches are promising, changing teaching practice to enact these approaches can be problematic for teachers (Davern, et al., 1997; Gau, 2005; Gutstein, 2007). In this paper, I document my own struggles and insights in moving toward a pedagogy of teaching mathematics with and for social justice within a rural high school.

Ball (2000) describes criteria for engaging in a “first-person perspective” study and states “one central goal is to contribute to scholarly discourse communities and to the development of theory” (p. 374). I chose to use my own teaching “practice as a site for research” (Cochran-Smith & Donnell, 2006, p. 507), based on the work of other researcher-teachers who strove to study pedagogy that was not available to be studied in other classrooms with other teachers (e.g. Gutstein, 2006; Lampert, 2001). In these examples the pedagogy in question was still evolving and the researchers found it necessary to directly engage in the exploration and iterative change to refine the pedagogy, and associated theory, in order to develop something that can be described and disseminated. Thus, in attempting to teach mathematics with and for social justice, I came to understand some of the difficulties in engaging in such an endeavor, and realized the previously articulated goal set forth by Ball for engaging in a “first-person perspective” study.

In this article, I will describe the framework I created to design, enact, and analyze instruction along with the challenges and insights gained from examining my teaching practice. The culminating insight is a refined framework, namely a better understanding of how to characterize the key players within the classroom, to teach mathematics with and for
social justice within a rural high school. The resulting framework will provide practitioners and teacher educators with the needed assistance when engaging in and/or promoting (Nganga & Kambuta, 2009) this type of work.

Theoretical Framework

I draw on the work of Lampert (2001), Gutstein (2003, 2006, 2007), and Udvari-Solner, Villa, and Thousand (2005) to create a framework with which to base the study of my own practice, teaching mathematics with and for social justice. Lampert’s (2001) articulation of teaching and learning as it happens in the mathematics classroom, provides a way to make sense of the complexities of the relationships between the teacher, the student and the content. The components of teaching mathematics for social justice, as described by Gutstein (2003, 2006, 2007), provide a target for instruction in the mathematics classroom. Finally, the work of Udvari-Solner, Villa, & Thousand (2005) provide a process of designing inclusive instruction, or teaching with social justice (Wager, 2008), that addresses the abilities, challenges, and interests of students while simultaneously meeting content demands for the lesson. I merge these three perspectives into the Unified Framework to support my efforts to design, enact, and examine instruction meant to teach mathematics with and for social justice.

Problem Space of Teaching

Lampert (2001) articulates the forum of teaching in her book Teaching Problems and the Problems of Teaching. Ultimately, the goal for any mathematics teacher is to facilitate a connection between the students and the content.

Figure 1. Teacher’s goal to connect students to content (Lampert, 2001).

Lampert describes this goal as wanting students to “study” mathematics, where studying is described as “any practice engaged in by students in school to learn” (p. 32). To promote this connection is the practice of teaching as proceeding “…simultaneously in relations with students, with content, and with the connection between students and content” (p. 33).

Figure 2. Forum of teaching as a series of relationships (Lampert, 2001).

And she defines teaching as “the practice of structuring activities of studying in relation to particular content and particular students” (p. 32). Simply put (but not simply executed), the teacher’s job, through the defined practices of teaching, is to facilitate students “studying” mathematics, but how does the complexity change when the task shifts to teaching mathematics with and for social justice?

Teaching Mathematics for Social Justice

Teaching mathematics for social justice (Gutstein, 2003, 2006) is a means for teaching mathematics that attempts to realize the goals of culturally relevant pedagogy (Diversity in Mathematics Education, 2007) to “produce
students who can achieve academically, produce students who can demonstrate cultural competence and develop students who can both understand and critique the existing social order” (Ladson-Billings, 1995, p. 474). Wager (2008) extends this thinking by describing the goal of teaching mathematics for social justice as positioning mathematics as a tool “to empower students to challenge society” (p. 100).

Teaching mathematics for social justice, as can be seen in the writing and teaching of Gutstein (2006, 2007, 2009), is to simultaneously promote the use and development of three types of knowledge: classical, critical and community.

![Figure 3. Teaching mathematics for social justice as an intersection of domains (Gutstein, 2009).](image)

Classical knowledge is the mathematical knowledge needed to gain access to advanced mathematics and to excel at high-stakes tests (Gutstein, 2006). Critical knowledge is the knowledge (both mathematical and otherwise) necessary to understand one’s sociopolitical reality (Gutstein, 2006). Community knowledge is the knowledge (both mathematical and otherwise) that exists within individuals from the school community context, which may not be understood by those who do not participate in the community (Gutstein, 2006). This final component of teaching mathematics for social justice acknowledges the “funds of knowledge” (Gonzales, Moll, & Amanti, 2005), or where and how mathematics is being used in the local community. Community knowledge can provide context and motivation for facilitating the use and development of critical and classical knowledge. Taken together these three domains describe the aims and challenges of teaching mathematics for social justice.

Teaching mathematics for social justice has been previously described as “promising” towards addressing the inequities that exist in the mathematics classroom and society at large (Diversity in Mathematics Education, 2007). Brantlinger (2007) suggests that equitable approaches to teaching mathematics that are implemented in urban contexts should also be encouraged in other contexts as well, such as the rural context. The research of Anderson & Chang (2011) has shown that students in rural communities take less mathematics than those in other contexts. The same research describes students in rural communities starting at lower levels in mathematics and having less access to Advanced Placement Courses than their non-rural counterparts. Teaching mathematics with and for social justice can be a means for addressing these inequities by helping “teachers in rural schools make mathematics…more relevant to the lives of their students” (Harmon, Henderson, & Royster, 2003, p. 56).

Some of the difficulty of in-service teachers attempting to teach mathematics for social justice has been described as a curriculum or lesson development issue (Gau, 2005; Gutstein, 2007). The inherent nature of teaching mathematics for social justice necessitates teachers utilizing local contexts, which inhibits teachers “plugging in” lessons that are designed
by a third party, thus calling for teachers to assume the additional role of a curriculum developer (Gutstein, 2007). Gau (2005) found in her study of in-service teachers learning to teach mathematics for social justice that the teachers did not perceive the lessons they developed as intending to teach mathematics, but merely using mathematics that was already learned to explore a social justice context (Diversity in Mathematics Education, 2007). To address the challenges of designing lessons that meet the target of instruction as articulated by Gutstein (2006, 2009), I offer the Universal Design Process (Udvari-Solner, et al., 2005).

![Diagram of the Universal Design Process](image)

Figure 4. The Universal Design Process (Udvari-Solner, et al., 2005).

Teaching Mathematics with Social Justice

To decide to teach mathematics for social justice, to position mathematics as a tool “to empower students to challenge society” (Wager, 2008, p. 100), suggests that the enactor of such an approach realizes that there are inequities in the mathematics classroom and/or the world at large that need to be challenged. Having made such a choice to teach mathematics for social justice would also suggest that the teacher would want to provide a just classroom environment where the teaching and learning of mathematics can occur. Wager describes this type of environment as “a socially just community in which students participate equally” (Wager, 2008, p. 99) or to teach mathematics with social justice. Inclusive education has been defined as a means for providing all students, regardless of their needs, abilities and interests, access to engaging content in the classroom (Villa & Thousand, 2005), and parallels what it means to teach with social justice.

In brief, a teacher who chooses to teach mathematics for social justice, or seek to create a more just world through the teaching and learning of mathematics, would reasonably be one who would want to teach mathematics with social justice (Wager, 2008), or seek to create a more just classroom environment for the teaching and learning of mathematics. The Universal Design Process can help with both of those intentions, as well as address some of the previously described instructional design challenges associated with teaching mathematics for social justice.

The Universal Design Process (Udvari-Solner, et al., 2005) is a means for developing lessons that address the needs, abilities, and interests of all students that are to learn the desired content. It is primarily associated with supporting teachers of inclusive classrooms, where all students, despite label and/or ability, are taught together, and the underlying assumption is that “living and learning together benefits everyone” (Falvey & Givner, 2005, p. 5). Specifically, the Universal Design Process (Udvari-Solner, et al., 2005) has four components (see figure 3): 1) learning about the students in the classroom, 2) naming the content that is to be taught, 3) deciding how students will engage within the content, and 4) determining how students will demonstrate their learning of the content.

In learning about the students, a teacher is “developing positive profiles of students’ social and academic abilities, strengths, and learning concerns” (p. 138), with the suggestion being to use a multiple intelligence perspective (Gardner, 1993) to construct the optimum means for delivering instruction. In naming the content, a teacher decides “what is to be taught;
what level of knowledge or proficiency students are to demonstrate; and what context, materials, and differentiation are necessary to allow all students, including those with disabilities, a point of entry to learning” (p. 141). Some of this component is dictated for the teacher through district approved curricula or state standards. Deciding how students will engage with the content, or the “process” component, involves a teacher deciding on the “instructional strategies that afford students multiple means of engaging with the curriculum” (p. 143). This component represents how the students will learn the content of the lesson. The last piece of the Universal Design Process, or the “product” component, has teachers determining “how students will demonstrate and convey their learning” (pp. 145-146). This last component is the assessment portion of the design and provides an opportunity for students to represent their learning within a tangible artifact.

Unified Framework

Lampert’s (2001) description of the forum of teaching provides a base with which to overlay the other two perspectives within the Unified Framework.

The Universal Design Process (Udvari-Solner, et al., 2005) can be layered onto this representation of teaching practice, with the first two components already being found within the representation. The relationship between the teacher and the students in the forum of teaching would naturally imply the first component of the Universal Design Process, which is for the teacher to acquire an understanding about how the students learn.

The second component of the Universal Design Process is concerned with naming the content to be studied. Expanding on Lampert’s notion of content are the components of teaching mathematics for social justice as articulated by Gutstein (2006, 2007, 2009). A teacher engaged in teaching mathematics for social justice is concerned with the student learning the identified mathematical objectives of the unit (classical knowledge), learning how the mathematics can be found in the everyday reality of the student (community knowledge), and learning how the mathematical objectives could be used to better understand that everyday reality and/or affect it for the better (critical knowledge).

The relationship between the students and the content is one that is facilitated by the teacher. The students engage with the content through the tasks and environment that the teacher has designed. This relationship can be equated to the “process” component of the Universal Design Process, or how students will “study” (Lampert, 2001) the mathematics.

Figure 5. Unified Framework to design, enact, and examine teaching mathematics with and for social justice.
Udvari-Solner, et al. (2005) describe the “product” component of the Universal Design Process as “how students will demonstrate and convey their learning” (pp. 145-146), which is the evidence that the students are “studying” the content. Further, the product can be used as evidence that the process component was effective in facilitating students learning what the lesson was designed to teach. This evidence of learning, or lack thereof, can also be equated with evidence of success/struggle in attempting to teach mathematics with and for social justice. The literature calls for the documenting of this type of struggle in the classroom. Specifically, “(m)ore work is needed in this area to see what teachers struggle with, as they learn to teach mathematics for social justice” (Diversity in Mathematics Education, 2007, p. 420), which leads to the research question for this study:

What are the inherent struggles of teaching mathematics with and for social justice within a rural context?

Methods

To answer the research question, I conducted a “self study” (Zeichner & Noffke, 2001) of my own teaching practice. Acting as a researcher-teacher, I used the Unified Framework to guide my teaching practice and this study, which I position as an instrumental case study (Ball, 2000; Cresswell, 2007) in “an attempt to bring together theory and book knowledge with real-world situations, issues, and experiences” (Berg, 2007, p. 232). The boundaries for this case were tied to documenting the students “studying” (Lampert, 2001) mathematics, and how it was facilitated within the mathematics classroom, which occurred over six, 45-minute, class periods.

Setting & Participants

This study was situated in the only high school within a geographically large rural school district, primarily composed of two small towns, and within commuting distance of a mid-size Midwestern city. The students were enrolled in one section of the second course of the high school mathematics sequence, which used Course 2 of the Core Plus curriculum (Hirsch, Fey, Hart, Schoen, & Watkins, 2008). The primary population for the class was tenth grade students, with a smaller group of ninth grade students. Given no alternative track for mathematics, and the required two credits of mathematics for graduation, the class of 25 students had a heterogeneous mix of students, reflective of the school’s demographics.

Data Generation

Two categories of data were used to capture what went on during the study: 1) teacher journals and, 2) student work. The teacher journal (Cochran-Smith & Lytle, 1993) has been shown to be a useful tool in generating data for practitioner inquiry (e.g. Gutstein, 2006; Heaton, 2000; Lampert, 2001; Lubienski, 2000). For this study an audio teacher journal was used to document the teaching practices that occurred within the classroom and the reactions to those
teaching practices. Referring to the Unified Framework (see figure 5) the audio journal was generated to capture the interactions between the teacher (myself) and the content, the teacher and the students, and the teacher and the facilitated connection between the students and the content (aka process & product).

The student work that was generated consisted of the daily work, informal assessments, and final products for the lesson. The student work was meant to capture the process and product portions of the Unified Framework (see figure 5), which implies how the students engaged with the content and ultimately learned from the lesson.

The Lesson

The six-day lesson was designed as a student-generated exploration of the fairness of the classroom teacher’s grading practices using expected value. Prior interactions and informal assessments of the students allowed me to create a profile of the multiple intelligences represented in the classroom. Utilizing a core of identified multiple intelligences (Gardner, 1993) a series of learning stations were created for students to work through during the lesson. Students were assigned one of six sets of anonymous student grade data to use throughout the learning stations. The goals of the stations were for the students to represent the data as a whole and to judge how the grades would be represented using different probability scenarios for collecting assignments at random (as was the practice of the classroom teacher). As a final product, students were to create a grading practice recommendation for the classroom teacher, which was designed to use the completed mathematics as support for their recommendation. The student products were evaluated using a rubric based on Gutstein’s (2006, 2007) articulation of the aims of teaching mathematics for social justice, or how the students demonstrated classical, critical, and community knowledge related to the lesson.

Data Analysis

The purpose of this study was to document the struggles of a teacher attempting to teach mathematics with and for social justice within a rural context. Thus, using a loose understanding of “struggle”, analysis of the
transcribed audio teacher journal employed the tradition of grounded theory (Corbin & Strauss, 2008; Emerson, Fretz, & Shaw, 1995). Open coding was used to identify instances within the transcript that were associated with perceived struggles in the practices of teaching. A second pass of the transcript data allowed for refining and categorizing the specific areas of struggle, with a third pass allowing for themes to emerge. The rubric evaluations of the student products were used as “provisional” codes (Saldaña, 2009), which aligned with Gutstein’s (2006, 2007) articulation of the aims of teaching mathematics for social justice. The goal of the coding was to articulate the nature of the students “studying” the intended content. Finally, the emergent themes from the transcript data were compared with the coded student product data looking for connections.

Findings & Implications

…if we are looking at the three C’s of classical, critical, and community, I don’t think I did that.

Audio journal excerpt from 6.2.2009

The above quote is a reaction from the teacher journal taken from the last day of the lesson and suggests an initial feeling of frustration in the outcomes of the lesson.

After an examination of the products and audio teacher journal, there emerged a general disconnect between the tasks that students were being asked to do and the purpose behind those tasks. Students were overall engaged and demonstrated enthusiasm for learning mathematics using the learning stations. Yet the work of the students appeared to be completed as an exercise rather than with a greater purpose of evaluating the grading practices of the classroom teacher, or grading practices in general. This disconnect could be seen in the student products where students made grading recommendations but rarely connected those recommendations to the mathematics.

One of the student products that did make this connection was a letter addressed to the classroom teacher, and contained the following quotation:

When we took the averages of all of [a student]’s assignments, she got a 8.93. Looking at how you would collect 1/4 or 3/10 assignments, she got lower averages, which were 8.4 and 8.31. This shows that you aren’t giving her the grades she deserves.

This part of the letter provided evidence that the student used the intended mathematics (expected value or finding the average of a probability distribution) to calculate the grade given the different scenarios. In addition, the student made a comparison with the different averages/scenarios and made an argument that the grading was unfair because the teacher was not providing the student with “the grades she deserves”.

Both of these instances were positive indicators according to the rubric used for evaluation. But the last sentence in the quotation also provides evidence of the
disconnect between the learning profile of the students and the intended outcomes of the lesson. The students were never asked to collaboratively define what they understood a grade to represent, or what is “fair” for assigning grades to a student. Did a grade represent conceptual understanding of a mathematical concept? Did a grade represent effort expended toward learning mathematics? Did it represent a combination of the two? The answers to these questions were unknown, because they were never asked, or (unfortunately) deemed necessary to be answered before or during the six-day lesson.

Previously stated, I defined the content using Gutstein’s (2006, 2007) framework for teaching mathematics for social justice and then defined the students from a multiple intelligence perspective (Gardner, 1993). Also previously stated, the goal of teaching is to facilitate a connection, or relationship, between the students and the mathematics. To facilitate the connection is the process and products that are put into place by the teacher. Given these different perspectives it makes sense that the disconnect was observed within the products that students produced for the lesson.

To address these findings, I call for adapting the Unified Framework to better fit the aims of teaching mathematics with and for social justice. In the students’ final products, there was a low level of fidelity between the intended content to be learned and the level of demonstration in the products.

Previously, I expanded the notion of content to contain the classical, critical and community components proposed by teaching mathematics for social justice. I now propose that the three components extend into the other design elements of the Unified Framework. Instead of merely developing a learning profile of each student using a multiple intelligence perspective (as suggested by Udvari-Solner, et al. (2005)), a teacher should gauge the students’ aptitude for the various components of knowledge suggested by teaching mathematics for social justice. What is the collective knowledge about the community context? What perspectives have students considered in thinking about the topic? What positions do students hold? How could mathematics be used to learn more about the topic? Thus, if a teacher is to attempt to teach mathematics for social justice it would be appropriate to understand students as learners of mathematics for social justice. Extending the logic, the teacher should also
be understood as a teacher of mathematics for social justice. This reframing of the teacher and the learner would make it imperative to assess how the students and the teacher understand the community perspective of grading, how they understand the fairness of the grading practices, and how they understand the mathematical concept of expected value, in order to best design a process and product that facilitates students “studying” the intended content. Viewing the students and the content from the same perspective can better allow the process and product to be a bridge between the two, rather than to highlight a disconnect.

Identified within the data was the problem of connecting tasks to a purpose. What I propose to answer that challenge is to be explicit in the process component of the lesson design as to how specific tasks will allow students to “study” the named content according to each of the dimensions of teaching mathematics for social justice, and to be explicit with students concerning the intent of the topic. This is similar to what Harel (2008) proposes, in his “necessity principle”, where a well designed problem will create a need to use certain mathematics, only I wish to extend it to include the two other components of knowledge proposed in teaching mathematics for social justice.

Conclusion

In this paper, I document my own struggles and insights in moving towards a pedagogy of teaching mathematics with and for social justice within a rural high school. This work answers the call to document the struggles that teachers experience in attempting to teach mathematics for social justice (Diversity in Mathematics Education, 2007). In addition, this work responds to the appeal to teach mathematics for social justice in non-urban contexts (Brantlinger, 2007), and may help address some of the issues teacher educators have described in promoting teaching for social justice in rural contexts (Nganga & Kambuta, 2009). Further work is needed to document the use and development of the refined framework as it applies to designing, enacting and examining equitable pedagogy. In conclusion, I believe this paper fulfills Ball’s (2000) requirements for engaging in this type of work by contributing “to scholarly discourse communities and to the development of theory” (p. 374).

References


There is general recognition of the benefits and importance of successful P-12 transitions to college and college completion. Postsecondary education is associated with substantially higher wages, greater productivity in the workplace, better health, greater civic involvement, and greater job satisfaction (Organization for Economic Cooperation and Development, 2004). However, persisting social and economic inequalities exist in achieving a postsecondary education and are attributable to economic, racial, and gender disparities resulting in considerable gaps in college access, achievement, and college completion for minority groups (Callan, Finey, Kirst, Usdan, & Venezia, 2006; Trent, Orr, Ranis, & Holdaway, 2007).

For example, the Organization for Economic Cooperation and Development (2004) reported that 48% of Hispanics age 25 and older do not hold a high school credential compared to 20% for the total population. Based on the 2000 census, the proportion of people aged 25 and over who had completed high school or more education ranged from 84% of those who reported they were White, 72% who reported they were Black or African American, and 52% who reported they were Hispanic or Latino (Bauman & Graf, 2003). Only 51% of the total population reported some college and 24% reported holding at least a bachelor’s degree. The overall median Black family income in the United States is 63% of the median white family income (U.S. Department of Education, 2002). Flint (1997) pointed out that parents and students with lower incomes are less likely to receive adequate information about college access and/or enroll in college.

Goldrick-Rab, Carter, and Wagner (2007) determined that a vast majority of research studies on college readiness and entry were concerned with examining inequities in academic and social participation. In examining these issues, this paper provides a description of the current landscape about college readiness and access, effective practices for promoting college readiness and access, and policy implications at the state level.
Current Landscape of College Readiness and Access

Historical data show that high school graduates entered college and found they were not prepared for college. Shults (2000) reported that an average of 36% of entering students in community college took at least one remedial course in the fall of 1998. Recent data suggest that as many as 40% of all students entering postsecondary education require at least one remedial course (American Diploma Project, 2006). Further, at community colleges, approximately 60% of all new entering students sometimes require remedial instruction. Moreover, according to the U.S. Department of Education (2008), only 17% of high school graduates who require at least one remedial reading course and only 27% who require a remedial math course earn a bachelor’s degree.

ACT, Inc. (2011) reported approximately 28% of all high school graduates who took the ACT test met no College Readiness Benchmarks, while 47% met between 1 and 3 Benchmarks. Only 24% of all 2010 ACT-testing high school graduates met all four College Readiness Benchmarks, meaning that less than 1 in 4 were academically ready for college coursework in all four subject areas.

Many individual, family, institutional, and system-wide factors affect a person’s ability to prepare and subsequently graduate from college (Deil-Amen & Turley, 2007). Accordingly, individual, institutional, and policy barriers to successful transition to and through postsecondary education were reported in the literature. Individual barriers include lacking a high school or General Educational Development (GED) diploma, adequate academic preparation, and knowledge of helpful resources (U.S. Department of Education, 2006). Several researchers found significant mean differences between Blacks and Whites in college access and completion attributed to differences in high school preparation (Cabrera, Burkum, & Lanas, 2003; Terenzini, Carrera, & Bernal, 2001). Other scholars (Carter, 1999; McDonough, 1997; Perna & Swail, 2001; Schneider & Stevenson, 1999) reported research focusing on the role of high school preparation in shaping students’ aspirations. Schmid (2001) noted that differences in aspirations, dropout rates, grade-point averages, and test scores are usually attributed to socioeconomic status. Other studies focused on sociological aspects linking college readiness with disadvantaged students (Deil-Amen & Turley, 2007).

Institutional barriers included inconvenient course schedules, lack of support and counseling services, and low persistence rates in remedial education (Calcagno & Long, 2008). Policy barriers were characterized as limits on state-level postsecondary funding, financial aid, and lack of alignment among various levels within P-20 systems (Jenkins, 2008; McSwain & Davis, 2007; U.S. Department of Education, 2008).

Conley, Aspengren, Stout, and Veach (2006) found that many first-year students experienced their college courses were fundamentally different from their high school courses. Kirst and Venezia (2004) reported on issues relating to misunderstandings that contribute to inadequate preparation for college. Kirst and Venezia’s work highlighted such issues as inequalities throughout the P-20 educational systems in high school courses offerings, connections with local postsecondary institutions, information about college placement policies, and tuition costs.

Effective Practices for Promoting College Readiness and Access

A solid research base supports numerous practices for promoting college readiness and
access. Three major practices include (a) aligning high school exit standards and skills with college-level entry requirements; (b) students taking and completing a rigorous curriculum of courses while in high school; and (c) communicating accurate and timely information to students and families regarding expected knowledge, performance standards, attitudes, and behaviors that students need to prepare them for college.

Summaries of research conducted by ACT (2011) showed that the strongest predictors of college persistence and degree attainment were prior academic achievement and high school course-taking patterns (Lotkowski, Robbins, & Noeth, 2004). Similarly, Adelman (2006) used a large national data set that traced students from high school through college and found the most important predictor of bachelor’s degree attainment was the academic intensity of a student’s high school courses. ACT advocates that all high school students complete a recommended core curriculum consisting of the following: (a) at least four years of English; (b) at least three years of mathematics (typically Algebra I, Geometry, and Algebra II); (c) at least three years of social studies (typically U.S. History, World History, and U.S. Government); (d) at least three years of natural sciences (typically general science, biology, and chemistry). In addition, ACT added “courses for success” based on research demonstrating that students who successfully complete these courses will likely achieve college readiness and not need remediation. The advanced courses include mathematics courses (e.g., trigonometry, biology, chemistry, and physics).

The American Diploma Project Network (ADP), a network of 32 states, works with Achieve, Inc. to align high school graduation requirements to college-readiness standards. The common call for alignment between high school coursework completion and enrollment in credit-bearing college courses is the adoption of a single set of college-readiness standards for reading, writing, and mathematics, with an agreement on common assessment instruments for use across all segments (Bottoms & Young, 2008). As a foundation, programs should align entry/exit skills among levels and link course content to college level performance requirements (Center for Student Success, 2007). The Center for Student Success recommends clearly documenting and disseminating the performance standards representing the knowledge and skills students need to succeed in entry level courses in each discipline. Strong alignment and articulation of dual enrollment programs are essential with transparency for curricular pathway. Research findings indicate that dual enrollment programs are growing in size and scale. A statistical report for 2002-03 showed that 71% of U.S. public high schools offered some sort of dual enrollment program, with 57% of postsecondary institutions allowing high school students to enroll in college courses (Klekotka, 2005). Dual enrollment programs are reported to exist in all 50 states, even in the absence of state policy (Lerner & Brand, 2006). Practitioners should facilitate ongoing strong dialogue to explore the specifics of any content or assessment misalignment that exists as well as monitor proposed solutions.

Policy Implications for College Readiness and Access

Williams (2010) provided a review of state policy dimensions for improving college readiness opportunities for high school students. These dimensions included the alignment of coursework and assessments, financial incentives, and support to stimulate P-12 and postsecondary education to collaborate (Conley, 2003; Davies, 2006). Another dimensions included the capacity to track students across educational institutions statewide along with the...
ability to publicly report on student progress and success from high school through postsecondary education. Conley (2007) suggested that state policies should require high school curriculum and instruction to align with college expectations. The content of each high school course should link to college readiness standards or benchmarks and state content or core standards.

Kirst and Venezia (2004) provided recommendations for promising reform by providing all students, their parents, and educators with accurate, high quality information about high school courses and access to colleges. Kirst and Venezia pointed out that college access and readiness information must be inclusive of materials on access to the resources to make informed decisions.

A number of states have taken concrete steps to improve college readiness and access. State-level initiatives promote college awareness. In response to the need to prepare students postsecondary education, several outreach and intervention programs have been implemented. Some states have initiatives aimed at assessing high school student readiness for college and providing mechanisms to assist student with setting appropriate expectations. Noteworthy, the Kentucky Department of Education and the Kentucky Community and Technical College system are working together to assess college readiness in the 10th grade and devising mechanisms to identify academically at-risk students, so that they can use their junior and senior year to become college-ready. Similarly, North Carolina has designed a specialized 12th grade mathematics course for students identified in the Early Math Placement testing program, which administers college placement tests in high school. The Montana University system encourages high school juniors to take its writing assessment, and provides a supplemental online course called Strategies for Improving High School Writing.

Minnesota’s “Get Ready” program, established by its Higher Education Services Office, encourages college preparation starting as early as 4th grade and sponsors a comprehensive website of online advising tools, college preparation and selection resources, and information about financial aid. Two other notable informational projects are Indiana’s Career and Postsecondary Advancement Center (ICPAC) and Florida’s College Reach Out Program (CROP), both of which invested substantial resources in developing data and delivery systems to help students and parents access student records and information about college requirements.

ACT, Inc. (2009) recommended that states should adopt essential standards, and advocated the standards should be fewer – but essential – learning standards. To ensure that all students are ready for college or career, ACT, Inc. noted it is imperative that policymakers be guided by a real-world definition of “readiness” – that is, a definition that reflects those standards that have been validated as the most essential for success in college classrooms. Further, ACT, Inc. suggested that states should make sure that their state standards include the essential skills from ACT’s College Readiness Standards that are required for students to meet the College Readiness Benchmarks for the ACT.

Other recommendations included common expectations, clear performance standards, rigorous high school courses, early mentoring and interventions, and data-driven decision. States should adopt a rigorous core curriculum for all high school students. Several states support the core curriculum recommendations of A Nation at Risk: The Imperative for Educational Reform, specifically, that students take a core curriculum of at least four years of English and three years each of mathematics, science, and social studies. In addition to a consistent, rigorous set of essential
P-12 content standards, states must define performance standards on assessments aligned with college readiness learning standards, so that students, parents, and teachers know how well students must perform academically to have a reasonable chance of success at college. Based on decades of student performance data, ACT defines “college readiness” as students having approximately a 75% chance of earning a grade of C or higher or a 50% chance of earning a grade of B or higher in first-year colleges. Students who take a rigorous core curriculum should be ready for credit-bearing first-year college courses without remediation.

States should begin monitoring student academic performance early to make sure younger students are on target to be ready for college and career. Interventions are needed for students who are off target. Empirical data show that students who take challenging curricula are much better prepared to graduate high school ready for college and career. If students are to have a chance at college and career readiness, their progress must be monitored closely so that deficiencies in foundational skills can be identified and remediated early, in the upper elementary grades and middle school. In addition, age-appropriate career assessment, exploration, and planning activities encourage students to consider and focus on options so that they can plan their high school coursework accordingly.

States need to establish longitudinal P-16 data systems. If states are serious about ensuring that more of their students are prepared for college and work in the 21st century, they must closely monitor student performance at every stage of the learning pipeline, from preschool through the elementary, middle, and high school grades, all the way through college. Use of a longitudinal data system would enable educators to identify students who are in need of academic interventions at an early stage, thus giving teachers and students more time to strengthen these skills before graduation. Longitudinal data systems provide a tool to schools to ensure all their students take and complete the right number and kinds of courses before graduation. Using a longitudinal assessment system also permits schools to evaluate the value added by each core course in helping students to become ready for college. In addition, such systems allow colleges to offer feedback reports to high schools that examine how well prepared each high school’s graduates are for college. These reports can be used to strengthen and align high school curricula for college enrollment and success. The successful transition of students from high school to college is clearly a shared responsibility of secondary and postsecondary stakeholders.

Additional research is necessary to help advance conceptualization of the various dimensions of P-12 transitions taking place both into college and within college. The transitions from high school to college will require close attention to reforms that have taken place at both the P-12 and higher education systems. Scholars, practitioners, and policymakers must create data systems and data sets that link practice, policy, and research.
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A Tale of Two Systems: Principals’ Concerns with NCLB Testing and School Resource Availability

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Abstract

This study examined the patterns, and discrepancies regarding concerns of principals with NCLB annual testing and school resource availability. An ethnographic approach was used to determine the attitudes of eight middle school principals from high resource availability, average resource availability, and low resource availability. From the responses of the participants, one of the themes that emerged was concerns with NCLB testing. The patterns which emerged for concerns with NCLB testing were: stress, finances, and content. Principals from all resource groups other than high resources spoke in detail about the stress that they felt NCLB testing was creating within their schools. Principals from high resource schools spoke about the financial impact that NCLB testing brought upon their budgets. Principals from high and low resource schools spoke from different perspectives about their concerns with the content of annual state tests.

Objective

The purpose of the current research investigated when middle school principals are asked to describe their beliefs regarding concerns regarding No Child Left Behind annual testing requirements, what do their comments reveal along lines of similar school status?

Perspectives

In 2001 NCLB changed the paradigm for public schools operation. The impact of annual testing, highly qualified teacher requirements changed how schools operated. NCLB required outputs in student performance in the form of annual testing.

Differing opinions exist about the feelings and impacts that annual testing has had upon instruction and student learning. Taylor, Shepard, and Rosenthal (2003) found that teachers voiced positive feelings towards the adoption of standards, but not towards annual testing. Other studies (Abrams, Pedulla, and George, 2003, Clarke, Shore, Rhoades, Abrams, Miao, Li, 2004, and MacMillan, 2005) found that teachers have expressed a high degree of stress being created by annual testing. In studies regarding annual testing (Hanushek, kain, Rivkin, 2004; Sunderman and Kim, 2005; SundermanOrfield, and Kim, 2006) found that teachers’ fear of being associated with a failing school are causing them to leave struggling schools.

Methodology

To determine the attitudes of the principals, an interview protocol was administered. This allowed for the principals to describe in their own words their attitudes about the topics being researched. By analyzing the responses of the principals this study also investigated if differences in the attitudes of these middle school principals existed along lines of similar school status.

Eight middle school principals were selected from eight different middle schools representing seven school districts in Suffolk and Nassau County, New York. The eight principals represented six distinct similar school groups. Three of the principals worked in
schools categorized by New York State as low needs to resources available category, three in average needs to resources available category, and two in the high need to resources available category.

Table 1 identifies the gender, similar school status, resource availability to student need, experience in education, administration, and as a middle school principal.

Table 1  

Demographics of Participants

<table>
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<th>Participant</th>
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<th>Experience</th>
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<tr>
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</tr>
</tbody>
</table>

Data

The patterns that emerged from the theme of concerns with NCLB testing were creation of stress, finances, and test content.

Principals from all resource groups spoke of how annual testing was creating stress in their school. When speaking of this stress, two of the principals spoke of how test results are published as a source of concern. MH19, state, “When you show up in Newsday as this is where you are and where you ought to be, I think it holds some back.” The same pattern was spoken of from a principal in an average resource school. FA36, “When you get reported in the newspaper, and your school is on the chopping block, obviously everyone feels pressured.” Two of the principals spoke of the punitive nature that NCLB mandates bring to their schools. A principal from a low resource school, FL19, said, “I think the accountability is overly punitive. I think when we talk about published test results, particularly among a special education segment; I just think that is punitive.” A principal from an average resource school also spoke of the punitive nature associated with NCLB testing. MA13 “That threat of punishment is always over your head. I think that is what creates so much anxiety among teaching staff, and ultimately that creates anxiety out in the public as a means of motivating us to do a job in which we are already inherently motivated to do.” One principal, FA35, felt that NCLB testing impacted every stakeholder group in her school. “There is a ripple effect. Teachers are more stressed and I find that students are more stressed, and parents are more stressed.”

Two principals from high resource schools, MH38 and MH11, acknowledged that fear could exist because of the pressure to perform, but did not report it being present in their buildings. MH38 said his reason for this was that he refused to let it exist. Another of the principals from a high resource school, MH11, spoke of not being concerned with the “minimum competencies” of NCLB testing. Both of these principals stated they do not support many of the mandates of NCLB.

Only the three principals from high resource schools poke about NCLB testing and funding. The concern of these principals is that the mandates for testing do not provide financial relief for costs that the school incurs to provide training for teachers to be able to score tests and the costs incurred for substitute teachers. These principals spoke about how they are also funded at a lower rate than other schools. MH11 said, “I mean, a district is going to spend, for instance
between $12,000 and $15,000 just to rate the assessments, and that’s coming out of already razor tight budgets. There is limited BOCES aid if you do regional scoring. But otherwise, particularly in low-need districts like myself, you bear the burden of that cost entirely.”

Among the criticisms of the test itself, two high resource principals, MH11 and MH38, stated a concern about the tests which were used to evaluate schools because of the narrowness of their scope. Both of these principals were critical of a “one size fits all mentality.” MH11 stated, “to use a single measure to evaluate what’s actually happening and the successes that are taking place within the school is narrow in perspective.”

MH38 and FL18 commented at length about the content and composition of the test itself; both had criticisms about the content found on the annual tests. MH38 noted that in his school many of his brightest students were not performing well on these standardized tests because the tests were limited and not open ended. He stated:

The big problem in some ways is for the smart kids who are doing the inferencing. They are doing a lot of inferencing. When they do inferencing on the multiple choice questions, they get themselves into trouble. They are looking too deep when the subject is straightforward.

FL18 associated a drop in the scores of students at her school due to the abstract nature of the tests. She stated:

If you looked at the actual test, they’re very abstract in many parts, and at the middle school level we’re dealing with very concrete learning, still at this point. Our students really haven’t moved to that abstract learning process yet. They’re just getting there, probably towards the end of 8th or 9th grade year, where they can really start to think about abstract concepts….. but, you always see a dip when you see middle school scores – doesn’t matter what district; there’s always some sort of dip.

Conclusions

Participants spoke of three types of concerns they associated with annual testing: the creation of stress, financial constraints, and issues with the content of the annual tests. The feeling of stress was frequently stated as fear of public exposure by local newspapers. The principals also spoke of the tests creating stress among the faculty and the students. This finding is consistent with the findings in the literature (Abrams et al., 2003, Clarke et al., 2004, and MacMillan, 2005). Only principals from the highest resource availability did not express stress being caused by fear of performance on state tests.

In their studies regarding annual testing (Hanushek, 2002; Abrams et al., 2004; Sunderman and Kim, 2005, 2006) found that teachers fear being associated with a failing school. This study found that similar fears exist among principals. Many of today’s schools operate in a paradigm fueled by fear of failure and public exposure. The question that must be answered is whether or not this fear has positive impacts upon student achievement or debilitates learning.

Another concern, shared by two of the male principals from high resource schools, was the creation of financial burdens upon the school. This is felt when teachers are called upon to mark annual tests and substitute teachers have to be paid from the local budget without regional or statewide support. A final concern associated with the test that the content of the test was not appropriate for their students. A Principal from the high resource schools felt that the test penalized students who inferred and
thought beyond the scope of the question. The principal from the low resource stated that the tests were often too abstract for concrete learners and that the questions were not developmentally appropriate.

**Importance of this Study**

This study added to the body of literature in four of its key findings: 1) Discrepancies in the nature of NCLB testing and creation of stress; 2) The prevalence of fear being shared by the principals of schools in addition to the faculty, students and school community at large; 3) Concerns of principals of high resource school regarding the funding of NCLB testing; 4) Discrepancies between principals of high resource and low resource schools regarding the actual content of annual tests.

The first finding of this study was that NCLB testing is creating an atmosphere of stress in the schools. This feeling of stress is found more profoundly in low and average resource settings, and is not present for the most part in high resource school settings. These findings are similar to previous research but those studies did not address school resource availability as a variable. In previous studies regarding annual testing (Hanushek, 2002; Abrams et al., 2004; Sunderman and Kim, 2005, 2006) found that teachers fear being associated with a failing school. This study found that similar fears exist in the principal’s offices.

Another finding of this study was that principals in high resource schools express a greater concern about the financial impacts of annual testing mandated by NCLB more than their counterparts in average or low resource schools. A final finding was that while principals from differing resource groups have concerns regarding the content of annual state tests, principals the resource availability of the school played a significant factor in determining the specific nature of concern regarding test content.
References


A Pilot Study on the Use of Nonlinguistic Concrete Materials and Drama to Aid Vocabulary Learning for Third-Grade Students

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Abstract
This article reports on the effects of the use of nonlinguistic concrete materials and dramatization on student vocabulary learning in eight third-grade classrooms. It follows a preceding study which determined that the use of nonlinguistic concrete materials and drama in K-3 classrooms for vocabulary instruction was minimal and varied across content areas. The results of the pilot study showed that the use of nonlinguistic materials significantly improved vocabulary learning for normally-progressing students (p=0.00185), but had little or no effect on students in reading intervention classrooms. The study was quasi-experimental in nature and utilized six third-grade classrooms of normally-progressing students and two third-grade reading intervention classrooms. Each set of classrooms was randomly divided between treatment and control groups. The study did not prescribe a vocabulary instructional method other than requiring that nonlinguistic concrete materials and drama were to be used in the treatment groups. The concept of augmenting vocabulary lessons with these materials was based on extending the preliterate method of learning names of objects by seeing, touching, hearing, smelling, and tasting them. Vocabulary instruction time was held constant throughout the study for both treatment and control groups.

The landmark studies on early vocabulary acquisition by Hart and Risley were the impetus for our studies on vocabulary instruction in grades K-3. Hart and Risley (1995) documented that early word exposure during the preliterate period provided a linguistic foundation that supports the acquisition of future reading skills. For preschool children, it is the home environment that sets the stage for later vocabulary growth. The early word learning begun in the home comes from incidental word exposure through conversations that occur within the earshot of the child and random utterances that occur during the day as the parent or caregiver interacts with the child. “We have to change your diaper” and “I bet you are hungry” are words spoken directly to the young child. In addition to the everyday routine use of language, parents and caregivers teach words directly to children within their natural environment. “Here is your rabbit” and “This is a blueball” are deliberate attempts to teach very young children word meanings. During this direct teaching, the targeted word’s meaning is attached to a referent in the child’s environment.

To determine whether the early practice of pairing the word with its referent continued at school in grades K-3, we conducted a descriptive study of the materials teachers in grades K-3 used when teaching vocabulary. In 2009-2010, trained graduate students observed a total of 507 vocabulary lessons in 179 classrooms in northern Mississippi to document the types of materials teachers used during vocabulary instruction. We were interested in learning how many times nonlinguistic concrete materials and drama were used to teach targeted vocabulary. We found that the use of objects and actions varied among academic content areas as well as among the Mississippi Department of Education school performance ratings. The numbers of lessons that used objects and action
as a percentage of total lessons are as follows (Holmes & Holmes, in press; MDE, 2010):

<table>
<thead>
<tr>
<th>Academic Content Areas</th>
<th>School Performance Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics- 42.6%</td>
<td>High Performing- 34.5%</td>
</tr>
<tr>
<td>Science-15.0%</td>
<td>Successful- 31.2%</td>
</tr>
<tr>
<td>Language Arts- 9.1%</td>
<td>Academic Watch- 15%</td>
</tr>
<tr>
<td></td>
<td>At Risk of Failure-11.8%</td>
</tr>
</tbody>
</table>

This article describes a second study we conducted with 118 third-grade students to test whether the inclusion of nonlinguistic concrete materials and drama added to regularly planned vocabulary lessons had a significant effect on vocabulary learning. It is important to note that for the purpose of both studies, we defined vocabulary knowledge as “knowing the meaning of words” and vocabulary instruction as “teaching the meaning of targeted words.” Though important, spelling, phonics, and sight word recognition were not a part of either study.

Review of Vocabulary Instruction Research

The importance of vocabulary learning to school achievement cannot be overstated. Vocabulary knowledge is highly correlated with reading comprehension (Senechal, Ouellette, & Rodney, 2006; Biemiller, 2001; National Reading Panel, 2000; McKeown, Beck, Omanson, & Perfetti, 1983). Stanovich (2000) found that vocabulary levels assessed in grade one predict about 30% of the variance of grade 11 reading comprehension. Much of the research on direct systematic instruction of reading has focused on the teaching of phonological awareness, phonemic awareness, and phonics, all critical and predictive foundational skills for reading success. However, once these basic skills are learned, it takes vocabulary knowledge for students to comprehend the meaning of the words they have decoded (Stahl & Nagy, 2006; Nagy, 2005). The following quote by Marilyn Adams (2010/2011) eloquently summarizes the importance of vocabulary knowledge:

What makes vocabulary valuable and important is not the words themselves so much as the understandings they afford. The reason we need to know the meanings of words is that they point to the knowledge from which we are to construct, interpret, and reflect on the meaning of text. (p. 8)

Biemiller (2004) found that there is little planned vocabulary instruction in kindergarten and first grade classrooms. Without planned direct vocabulary instruction, children depend on written contexts to learn the meaning of new sophisticated words. Unfortunately, research suggests that written context alone is inefficient and ineffective for children under 10 because texts written for the early grades focus on readability and do not contain the words that would expand vocabulary knowledge (Biemiller, 2006; Stanovich, 2000).

Vocabulary instruction should be taught through direct and indirect methods (Graves, 2008; Stahl & Nagy, 2006). Of the estimated 2,000-3,000 words students learn in a year (Stahl & Nagy, 2006; Beck & McKeown, 1991), teachers should choose 10-12 words to teach directly each week, 360-432 words for a 36 week school year (Stahl & Nagy, 2006). These are the sophisticated and academic essential words students must know well for their daily lessons. The rest of the words are learned through exposure, mostly from books and other forms of written text (Hayes & Ahrens, 1988).

Learning the meaning of words is a complex multidimensional process (Lesaux, Kieffer, Faller, & Kelley, 2010) that can move students from basic definitional knowledge to broader and deeper layers of meaning necessary for the development of conceptual knowledge. Or, it can begin with building the knowledge of concepts and culminating in definitional
knowledge. These deductive and inductive approaches to vocabulary learning offer pathways to the understandings Adams (2010/2011) said were valuable and important for comprehension.

**Nonlinguistic Materials as a Multisensory Context for Word Learning**

The recognition that nonlinguistic concrete materials support cognitive processing is not new. Piaget (1976) developed his stage theory of cognitive development to explain how we learn about our world. Infants and young children begin to learn through multisensory explorations. As children progress through the next two stages, they depend on concrete materials to aid abstract thought. Roughly by age 12, they are able to engage in abstract thought with lessening dependence on concrete materials to the point where they can reason without their support.

Paivio (1986) found that interaction with nonlinguistic concrete objects supports linguistic input that leads to speaking and writing. He categorized these mental processes into two separate, yet interrelated cognitive subsystems, “verbal” and “imagery,” referring to imagery as “referent images” (p. 120). In our study we refer to the use of nonverbal materials and drama as “nonlinguistic” and the verbal and written codes as well as two-dimensional imagery as “linguistic” and “imagery” vocabulary instruction. No matter what the label, wordless representations of objects, images, or events evoke separate memory processes from verbal and written linguistic presentations of information (Paivio, 1986). It is interesting to note that when either of the subsystems (linguistic or nonlinguistic) is activated, the other subsystem is more easily recalled (Paivio, 1986). Therefore, memory is strengthened when both cognitive subsystems are activated.

Younger children, who have not developed reading skills that enable them to read books with sophisticated vocabulary, must rely on mental and pictorial images to provide context clues for word meaning. Powell (1980) conducted a meta-analysis of 23 studies on the use of mental imagery to promote word recall and found that high imagery words (e.g. flower) were remembered more often than low imagery words (e.g. loyalty). Taken to a different level, Marzano (2004) advocates the use of real, rather than imagined pictures that are supplied by the teacher or generated by the students. Moving beyond two dimensional images, Stahl & Nagy (2006) support the use of drama to convey a word’s meaning. They found that drama is most effectively used as a reteaching or reviewing strategy so that students have at least some background information related to the word as they try to construct meaning from the dramatic movements.

When the common method of instruction of using linguistic materials and two-dimensional images is augmented with nonlinguistic concrete materials and drama, students are exposed to more than one type of contextual encounter with words. This overcomes a danger pointed out by McKeown and Beck (2006) that teaching a word within a single context will lead to a limited view of a word’s meaning. For example, to expand the students’ knowledge about the word “barrel” teachers can bring a real barrel to class and let the students examine its attributes. This newly acquired information can be integrated with written and verbal explanations thus expanding their contextual knowledge of barrels. When students have access to information through their actions on a barrel, they develop an understanding that (1) not all barrels look or feel alike and (2) the word barrel, learned as a noun, can also be used as an adjectival (barrel shape)
and verb (barrel down the road). These understandings facilitate students’ ability to make meaningful inferences when they come upon this word in oral discourse or written text.

**Nonlinguistic Concrete Materials and Drama in Vocabulary Lessons**

In our review of the literature, we found that the concept of “multiple contexts,” a bedrock principle of effective vocabulary instruction (Beck, McKeown, & Kucan, 2008; Coyne, Simmons, & Kame’enui, 2004), was predominantly linguistic. Images and drama were recommended as viable learning tools (Graves, 2009; Kamil, 2004; Marzano, 2004), but were far outnumbered in our search by linguistic-only vocabulary strategies such as graphic organizers, writing journals, interactive word walls, student-created definitions, morphemic analysis, and the use of written context to derive meaning.

Making connections between known information and new information is a critical cognitive strategy that enables students to build knowledge through the activation of existing schema. Carr & Thompson (1996) call this mental process the “power of prior knowledge” (p. 1). Through the use of concrete materials and drama, students are able to connect hands-on sensory knowledge to the more complex abstract processes of learning a referent’s label, creating definitions, using words in sentences, and determining related conceptual information. Concrete materials provide opportunities for students, individually or in groups, to engage in nonlinguistic exploration, analysis, and inquiry that lead to linguistic processing through questions and conversations about the word and its attributes.

Noted researchers including Stahl & Fairbanks (2006) and Snow, Griffin, & Burns (2005) emphasize that definitional and contextual knowledge must be present for effective word learning because both add essential dimensions of word knowledge. For deep contextual processing to occur, students must encounter words in a variety of contexts. Adding back the concrete referents to vocabulary instruction is one way to provide a contextual mix of strategies that provides opportunities for students to make connections between new and previously learned or experienced information about words.

We developed an intervention that supports the written and oral presentations of word meaning with visual and touchable materials. A nonlinguistic concrete materials-based intervention emulates at school the early word learning begun in the home. Through the use of concrete materials, teachers can build a nonlinguistic context to provide meaningful clues for vocabulary learning through relevant visual, auditory, tactile, olfactory, and gustatory/taste experiences. Students have opportunities to integrate their hands-on, and, in some cases, noses-on, and, in fewer cases, taste buds-on experiences with the linguistic experiences of reading, writing, listening, and speaking.

**Third-Grade Pilot Study**

The purpose of our study was to determine whether vocabulary learning and retention could be improved by expanding the term multiple contexts to include nonlinguistic concrete materials and drama. The following research questions guided this study:

Research Question 1: Does the inclusion of nonlinguistic concrete materials and drama with teacher-planned lessons promote more durable vocabulary knowledge for third-grade students
Research Question 1: Does the inclusion of nonlinguistic concrete materials and drama with teacher-planned lessons promote more durable vocabulary knowledge for third-grade students in regular education classrooms than lessons that rely solely on linguistic materials and two-dimensional images?

Research Question 2: Does the inclusion of nonlinguistic concrete materials and drama with teacher-planned lessons promote more durable vocabulary knowledge for third-grade students in reading intervention classrooms than lessons that rely solely on linguistic materials and two-dimensional images?

Research Design

The following are the three core principles that guided our study:

1. Directly teach a few words each week and teach for deep understandings.
2. Teach sophisticated rare words that have direct high utility for the students.
3. Enable students to encounter and use the words multiple times, in multiple ways, in multiple contexts that contain definitional knowledge and relevant nonlinguistic information.

The quasi-experimental study was conducted daily for five weeks in the fall of 2010. Eight third-grade classrooms were randomly separated into treatment and control groups. The treatment groups received vocabulary instruction augmented by the use of nonlinguistic concrete materials and drama; the control groups received linguistic and imagery vocabulary instruction that had been previously planned by the teachers. The type of assessment used was pretest/posttest. The pretest was administered prior to the start of the study in October and the posttest was administered seven weeks after the last instructional session. To distance the students from immediate instructional effects, the posttest was given after the students returned from Christmas break so we could determine with more certainty whether the rate of word retention varied between students in the treatment and control groups.

Participants

A total of 146 students in regular education and intervention classrooms participated in the study. By the end of the study, data were analyzed for only the 118 students who had taken both the pretest and the posttest. Of these students, 92 were in regular classrooms and 26 were in intervention classrooms. School-wide, 57% of the students were eligible for free and reduced lunch. Seventy-eight percent of the students were white, 18% were black, and 2% were Hispanic. Eight teachers participated in the study. Of the eight teachers, six taught in self-contained classrooms with heterogeneous student populations and two taught reading intervention classes that served students with low reading achievement. The six regular education classroom teachers and the two intervention teachers were randomly assigned to either a treatment or control group by Ellenburg, one of the researchers. The size of the student population in each regular education and intervention class varied from 15-18 students resulting in n=51 for the regular education treatment groups and n=41 for the regular education control groups, and n=15 for the intervention treatment group and n=11 for the intervention control group.

Word Selection and Materials

Teachers from all eight classrooms met in September, 2010, to select 50 words to teach explicitly during the five week study. These words came from the third-grade curriculum course of study for reading, mathematics, science, and social studies curricula and were to be taught to all students in both the treatment and control groups. Specialized content area
words were selected because they appeared frequently in content area texts and lessons and were needed to understand the lesson. A few easier words were selected because of their prime importance for understanding a reading passage or for content area learning. The teachers used the following tiered system of categorizing words by level of difficulty and utility developed by Beck, McKeown, and Kucan (2002):

Tier 1- High frequency everyday words known and used by children that rarely need instruction

Tier 2- High frequency synonyms for the everyday words students already know and use

Tier 3- Low frequency, but essential specialized academic words, that refer to new or specific concepts within disciplines

It is important to note that the categorization of words among the three tiers varies according to culture and geography. For example, the students in the study live in southern Alabama and are more familiar with thunderstorms, tornadoes and hurricanes than children in southern California. Therefore, for this population of students we labeled these words as Tier 1. They are already primed for learning Tier 2 and Tier 3 words related to weather such as “precipitation,” “cumulonimbus,” “front,” and “supercells.” Furthermore, children who come from talkative families or who are exposed to a wide array of books have already been exposed to the more sophisticated Tier 2 and 3 words as a matter of course (Hayes & Ahrens, 1988; Hart & Risley, 1995) and should be challenged accordingly.

In addition to the challenge of selecting useful words at the appropriate level of difficulty, the teachers had to choose words that could be represented by concrete materials and drama. Initially, they were concerned that there would be too few words that could be matched to their referents. However, this concern was unfounded. They found that many of the words students needed to know for content area learning and reading comprehension could be matched to these materials. Tier 3 themed content area words frequently lent themselves to multimodal student engagement (Bravo & Cervetti, 2008). The complete list of vocabulary words used in the study is shown in Table 1.

After the words were selected, teachers in the treatment group met to determine how to procure the necessary materials. Collaboratively, these teachers put together a vocabulary trunk with materials they already owned, could make, or find to share among the four treatment group classrooms. Many of the materials existed in the immediate environment and could be gathered at little or no cost. For example, for the word “spoiled” teachers provided their students with spoiled milk. For the word “bulb” teachers found different types of bulbs to show how the word “bulb” could be represented in different ways (e.g. flower and light bulb). Though a small budget was available by the researchers to the teachers to purchase materials, this was not used. Together, the teachers were able to gather all the materials on their own.

Another concern was that it would be too difficult or too costly to create a collection of materials for each of the four treatment classrooms. The teachers accommodated this need by staggering the times of their vocabulary lessons. This allowed the four groups to teach the same words each day using the same corresponding concrete materials.
Instructional Procedures

The instructional part of the study began October 18, 2010, and ended November 19, 2010. All teachers were required to teach the same 50 words during the study. They explicitly taught 10 new words each week for five weeks. The vocabulary lessons lasted between 15-20 minutes a day, four days a week. Teachers in the treatment and control groups introduced all ten words along with their definitions on Monday. During the week they taught lessons using two different vocabulary PowerPoint programs that were required by the school and in place since August. The PowerPoint programs included pictures and videos of the words and contained games and other activities for the students and can be accessed from the following sources:
Teacher Created Resources to Support Pearson Scott Foresman Reading Street
http://classroom.jc-schools.net/waltkek/Third%20Grade.html
Third-Grade Reading Street Teacher Resources
http://www.scottsboro.org/~flewis/SF%20Reading%20Street/Third%20Grade%20Reading%20Street%20Teacher%20Resources.htm

At the conclusion of each lesson, students in the treatment and control groups were given vocabulary worksheets that were to be completed during the day in learning centers. The worksheets were not graded, but were used to identify the words teachers needed to reteach or clarify during their lessons. On Friday, all students took a weekly vocabulary test.

The following describes how the vocabulary lessons differed between the treatment and control groups:

The teachers in the treatment groups augmented the PowerPoint lessons with nonlinguistic concrete materials and drama that matched the targeted vocabulary. They set aside these materials and gave the students time to explore them individually and in small groups. For example, students discussed the attributes of a real bulb made up definitions, used the word in sentences, and played games or completed activities introduced through the PowerPoint lesson. No scripting or detailed instructions on ways to use the materials were given to the four teachers.

The teachers in the control groups engaged the students in linguistic and imagery vocabulary instruction presented on the PowerPoints and did not include nonlinguistic concrete materials and drama in their lessons.

The authors met with the teachers weekly to ensure that the teachers of the treatment and control groups were following the study design.

Assessment

The same test was used as the pre and posttest for students in the treatment and control groups to determine levels of word meaning retention. The pencil and paper pre/posttest was created by the authors and the other third-grade teachers and revised to ensure that the definitions were accurate, clearly written, and that only one word from the list of four choices matched the definition. We checked the possible answers to make sure the distracters for any given word were constructed with the same part of speech, tense, or number. We followed a format recommended by the National Reading Panel (2000) where the definition was written and students had to select the word that matched the definition. We decided to use the definition as the stem with single words as the choices because the reverse procedure would have required the students to do more reading. With a 50 item pre- and post-test, we wanted to
minimize fluency and readability as variables in order to focus our assessment on word meaning.

**Word Selection Analysis**

Since the teachers selected the words to be taught according to their vocabulary framework and the various content units which were covered during the five week study, their decisions on word choice were final. We analyzed the 50 words they selected to determine whether there were patterns of word choices that emerged with a view toward informing word choice for future similar studies.

Our concern was that the teachers included 15 Tier 1 words among the 50 words they selected to teach. They responded that Tier 1 words were necessary since they were important to the unit of study. Furthermore, some said they didn’t want the children to know zero words at the time of the pretest for esteem reasons. We deferred to their judgment on the issue, but the disadvantage of having too many Tier 1 words is that it removed a good deal of the “improvement space” or “headroom” in the study. That is, since the overwhelming majority of the students knew the meaning of the 15 Tier 1 words, they were actually being tested on only 35 words (the sum of the Tier 2 and Tier 3 words).

We divided the 50 words selected for instruction according to their parts of speech. The results are also shown in Table 1.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Word</strong></td>
<td><strong>Tier</strong></td>
</tr>
<tr>
<td>crops</td>
<td>2</td>
</tr>
<tr>
<td>lazy</td>
<td>1</td>
</tr>
<tr>
<td>partners</td>
<td>2</td>
</tr>
<tr>
<td>cheated</td>
<td>1</td>
</tr>
<tr>
<td>instrument</td>
<td>2</td>
</tr>
<tr>
<td>calendar</td>
<td>1</td>
</tr>
<tr>
<td>resources</td>
<td>2</td>
</tr>
<tr>
<td>community</td>
<td>2</td>
</tr>
<tr>
<td>throne</td>
<td>2</td>
</tr>
<tr>
<td>environment</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Week 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Word</strong></td>
<td><strong>Tier</strong></td>
</tr>
<tr>
<td>barrels</td>
<td>2</td>
</tr>
<tr>
<td>pegs</td>
<td>2</td>
</tr>
<tr>
<td>trophy</td>
<td>1</td>
</tr>
<tr>
<td>spoil</td>
<td>1</td>
</tr>
<tr>
<td>coordinate grid</td>
<td>3</td>
</tr>
<tr>
<td>core</td>
<td>2</td>
</tr>
<tr>
<td>crust</td>
<td>2</td>
</tr>
<tr>
<td>mantle</td>
<td>3</td>
</tr>
<tr>
<td>map</td>
<td>2</td>
</tr>
<tr>
<td>rocks and minerals</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 3</th>
<th>Week 3 Continued</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Word</strong></td>
<td><strong>Tier</strong></td>
</tr>
<tr>
<td>bulb</td>
<td>2</td>
</tr>
<tr>
<td>blooming</td>
<td>2</td>
</tr>
<tr>
<td>sprouting</td>
<td>2</td>
</tr>
<tr>
<td>doze</td>
<td>2</td>
</tr>
<tr>
<td>showers</td>
<td>1</td>
</tr>
</tbody>
</table>

One reason for the dominant number of nouns was that the content-area textbooks typically dwelt on definitions related to the
themed concepts of nouns rather than any other part of speech. For instance, in the science unit on the geological aspects of the earth, five vocabulary words were selected. All were nouns. In the unit on weather, four words were taught. All four were also nouns. Nouns were selected for the simple reason that they named the concepts the teachers wanted the students to know. Again, we deferred to the judgment of the teachers.

The teachers essentially followed the research-based advice of Biemiller (2001, 2004) that children younger than 10 years have difficulty inferring the meaning of new words from written context alone. Thus, the teachers selected important words from the context of the students’ textbooks for intensive direct instruction and spent the first part of their vocabulary lessons on teaching the definitions and delivering instruction on those targeted words through PowerPoints. The teachers, therefore, used both contextual and isolated word methods for teaching vocabulary.

Another issue was the inclusion of inflected words in the 50 selected words. Unlike derivational morphemes that generally change the meaning and part of speech of the root words, inflectional morphemes don’t change the meaning at all. Instead, they simply adapt the words to the standards of English usage and syntax by the addition of suffixes. Of the 50 words, the teachers selected 17 words in an inflected form. That is, “resources” was taught, not “resource,” “blooming” was taught, not “bloom.” One reason for this was that the word was simply copied without changing the form at all from the texts that the students were using in science, mathematics, or social science units.

Data Analysis and Results

The average scores on the pretests and posttests are shown in Table 2.

| Table 2. Average scores by control and treatment groups on pre- and posttests |
|-----------------------------|-----------------------------|
|                             | Pretest                     |
|                             | Number of Participants | Average score |
| Control Group               | 63                           | 48.5           |
| Treatment Group             | 70                           | 50.6           |
| Posttest                    |                             |
| Control Group               | 65                           | 64.0           |
| Treatment Group             | 69                           | 72.2           |

The average scores indicate that the students knew the approximate meaning of about half the words to be taught. Of course, some margin must be assumed for correct guessing.

These raw averages shown in Table 2 simply show the approximate improvement over all students. For the detailed analysis, we eliminated pre- or posttest scores for the students who did not take both tests. To determine the improvement on a student-by-student basis, we compared scores of the same student from pretest to posttest by subtracting the score on the pretest from that on the posttest.

We separated the effects of the materials on normally progressing students in the six regular education third-grade classrooms from their effects on academically-delayed students in the two third-grade reading intervention classrooms. Thus, we analyzed the improvement...
separately for the two intervention classrooms from the improvement of the other six classrooms.

The results for the normally-progressing classrooms and for the intervention classrooms are shown in Table 3.

<table>
<thead>
<tr>
<th>Normally Progressing Classrooms:</th>
<th>Number of participant</th>
<th>Average difference in posttest and pretest scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>41</td>
<td>16.9</td>
</tr>
<tr>
<td>Treatment Group</td>
<td>51</td>
<td>24.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention Classrooms:</th>
<th>Number of participants</th>
<th>Average difference in posttest and pretest scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>11</td>
<td>11.3</td>
</tr>
<tr>
<td>Treatment Group</td>
<td>15</td>
<td>11.9</td>
</tr>
</tbody>
</table>

The standard deviations for the average differences between posttest scores and pretest scores were 10.7 for the treatment group and 12.3 for the control group. A t-test was conducted to determine whether these results were statistically significant at the 0.05 level. We found that the result was significant at the p = 0.0011 level, thus enabling us to reject a null hypothesis that asserted that the use of materials had no effect on vocabulary learning by normally progressing third grade students. There remained, of course, the possibility that the treatment group was further advanced academically than the control group, either by innate intelligence or environmental factors.

In order to control for those differences, we conducted an ANCOVA, using the scores of the pretest as a marker for prior general knowledge and the scores of the posttest as the dependent variable. However, prior to the ANCOVA, we ran a homogeneity of regression analysis to determine whether the assumptions behind the ANCOVA would be valid. The slopes of the regression lines for pretest versus posttest were determined for both the control and treatment groups. The slopes turned out to be within 6.8%, small enough to warrant the ANCOVA’s use.

We found that the overall correlation between pretests and posttests for both groups combined was $r = 0.665$ and the portion of the within groups variability of the posttest scores attributable to covariance with pretest scores was 0.687. After subtracting variances arising from these sources from the appropriate variances (within groups and between groups), and adjusting the mean scores, we found a p-value of 0.00185, still substantially beyond our threshold for rejection.

The effect size was 0.668, in the moderate to large range.

We checked for internal consistency for each definitional question by utilizing the calculation of Cronbach’s alpha. The variance of the posttests scores was 256.41 and the sum of the individual variances of each “testlet” turned out to be 39.47. Thus, Cronbach’s alpha was calculated to be 0.863. Nunnally (1978) provides a rule of thumb of 0.70 in order for the data to be considered internally consistent. Thus, we concluded that our test instrument was in the proper range for internal consistency.

The results for the intervention classrooms, however, weren’t so encouraging. The raw mean improvement for the control group (n = 11) was actually higher (13.1) than the treatment group (n = 15) mean improvement (12.5). One score in the treatment group was an
outlier. The student scored 62 on the pretest, but only 40 on the posttest. If his/her score is disregarded, the raw mean increases to 15.0, but it is still far short of providing justification for rejecting the null hypothesis. The relatively small sample size and perhaps other hidden variables had a major impact on the study in intervention classrooms.

Conclusions

In this study we learned that nonlinguistic concrete materials and drama, when combined with regularly planned linguistic vocabulary lessons, had a positive learning effect for regular education students, but made no significant difference in vocabulary learning for students in the reading intervention class. The students in the regular education classrooms had large gains from pretest to posttest showing that concrete materials were associated with vocabulary learning. The low p-value gives us confidence that this is a real improvement, not just a statistical anomaly.

Questions and Concerns

Why was there a vast difference in the improvement of vocabulary learning between the students in regular and intervention classes? It is intuitively appealing to think that multisensory materials would provide a necessary scaffolding for children unable to derive meaning from the more abstract code instruction of speech and writing. But that conclusion was not borne out by the data.

Why did we teach the same words to both groups? The words came from academic content taught to all students and they are therefore important to understand other subjects in the curriculum. Denying students in the intervention group access to sophisticated and academic words will hurt them during their study of academic subjects. We maintained high academic standards for both groups.

The most frequently asked question concerning this research was none of the above, but rather, “How do you teach words that represent abstract concepts and, therefore, can’t be represented by their concrete referents?” Our response mirrors the answer that the phonics-first researchers give when asked about non-decodable words: “You teach them as sight words.” Our answer for words that can’t be represented through concrete materials and drama: “You use linguistic methods.” However, just as there are a large number of words that can be decoded, there are a large number of words that can be represented through nonlinguistic materials. Because teachers have time to teach directly only a fraction of the 2,000-3,000 words students learn each year, the field is wide open to select words that can be matched to concrete referents or represented through drama.

How was this augmentation of vocabulary instruction received by classroom teachers? Some teachers we talked to have been reluctant to try new methods that deviate from trusted linguistic strategies. In our conversations they said they thought the use of nonlinguistic concrete materials and drama would be too time consuming and labeled these materials as something fun to do, a “frill.” However, the teachers who participated in the study planned to continue using concrete materials in their vocabulary lessons. This strategy also had the support of the principal who asked the third-grade teachers to create vocabulary trunks of materials.

Implications for Future Research

Implications for future research come from the questions that arose from the study design and learning improvement results. It is
evident that more research is needed to
determine the disparity between regular
education and reading intervention results. With
such small numbers, 26, in the intervention
classrooms, more research must be done on a
larger sample size to confirm the reliability of
the results.

Another variable may have been the
differences in the size of the students’
vocabularies. If students in the intervention
classes have a smaller lexicon, they may lack the
relevant schema to learn some of the more
sophisticated academic words during the time of
the study. On the other hand, the selection of
less challenging words creates a ceiling effect
that limits the measurement of learning
improvement between the pre and posttest.
To minimize the numbers of words students
must learn, we suggest that teachers use
materials to teach the meaning root words
without their inflections. Because inflections
typically accommodate the syntax of the
language, root word knowledge should be
sufficient for learning meaning. In this study,
34% of the words were inflected rather than root
words. Reed (2008) found that students who use
their knowledge of morphology to break words
into their roots and affixes learn the meanings of
two-three more new words daily than students
who have not been taught this skill.

The principles of judicious word
selection, multiple exposures, and varied
contexts (e.g. Pearson, 2007; Hiebert & Kamil,
2007; Stahl, & Nagy, 2006; Beck, McKeown, &
Kucan (2002); Blachowicz & Fisher, 2000) are
hallmarks of a sound research-based vocabulary
program that can be sustained and supported
through the use of concrete nonlinguistic
materials and drama. When teachers expand
their repertoire to include materials students can
see, touch, hear, and sometimes taste and smell,
they provide an enriched multisensory context
that provides even more opportunities for
students to deepen their word knowledge, and is
not a frill.

Vocabulary learning is integral to the
Common Core State Standards for English
Language Arts. The College and Career
Readiness Anchor Standards for Language
(CCR) devotes three of the six standards to
vocabulary that include the analysis of
meaningful word parts, the use of context clues,
nuances in word meaning, and the use of
academic and domain-specific words (CCR,
2011). To help all students meet these standards,
it is essential to further the research on
vocabulary learning.

Currently, we are replicating this study
in 12 regular education sixth-grade mathematics
classrooms. We are also seeking ways to repeat
this study in other K-3 regular education and
reading intervention classrooms to learn whether
the impact of nonlinguistic concrete materials
and drama on vocabulary learning varies among
grade levels, achievement levels, special
populations, content areas, and word choice.

Though there is no single method that
works for all students, our study of pairing of
nonlinguistic materials with linguistic
instruction can expand contexts for word
learning. The third grade teachers in our study
stated that they were able to identify important
curriculum content words that could be matched
to available or inexpensive referents and easily
include them in their regularly scheduled
vocabulary lessons. Through the use of concrete
materials and drama, their students had
opportunities to engage in exploration, higher
level thinking, and discourse in teacher-directed
and student-centered lessons. Lessons that
engage students with linguistic and nonlinguistic
information are compatible with Paivio’s (1986)
dual coding theory where he states, “Human cognition is unique in that it has become specialized for dealing simultaneously with language and with nonverbal objects and events” (p. 53).

Our pilot study of third-grade students is important because it establishes a rudimentary research base for the inclusion of nonlinguistic concrete materials and drama in vocabulary lessons. To date, we have found no other studies that focus on the teaching of vocabulary with nonlinguistic concrete materials and drama.

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What teachers do is help make possible futures more real for students. They help students look for the seeds of potential referred to by Gibran. Teachers then help individuals choose and nourish those seeds into development toward their best selves.

Teachers help students dream. Here it is important to understand the dynamic of dreaming. The difference between a simple fantasy and its transformation into a dream is the addition of responsibility. “In dreams begin responsibilities” state William Butler Yeats. Fantasies are turned into dreams as individuals commit themselves to growing in a particular direction.

Teachers are challenged to design the best process for helping students realize their dreams. Do we feed them a steady diet of facts? Do we focus on exciting their thinking? Do we encourage the construction of understanding? Do we set up learning environments conducive to the emergence of initiative? What do we value within the educational process that they value? The following vignettes illustrate a possible plan of delivery.

***

A former student, let’s call him Larry, at a small college where I worked had trouble writing a paper on what he wanted to do with his life. When pressed, he confessed that his real ambition was to become a professional bass fisherman. If that didn’t work out, then he would become a teacher. Larry expected my disapproval but didn’t get it. I told him if that was really his dream, then he had to commit himself to that endeavor first, because it would always impede his future as a teacher not to have tried.

We then discussed Larry’s dedication, talent, and competence as a bass fisherman. Was that endeavor aligned with his values? Is it what God what wanted him to do? How would becoming a professional bass fisherman align with his personal beliefs? He didn’t know and I
didn’t either. But perhaps the answer would someday unfold.

Our discussion was also an opportunity to explore the concept of intellect, the capacity for understanding the dynamic complexity of an endeavor. Professional bass fishermen have developed the intellect specific to the challenges of the profession; they must know the ecologies of lakes and rivers, as well as the ethology of bass behavior. It is also a business, so they must develop that understanding as well. Professional bass fishermen must develop a “special literacy.” They must be able to read the challenges and opportunities of their situations.

I told Larry that there was a word for bass fishermen who didn’t understand the necessary ecology and ethology of the endeavor: “amateurs.” The professionals of any endeavor develop their intellect in response to its specific challenges and opportunities.

Larry wrote a paper on the intellect of a bass fisherman. He read several books written by professionals. If nothing else, he found out that it is not as simple as most people suppose. It is a dynamically complex task requiring a developed intellect identified as a “cultivated intelligence.”

Most importantly, Larry’s interest was fully engaged in the process of an academic investigation. He became personally involved. The gaining of knowledge made more sense to him. This was not an exercise in “bulimic learning” for him. He acquired content knowledge not to pass a test, but because it aligned with who he was and what he wanted to become.

I haven’t heard from Larry in awhile, but I hope he musters the responsibility to make his dream become reality. He may change his dream, but regardless, he learned something about commitment, intellect, and responsibility, as well as ecology and ethology. If he decides to instead go directly into teaching, it will be a more informed decision and he will therefore be a better teacher. If Larry makes it as a professional bass fisherman, who knows what opportunities for contribution that will provide.

In that case, I did my job.

***

One of my best exercises of good judgment in regard to student teaching supervision was with a woman we will call Betty. (I will, of course, omit any evidence of poor judgment in this essay.) Betty worked with third graders in a San Diego classroom.

After my first observation of Betty, I requested a private room for consultation. She was a strong teacher, well organized and clear in her communication. Only one thing bothered me; left unchecked it would weaken her as a teacher. She could tell that something bothered me; she nervously awaited my comments.

I asked Betty why she hugged the kids. Puzzled by my question, she could only respond, “because we’re supposed to.”

Betty was a victim of a malady in American education, the pushing of universal techniques. Both her textbooks and professors had systematically told her that she should hug the kids. Betty, however, was simply not a hugger. You never saw a more awkward tableau than Betty forcing herself to hug those little kids. And they knew the hugs were forced. They submitted to them, but they too felt awkward.

Betty and I had a discussion about why she was not a hugger and whether she could, or even should, become one. She informed me that her family was not one to for physically showing affection. Nonetheless, her family was a caring one. We then discussed alternative ways of
showing affection and the benefits of behaving in ways that are natural to who you are.

By the end of her student teaching experience, Betty had the allegiance and affection of her students. She was comfortable in her role as a teacher. The students were comfortable with her. She was affectionate with them, but verbally, not physically. And the kids responded to her sincerity. Betty had learned that she had to find her own way of becoming a successful teacher.

In that case, I did my job.

***

One day I entered my classroom and began addressing the subject for the day. Soon, however, I noticed that one of my students, who we shall call Carolyn, a young mother of two children, was upset. To my question as to whether she was okay, she replied that she was consumed with anxiety because she was taking the Praxis exam the next day.

Carolyn had studied and studied, but she was not a good test taker. She had taken the Praxis before, and failed to pass it. Taking a test made her feel stupid (her word). I validated her point that test anxiety can erase memory and stifle intelligence and I asked the class to share a few examples of test stupidity.

I changed my agenda for the day to address test anxiety. I then introduced the issue of how we can choose to reduce stress in our lives and the importance of such freedom. (The alcoholic chooses alcohol, etc.) The methods we choose define us in powerful ways.

The class was human development, so the subjects of test anxiety and stress release were appropriate. The teacher’s job is to help people make possible (and, of course, desirable) futures more real. The situation had provided a teachable moment.

When I asked how she dealt with stress in her life, - Carolyn then gave a curious answer, “I don’t have a way to relieve stress,” was her reply.

“Then, Carolyn, you will soon be a dead woman. Or, actually, you would already be dead. Think about it. What is your primary method of relieving stress?” “I guess I pray a lot,” she said. There you go. That works. Have you prayed about the Praxis exam?”, I said. “I sure have, but I am still anxious. I had prayed before but I still flunked.”

“What about a prayer circle? Have you asked for help from people in your church?” (I had prior knowledge of her religious affiliation.) “I can’t do that,” she replied.

“Of course you can. They will do it for you. Call some people together this evening. I’ve got ten dollars that says that will help you pass the test.” “I can’t do that,” she repeated.

At this point, one of her friends in the class joined the discussion: “But Ronnie (Carolyn’s husband) can do that. I’m gonna call him and ask him to pull together a prayer circle for you.” And her friend did.

Carolyn reported in the next class that she had taken the test with a full night’s sleep behind her and hadn’t felt nearly as anxious as usual. A few months later she caught up with me in the hall to inform me that she had indeed passed the test.

Not only did that particular day of instruction help Carolyn pass the Praxis, but the rest of the class saw the importance of how we choose to relieve stress in our lives. It also
contained lessons in the dynamics of test anxiety and the development of persistence, the not allowing of oneself to become trapped by predicaments, to somehow find a way out of a situation.

In that case, I did my job.

***

When my Learning Theories class began in the afternoon of September 11, 2001, the shock, anger, and confusion in the faces of my students was obvious. Our country had been attacked that morning. I asked myself, “What would be the best way to conduct the class?” Sometimes, in such situations, people need to stick to a routine. Other times, they need to break routine and have a conversation that addresses the event. A key concern of mine, as a teacher, is the phenomenon of resonance:

In music, resonance means the reinforcement or prolongation of sound by reflection or synchronous vibration. In education, resonance occurs when students reinforce instruction by personal reflection or sympathetic engagement.

What are the conditions necessary for students to resonate with a particular understanding or insight? Students incorporate instruction into their developing intellect whenever they resonate with the insight or understanding. Learning, after all, is action on the part of the learner. It is self-construction, not an imposed bit of data. When students are not ready to resonate with a lesson, because of whatever conditions, then teachers need to adjust their teaching. So we talked.

We discussed how America could develop an informed decision about how to respond to the attack. How could we figure out what to do without sufficient and definite information? Could we, as a nation, muster the wisdom to have the clear-headedness and patience to wait until we knew who was really responsible? Would we, instead, find scapegoats in order to make ourselves feel better?

The discussion evolved into thinking about the “making of judgment”. How does a person or country determine education decisions in the midst of the confusion caused by anger, shock, and lack of dependable information? Dynamically complex situations such as the 9/11 attack require the exercise of a developed judgment, because clear knowledge about causes and conditions is rare, if not impossible.

Thinking about issues such as dynamic complexity and judgment transfers readily to the kind of predicaments inherent to the teaching endeavor. This was not made clear in the class. It was unnecessary, and inappropriate to do so at that time.

Several students told me, on that day and on following days, how much they appreciated the opportunity to have a conversation about the attack. Such an event should not be ignored for the sake of curriculum. The class helped them deal with their anger, shock, and confusion.

In that case, I did my job.

***

Conversation is an integral component of a constructivist learning process. Teachers should “lead the conversation.” Learning is perceived by constructivist teachers as primarily a social endeavor, one in which individual learners work in a collaborative effort to construct knowledge. Linda Lambert (1995), in *The Constructivist Leader*, writes:
In a constructivist conversation, each individual comes to understand the purpose of the talk, since the relationship is one of reciprocity. Each person is growing in understanding; each person is seeking some interpretation of truth as he or she perceives it.

Learning requires the application of the learner’s initiative. Therefore, conversation must occur (People can, of course, have a conversation within themselves.) because therein initiative is encouraged and informed. The opposite of initiative is inertia. Without conversation, any knowledge transferred between teachers and students is inert. It will not contribute to the life of the mind. Some weeks ago, a student in one of my classes commented, “This is my favorite class because everyone in here talks.”

I had managed to “lead the conversation,” to set up the conditions in the classroom that encouraged contribution from everyone. The students felt safe. They trusted the learning environment. They felt free, and challenged, to develop their understanding of the subject, not just memorize stuff for the tests.

Learning was understood as a continuous construction process, and as a personal but also a communal endeavor. The students therefore applied the energy and creativity of their initiative. They “owned” the process and the class.

In that case, I was doing my job.

***

I have a collection of stories I tell, entitled “Portraits of Educated and Uneducated People.” The collection is centered around the relationship between the educational process and the gaining of experience. The stories serve as useful images to help us discuss various concepts in learning theory and human development. The stories illustrate several key questions:

- What does it mean to be a successful human being?
- What are the essential characteristics of an educated, or, for that matter, experienced person?
- How does the education process fit in with the responsibility we owe our dreams?
- Why are some people better at gaining experience than others?
- How do we move toward our best potentials and avoid situations that diminish us?

An essential concern of the collection of stories is that we all have the task of determining what we all meant do do. Living a responsible life means determining who you are and choosing a vocation in alignment with that truth. I frequently ask my students for a reflection paper on the subject.

Whenever I do that, I am doing my job.

The Teacher’s Intellect

The ability to make possible futures more real for others depends upon the development of characteristics such as informed compassion and educated initiative. It goes beyond the mere acquisition of knowledge. It requires understanding of the student/teacher relationship and the joys and predicaments of its idiosyncratic and interactive nature. Teachers need to constantly learn how to read their situations, to develop their literacy as teachers.
The ability to teach requires the development of a teacher’s intellect, which is the structure of heart and mind that guides compassion and initiative. Bearing in mind Howard Gardner’s (understanding) of intelligence as the capacity to solve problems and fashion products, teachers have the responsibility of cultivating their intelligence as teachers.

Intellect is the capacity for understanding the dynamic complexity of an endeavor. The nature and substance of intellect is determined by the kinds of intelligence individuals choose to cultivate within themselves. Intellect, as it evolves, becomes what informs and directs the future activities of intelligence. Intellect is meta-intelligence or metacognition.

Intelligence without intellect can only be reactive; intellect is what makes action possible. Intelligence may be the capacity to solve problems and fashion products, but intellect is what identifies the problems to be solved and the products to be fashioned.

The endeavor of teaching generates specific kinds of problems that have to be solved. The products of teaching, such as competent and informed practitioners, life-long learners, successful human beings, and facilitative learning environments, are also specific to the endeavor. Teachers, like doctors, lawyers, detectives, politicians, or plumbers have a kind of intellect specific to the endeavor.

Practitioners who are not genuinely and actively engaged in the process of cultivating their intellect as teachers are stagnating. (Clear evidence that they were meant to do something else.) Teachers have not only the professional but the spiritual responsibility to develop their intellects as teachers. They owe it to their students, to the future, and to themselves to do so.

Compassion which is not informed and guided by a developed intellect can, in its blindness, diminish and cripple students. Compassion is essential to a healthy student/teacher relationship. Students know when teachers care for them. They resent and resist those practitioners who have agendas other than helping them forge a desirable future from their potential. But compassion without intellect is reactive; it lacks the perspective necessary for the true initiative, for action that best helps students image a dream and develop the necessary responsibilities.

Education for Initiative

I frequently ask my students this question: “The heart of our being cares about only one thing to important enough to measure it; what is that?”

They can investigate this question in any way they choose. They can talk to anyone: teachers, friends, family. A key ingredient of many of my assignments is conversation with people outside of the class. I take a special joy in involving people peripheral to the classroom experience with the puzzles I give my students. This expands the learning community.

The answers gathered from such conversations are always interesting. The resulting discussions are always enlightening.

In the heart of our being, we care only about growth. That growth can be intellectual, emotional, or spiritual. When we grow toward our potential, when we grow in our capacity to understand or love, or when we grow closer to our personal definition of God, then we take note and reward ourselves with the feeling that we are onto something. We measure only those
times when we are forging the substance of ourselves, when we are developing our integrity.

No other form of achievement, whether it consists of money, position, or fame, has an appreciable impact on us as individuals. Nothing other than growth matters. It is the only real success. Therefore, education for initiative is what should guide instruction. This is because:

**Initiative is movement toward growth.**

Initiative is never a reaction. It is a movement along a path of development. Initiative is what enables people to construct the responsibilities necessary for the actualization of their dreams. Without initiative, we do not think for ourselves, we don’t expand our awareness and understanding, we don’t develop ourselves emotionally, intellectually, and spiritually. Ultimately, the development of initiative is the aim of all teaching. Education for initiative is, in essence, the best evidence of success.

Simplistically filling student with facts is short-sighted because it systemically results in either resistance or resentment, or worse, bulimic learning. Initiative is intimately bound up with interest and ownership. The concept of relevance, a bugaboo to those who push for programmed instruction, is especially important to education for initiative.

Development of Intellect

A key insight to understanding the teaching endeavor is embedded in the statement, “God sends threads to webs begun.”

That image of threads moving toward evolving webs, illustrates intellectual development. My job is to help students design and construct their webs of understanding, their intellects. The necessary threads will then, with the help of student interest and initiative, accumulate to elaborate and nourish the evolving intellects.

I am philosophically a constructionist. My job as a teacher is to establish the conditions conducive to the emergence of learning in my classrooms. Therefore, my primary concern and activity as a teacher is to develop the interactive conditions in the student/teacher relationship that are conducive to the development of initiative. Initiative is a cardinal virtue. It is at the core of all worthwhile learning. Initiative is therefore at the core of all worthwhile action.

Two definitions need to be made clear at this point:

1. A condition is “something that must exist before something else can occur.”

   Certain characteristics of learning environments must be in place before learners are encouraged to bring forth initiative, to resonate with the instruction. Mutual trust and respect are integral to a healthy classroom. A spirit of inquiry is essential. A sense of freedom to fail is also necessary. Students must find the instruction relevant to their interests and potentials. Students need to also feel connected to the instructor; they must believe that the instructor is primarily concerned with helping them actualize their potentials. Without the presence of such conditions in classrooms, the development of initiative is suppressed rather than encouraged.

2. An emergence is an “unpredictable development” that arises from the interaction of underlying conditions.”

Programmed instruction assumes that developments, such as the capacity to read, can be assembled in a linear fashion. The state of
New York once isolated over 1200 separate reading skills that were, of course, research based. The result was a curriculum consisting of a blizzard of worksheets dedicated to mastering those disparate reading skills. The state eventually discovered that students could sometimes master all the skills and still be unable to read.

Reading is a holistic capability that emerges. That is, develops unpredictably, from within the minds of learners. Conditions can be developed which encourage the emergence of reading capability. But, for the most part in American education, we forget that without initiative on the part of learners, true literacy will not emerge. Readers cannot be trained into existence; they must be encouraged to develop.

What is true of reading is also the case of many other desirable characteristics. Critical thinking, life-long learning, and the development of individuals with character and integrity emerge from the interactive conditions of their educational situations. Such capabilities cannot be forced into existence. Conditions must be developed that encourage the emergence of holistic characteristics such as reading, thinking, and initiative.

Narrative Based Education

The products most critical to the educational process are holistic in nature. They are also emergent; they arise from interacting conditions such as interest, trust, creativity, curiosity, resonance, initiative, intelligence, and intellect. If we want students who can and do think critically, who have initiative, who own their own learning, who have a life-long spirit of inquiry, who wish to contribute, who have character and integrity, then we must comprehend and understand the holistic nature of such characteristics and design our instruction accordingly.

Teaching is an idiosyncratic endeavor dependent upon the developed intellect of its practitioners. Too many judgment calls have to be forged in the midst of confusing situations, without adequate information, for dependence upon a formulaic knowledge base. The teaching endeavor is too complex and dynamic for the simplistic application of prediction and control formulas.

As teaching is engaged with dynamically complex realities that make development unpredictable, it cannot be totally a science, (at least by Newtonian definitions of science). Quantum based fields of science, such as complexity science and chaos theory, do strive to comprehend and explain dynamically complex realities. Their holistic approaches can be helpful to comprehending and explaining the educational process. Teaching, however, remains primarily an art. Although the endeavor can be informed by scientific investigation, it should not be governed by it.

Two questions follow from the preceding understandings:

1. What are the conditions in my classroom that are necessary to excite and inform growth?

2. How can I help generate desirable but nonetheless unpredictable developments?

The answer to both of these questions involves the combination of three approaches:

Storytelling. Through stories we best convey the dynamic complexity of human predicaments. Stories are the best way to excite and educate initiative. Storytelling is brain-based teaching; the human brain has evolved over eons to prefer narrative learning.
Dialogue. Through genuine conversation meanings are shared and judgments are developed. Contextual awareness can be developed only through internal and external dialogue. Contextual awareness is what gives us understanding of dynamic complexity which, in turn, educates initiative.

Questions. Human knowledge is not advanced through the simple process of knowing; it is advanced only by questions that foster the construction of answers. Similarly, intellect is not developed by the simple acquisition of knowledge bits, but by the asking of contextual questions that engage the interest and ownership of the learner.

The synergistic combining of these three approaches constitute Narrative Based Education. The dynamic complexity of situations is best illustrated through story. Dialogue then helps us develop our contextual awareness of the situations under investigation. Questions carry us beyond the limitations of what we already know to a more comprehensive perspective and more elaborate understanding of the interactive realities. Narrative Based Education is the inquiry method of learning in action. Inquiry is always centered around the issue of “What’s the story?”

Some Final Thoughts

I am a teacher, not a trainer. The difference between a teacher and a trainer can be readily imaged in the etymology underlying the words education and training. Educe means “to bring forth.” What is brought forth? Growth is brought forth, whether it be intellectual, emotional, or spiritual. Training, on the other hand, comes from the Latin trahere, which means “to drag forth.”

Human development cannot be dragged forth. Teachers can only set up the conditions conducive to its emergence. Much of what is called “teaching” in education is actually training. Students generally prefer to be taught rather than trained.

It is important to provide information. It is even acceptable to occasionally entertain. But the most caring and productive thing a teacher can do for students is inspire them. Inspiration, as one might suspect, has a poetic root:

The word “inspire” is the opposite of “expire,” it means to “breathe life into.”

Teachers should endeavor to breathe life into the intellectual, emotional, and spiritual words of students. There is no better way to help make possible futures more real for students than through inspiring them to think, question, and believe in their potential. Teachers should strive to help students dream and develop the necessary responsibilities to make real the promise of those dreams.

Making possible futures more real for others is a dynamic and complicated endeavor. There is no more interesting or challenging task. Understanding the ecology of the educational process is a never-ending challenge.

Teaching is a sacred calling. All Teachers understand that we have a need to learn; but we also have a need to teach. Teaching is the highest form of productivity. Our spirit compels us to treasure the endeavor. Teachers are intimately involved with striving to bring about the only thing our being really cares about, growth. Nothing is more important than helping make possible futures more real for others. Only then are we really doing our job.
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