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Inside this issue:

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Contents
Page

Table of Contacts

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Our "Cathedral"

If you travel through Europe today, you will see in every city and in many villages, cathedrals of stirring beauty and incomparable durability. Created so many centuries ago, these remarkable structures remain as inspiring, as graceful, and even as functional as when they were built. The structures all had pointed steeples…pointing toward the heaven that watched over them, and support struts that looked like giant angel wings on each side of the steeples.

But "these cathedrals" Steven Beering, President of Purdue University, pointed out "were more than architectural masterpieces. They tell us something about the human spirit. They were built at a time when life was turbulent and uncertain. War, violence, sickness, and poverty were continual threats. There was little time and few resources for anything but survival. Yet the desire to create something beautiful and lasting would not be suppressed.

When a town built a cathedral, everyone participated. The young and the strong dug the foundations. Masons laid the stones. Artists sculpted the statues. The work went on for decades, even centuries. Therefore, many of the people involved knew they would never see the finished building. Yet, they wanted to be a part of it."

When I was a boy, my small corner of Brooklyn was cast in shadows. Parents had many jobs, children had few toys, and the family shared a modest meal. But most importantly, they shared their love, their time, and their presence around a scratched and scarred wooden dining table. And each week, all the families humbly walked, not drove, to this one cathedral in the middle of the town, in the center of our hearts and minds. It was our town's spiritual center and our center of hope. It's where the past and the future met. Everyone in the community offered their time, their money, and most importantly their faith and devotion.

Every family needs a table to sit around together, to discuss their common love and lore. And every community of families needs their "cathedral," something they have faith in, something they have built together, something that reflects past trials and triumphs, and something that houses their hopes for each future generation. No matter what…war, scandal, high cost of gas, overly congested roads, crowded malls, man made walls, long lines at the motor vehicle office, snow, sleet, rain…all of us need some safe haven, some special place that is a constant…That is what a school should be.

Despite how "dark" the night, come morning there should be 200 teachers putting their notes on the board, jelly beans on the desk, music stands in place. There should be 200 non-instructional staff turning on computers, raising the American flag, polishing hallways, unlocking all our doors. There should be principal educators looking out their windows and walking their hallways checking each classroom and corner of the building in their charge, greeting each arriving bus, each arriving child. And yes there should be a superintendent where "super intentions" should most importantly be the finest care and education for the community's children.

Welcome to the May issue of the educational journal. It includes contributions from educators from every corner of the county, the country and indeed across the Atlantic. The issue coincides with the budget season. But while dollars fill our days and busy our minds, do not lose that "sense" of our whole purpose and of the communities" faith in our cathedrals.

As a young boy, I faithfully attended a cathedral. As a young man I studied and visited cathedrals throughout the world. And for my three decades in education, I have had the privilege of working in one…crafting and shaping it, thanks to the inspiration and perspiration of loving, caring, and supportive people of faith. We cannot betray that faith in our schools and in each other, and in the futures we build.

Carl Bonuso,
Editor-in-Chief

From the Field

Improving Progress Through AfL

Dr. Joanna Goodman reflects on the role of Assessment for Learning

The term 'assessment' is often associated with an objective process of measurement (Drummond, 1994; Linn and Gronlund, 2000) and of obtaining information (Desforges,1989; Rowntree, 1987). This gathering of information often rests on assumptions that testing reveals objective truths but this can be disputed as "tests modify or even create that which they purpose to measure" (Hanson, 1994 p.47).

Therefore assessment is complex, because it can stand for different approaches to the gathering of evidence and is so ingrained in the whole educational process, it would be too simplistic to refer to it just as a measuring device without considering it as part of the learning process. Effective assessment could be more precisely viewed as a process of asking questions about learning and educational outcomes; a process in which understanding of children's learning can be used to evaluate and enrich the curriculum (Drummond, 1994; Weeden et al. 2002). As this expanded view of assessment puts the child's interests in the centre, it could be argued that it moves closer to recognising assessment as a tool for enriching children's learning and development, and as such could be viewed more in terms of assessment for learning.

In improving learning through assessment, Black and Wiliam (1998) suggest the following factors: a) effective feedback to pupils; b) active involvement of pupils in their own learning; c) adjusting teaching to take account of assessment results; d) recognition of influence of assessment on pupil motivation and self-esteem; e) self-monitoring and correction by pupils.

Over recent years, much has been written about the role of Assessment for Learning (AfL) in improving progress and how schools should use it to maximise achievement and learning sustainability. At the national level, following the findings of the Assessment Reform Group (ARG) on the positive impact of formative assessment on improving learning, the idea of AfL was embraced by the Qualifications and Curriculum Authority (QCA) who defined it as "the process of seeking and interpreting evidence for use by learners and their teachers to decide:
1) where the learners are in their learning,
2) where they need to go, and
3) how best to get there" (ARG, 2002).

Since then, schools have been trying to implement AfL into their everyday practice with different degrees of success regarding the various stages of implementation. At first, as with any new initiative, the idea of AfL met with some scepticism from the teaching profession as the lack of in-depth understanding of the theory and principles underpinning AfL, and often inadequate training, meant that teachers often felt that it would mean more work for them, especially regarding the expectations of giving feedback in terms of comments for improvement. My practical experience, lessons observations and academic research into the use of AfL in everyday practice confirm that still in some settings today, where AfL is being implemented, there appears to be only ritualised understanding of the processes behind it and the principled understanding can be harder to grasp.

In providing information for schools, the QCA (ARG, 1999; 2002) adopted the main AfL principles, as mentioned above, based on research-based evidence (Black and Wiliam). These principles recognise the importance of assessment for learning to classroom practice and advocate that AfL should become part of effective planning of teaching and learning, and a key professional skill for teachers, because at the core of it is the involvement of learners in their own learning processes.

Effective teaching should provide pupils with constructive guidance on improvement to enable them to become reflective and self-managing. These principles are important because they summarise the essence of assessment for learning and bridge the gap between educational research and the actual practice by identifying for teachers what is crucial to assessment for learning and why it is important to strive to make it part of effective classroom practice. This type of assessment is imperative for learners, because through their involvement, it helps them to manage their own learning, which is a skill for life rather than just for passing examinations (Stobart, 2008).

In order to have a better understanding of principles which encourage pupils to learn and why some pupils are more successful than others, extensive studies into the psychology of learning focused on motivation and, in particular, on the association between motivation and learning outcomes (Boekaerts, 2002; Dweck, 1986). Research indicates that motivational beliefs, which act as a frame of reference

for pupils' feelings and actions in a given subject or task, result from learning experiences and act as favourable contexts for learning, where students are not motivated to learn in the face of failure, but students who have positive beliefs about their capacity to learn have higher achievements (Boekaerts, 1995).

Therefore teachers who are effective at assessing where pupils are in their learning and who are able to communicate these levels of attainment followed by 'next steps' guidance on improvement, engage pupils in their learning in a positive way and increase pupils' self-motivation to learn and achieve. This approach produces particularly impressive learning gains when working with less able pupils as it reduces their anxiety of failure and, instead, creates an environment where everyone is able to move to the next stage in their learning, whatever it may be. When working with more able pupils, this approach encourages further learning as it does not put a ceiling on achievement, as a grade does, and identifies for learners their next learning goals.

Learners who are well-motivated are capable of using their self-regulatory skills effectively for higher achievement, whereas learners who are not skilled, or not inclined, to use self-regulatory skills, are poorly motivated and over-reliant on teachers. Therefore the involvement of students in their learning, e.g. through self-assessment, peer-assessment or self-reflection, is a key element of the AfL practice, which can be overlooked where learner autonomy becomes procedural, rather than an aim in itself, for example through explicit learning objectives and time for self-evaluation.

Schools thus face a crucial challenge of developing strategies of working successfully within the system of high-stake tests, for certification and accountability purposes, and developing self-regulated learners through formative practices.

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Dr. Joanna Goodman has a Doctorate in Education from King's College London. She is an educationalist with curriculum expertise and leadership development. She is an experienced senior school leader and a school inspector.

Assessment for Learning:
Where are You on the Continuum of Implementation?

- Discovery stage — • Early implementation
- Developing stage — • Different stages of implemention in different subject/ curriculum areas
- Advanced Stage — • Full implemention across all curriculum areas
- Evaluation stage — • Data from full implemention used to inform and improve future practice

Figure 1 AfL stages of implementation: Self-evaluation

Opinion Center

The Dignity Act - New York State's Anti-Bullying and Harassment Legislation

By Karen Siris, Ed.D.

Schools across our nation are recognizing the dangers of bullying, harassment and discrimination among our school children. According to bullyingpolice.com, 47 states have passed legislation to insure that plans are in place that will create safe and caring school environments for ALL. Because SAANYS appointed me as liaison to the New York State Education Task Force, I have had the opportunity to be part of the planning of the implementation of New York State's law, the Dignity Act (DA). This legislation (N.Y. Education Law §§10-18, 801) is scheduled to take effect in July, 2012.

The NYS law has several requirements that must be met. In summary the law requires that:

- No student shall be subjected to harassment by employees or students on school property or at a school function

- No student shall be subjected to discrimination based on a person's actual or perceived race, color, national original, ethnic group, religion, religious practice, disability, sexual orientation, or gender, by school employee or students on school property or at a school function.

- There may be no violations of: Title VI of Civil Rights Act of 1964, prohibiting discrimination on the basis of race, color or national origin, Title IX of the Education Amendments of 1972 prohibiting discrimination on the basis of sex, Section 504 of the Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability.

It is important for New York State School districts to understand and implement the following requirements of the statute that address bullying:

➢ Staff training to raise awareness and sensitivity of school employees to issues of harassment and discrimination.

➢ Designation of an anti-bullying coordinator to be trained in non-discriminatory instructional and counseling methods and in handling human relationships.

➢ Sensitivity and tolerance curricula for students

➢ Revision of the code of conduct to create a school environment free from harassment and discrimination.

Working on the task force has been an enlightening experience. Representatives from a wide range of advocacy groups (ACLU, GLSEN, SAANYS, NYSCSS, NYSED, NYSPTA, NYSUT, ADL, etc.) divided into four subgroups to review the parameters of the law: state policy, local policy, curriculum, and professional development. Working alongside state education representatives a Dignity Act 101 overview was created to get the word out to all New York State School Districts. This overview has been offered by various agencies throughout the state since July 2011.

In accordance with the legislation, an anti-bullying coordinator should be designated for each school building in a district. Once assigned and trained in bullying prevention strategies, this liaison officer will be responsible for gathering key stakeholders together to assess the current plans that are in effect in their assigned schools and to ensure that effective and powerful plans be developed to meet the parameters of the law. This may be a new team, or an extension of a school building's existing safety team. It will play a vital role in meeting the demands of the new legislation as it creates safe and supportive learning environments for our children.

Throughout the Dignity Act Task Force conversations, one overriding theme emerged. To prevent harassment and bullying in our schools, there must be a culture of caring and civility beginning in our earliest grades. Teaching respect for all, despite any individual differences in regard to race, sexual orientation, and physical characteristics must be woven into the fabric of classrooms, school buildings, playgrounds, and school buses.

Many schools already recognize the importance of addressing the needs of all participants in a "bullying" situation:

The "target," as the victim is sometimes called, is usually the primary focus. He/she needs to be heard, have a voice, and feel safe reporting unkindness without fear of increased bullying behaviors by the perpetrator (bully). A specific reporting system, developed by a school district, and well publicized to all constituents, needs to be in place, along with a response system that is timely and efficient. Simultaneously, guidance counselors, psychologists and social workers should provide social skills strategies to children whose behaviors may somehow attract the bully.

The needs of the child with the "bullying behaviors" must also be addressed. Schools would be shirking responsibility if these students did not receive appropriate counseling.

Finally, the bystander, the least recognized player in the world of bullying, requires attention. Watching unkindness as it occurs has damaging effects on these children as well. The guilt and shame felt by these students who do not speak up to help their peers follows them beyond the school day. Given the right strategies witnesses can become allies to the victims, show them they care, and help change an accepted culture of cruelty and unkindness to one of civility and caring.

At this time, each New York State school district should be in the process of reviewing their district policy, code of conduct and superintendent's regulations. Each document should be revised in accordance with the specifications of the new law. In addition, a staff member from each building should be appointed as a Dignity Act coordinator for each school building and approved by the board of education. The state will be offering training for these individuals and in turn they will become leaders in preventing discrimination and harassment within their buildings. There are suggested guidelines set forth by the state that are helpful in this process. Information is available at http://www.p12.nysed.gov/dignityact/.

Karen Siris, Ed.D., is Principal at Boardman Elementary School, in Oceanside UFSD, New York.

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A DESCRIPTIVE STUDY OF FUNDED HOMELESS EDUCATION PROGRAMS: BARRIERS AND SUPPORTS IN NEW YORK STATE

By Kerri A. Canzone, Ed.D.

ABSTRACT

Homelessness is ever-present in our educational system. It is important to examine current barriers and supports in the education of students experiencing homelessness. It is also critical to examine the academic achievement of this special population of at-risk students. Descriptive information was sought regarding types of barriers to education access and success, as well as supports and academic achievement in New York State funded Local Education Agencies (LEAs). Regional differences among barriers and supports were examined. Conclusions were drawn from the quantitative analysis of data provided by 148 New York State LEAs receiving federal McKinney-Vento subgrant funding in the 2007-2008 and 2008-2009 Consolidated State Performance Reports (CPSRs).

INTRODUCTION

The purpose of this study was to describe the types of education barriers to school access and success, as well as supports available to homeless students in 148 Local Education Agencies (LEAs) across New York State who received McKinney-Vento subgrant funding, and to ascertain what educational leaders are doing to meet the educational needs of their homeless student population. The study was based on data from the 2007-2008 and 2008-2009 New York State Education Department Consolidated State Performance Reports (CSPR). Data regarding barriers, supports, as well as English Language Arts (ELA) and mathematics achievement were gathered though the 2007-2008 and 2008-2009 CSPRs.

Statement of the Problem

What types of barriers to education access and success exist for homeless students in New York State Local Educational Agencies that receive McKinney-Vento subgrants?

Conceptual Rationale

The conceptual rationale for this study examined the relationship between the issues facing homeless students and the nature of the barriers, supports, and ELA and mathematics achievement within the school system. Based on the literature (Nabors 2004, Stronge 2000, Helm, 1993), some assumptions can be made about the nature of barriers and supports, as depicted in **Figure 1.1.**

Figure 1.1. Conceptual Rationale

Homelessness and the Educational Setting	Issues to Examine	Data Analysis
National and Regional Perspective	What legal barriers and other barriers to educating the homeless exist in the educational process?	2007-2008 and 2008-2009 Consolidated State Performance Report
Homeless Policy		Larger Districts have the ability to provide more supports and programs
Homeless Education in New York State	How are funded LEAs addressing the issue of homelessness?	
School Culture and At-Risk Students		Most Barriers are Legal in Nature
Programs and Services available	Are there different types of barriers among different regions?	Most supports and services involve a medical or mental health referral component

Table 1. General Characteristics of At-Risk Youth

Family and social background	Personal problems	School problems
Low socioeconomic status	Substance abuse	Course failure
Minority race/ethnicity	Pregnancy/parent	Truancy
Single-parent home	Learning problems	Passive/bored
Low parental support	Legal problems	Disciplinary problems
Family crisis	Low aspirations	
Community stress/conflict	Low self-esteem	Credit deficient
Family mobility	Alienation	
Limited experience of dominant culture	Rejects authority	Retained in grade
	Mental/physical health problems	

Note: Adapted from "Reducing the risk: Schools as communities of support," by Wehlage, Rutter, Smith, Lesko, and Fernandez, 1989, p. 50. Copyright 1989 by The FalmerPress, Taylor & Francis Inc.

Wehlage, Rutter, Smith, Lesko, and Fernandez (1989), while conducting a national study, developed a theory of dropout prevention based on educational engagement and school membership:

> The theory focuses on school factors associated with dropping out and directs attention to those conditions over which practitioners have some control; i.e. social relations within the school and forms of learning and curriculum. These school factors include the quality of relationships between adults and students and the amount of extrinsic and intrinsic rewards students can be expected to derive from learning. Social relations address ways in which educators can actively assist students in becoming bonded to the institution (p. 192).

It is important to consider Wehlage et al.'s (1989) theory when addressing the needs of students experiencing homelessness, in terms of educators building relationships and providing supports necessary for students to become engaged in the educational process.

Wehlage et al. summarized factors that were common to the at-risk youth population in their study of students in fourteen schools that were successful with this complex population, which are presented in **Table 1**.

In a study of 14 schools, Wehlage and his colleagues found that schools that functioned as a community and provided a support system for at-risk students, were effective in dropout prevention.

Stronge and Reed-Victor (2000), listed a description of services found to be effective in supporting home-less students and their families. Their table entitled, "Program Services for Young Homeless Children," is presented in **Table 2.**

In evaluating supports and programs for homeless students and families, it is useful to examine them in terms of Stronge's program services, which are coupled into educational services and community services.

Both Wehlage et al. and Stronge models provide important perspectives when examining homeless students and their education.

Definition of Terms

For the purposes of this study, the terms homeless students and unaccompanied youth, will be defined as per Subtitle B of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11431 et seq.):

Homeless Children and Youths. The term homeless children and youths--

(A) means individuals who lack a fixed, regular, and adequate nighttime residence (within the meaning of section 103(a)(1)); and

(B) includes--
(i) children and youths who are sharing the housing of other persons due to loss of housing, economic hardship, or a similar reason; are living in motels, hotels, trailer parks, or camping grounds due to the lack of alternative adequate accommodations; are living in emergency or transitional shelters; are abandoned in hospitals; or are awaiting foster care placement;

Table 2. Program services for young homeless children

	Transportation	Parents and children need transportation to and from the center or school
	Efficient Record – Keeping	School personnel can assist these children in a timely manner to assure that a child will receive the services for which s/he is eligible.
Educational Services	Tutoring	Tutoring programs benefit the young child academically as well as socially and emotionally
	"Feeling Better Rooms"	"Feeling Better" rooms provide young homeless children a safe and supervised environment when they are too sick to attend their childcare or school.
	Food Banks	These agencies can supply families with nutritional food for their children.
Community Services	Clothing Banks	These organizations can provide free or inexpensive seasonally appropriate clothing for young children.
	Doctors, Dentists, and Mental Health Specialists	On-site services provided by doctors, dentists, and mental health personnel allow parents to seek care for their children at a central location.

Note. Adapted from "Educating homeless students: Promising practices," by Stronge and Reed-Victor, 2000, p. 39. Copyright 2000, by Eye on Education.

(ii) children and youths who have a primary nighttime residence that is a public or private place not designed for or ordinarily used as a regular sleeping accommodation for human beings (within the meaning of section 103(a)(2)(C));

(iii) children and youths who are living in cars, parks, public spaces, abandoned buildings, substandard housing, bus or train stations, or similar settings; and

(iv) migratory children (as such term is defined in section 1309 of the Elementary and Secondary Education Act of 1965) who qualify as homeless for the purposes of this subtitle because the children are living in circumstances described in clauses (i) through (iii).

Unaccompanied Youth. Includes a youth not in the physical custody of a parent or guardian.

Methodology

Quantitative methods were utilized to analyze previously obtained survey data via the 2007-2008 and 2008-2009 New York State Education Department (NYSED) Consolidated State Performance Reports (CSPRs). Survey data were obtained from the 2007-2008 and 2008-2009 school years from homeless liaisons and other school leaders regarding education barriers, supports, programs, and achievement for homeless students. Patterns, trends, discrepancies, and themes were examined.

Setting

A total of 148 Local Education Agencies (LEAs) submitted information to the New York State Education Department (NYSED) Consolidated State Performance Report Survey (CSPR) for the school years 2007-2008 and 2008-2009. Data included information from 81 LEAs in 2007-2008 and 67 LEAs in 2008-2009.

Data were collected from LEAs who received McKinney-Vento subgrant funding from 25 counties and 10 regions that responded to the 2007-2008 survey and from 23 counties and 10 regions in New York State were represented in 2008-2009.

The survey respondents were LEA staff members from a total of 148 districts, who were most typically, the Local Education Agency (LEA) homeless liaison. The survey respondents were required to respond to specific questions about their homeless student population. Data were aggregated and reported by region. Regions with less than five respondents were combined with contiguous regions, leaving a total of seven regions represented. A summary of merged New York State Regions can be found in *Table 3.*

Data for the 2007-2008 and 2008-2009 school years indicated that transportation was the most frequent barrier to the education of homeless students by 16% of the LEAs receiving McKinney-Vento subgrant funding. School records, determining eligibility for homeless services, and obtaining immunization records totaled 14%, 10%, and 10% respectively were the next most frequently reported barriers. Obtaining other medical records (8%) and selecting a school of attendance (3%) were the least frequently experienced barriers.

It is important to note that the frequency of the barriers experienced decreased across all barriers from 2007-2008 to 2008-2009. Most barriers decreased by at least 10% from 2007-2008 to 2008-2009. A 6% and 5% decrease were reported for obtaining other medical records and school selection barriers, respectively. Overall, these barriers were experienced the least frequently.

Table 3. 2007-2008 and 2008-2009 Region breakdown (merged)

New York State Regions	Number of LEAs
Chautauqua-Allegheny and Niagara	9 (Merged with Niagara)
Finger Lakes	11
Thousand Islands	7
Adirondacks and Capital-Saratoga	17 (Merged with Capital-Saratoga)
Central Leatherstocking	0
Saratoga-Capital	17
Catskills and Hudson Valley	33 (Merged with Hudson Valley)
Long Island	32
New York City	39

Survey respondents were given the option to write open-ended responses related to other barriers their LEA experienced. Responses were coded and analyzed to describe barriers not listed in the survey.

The 2007-2008 and 2008-2009 survey data were recoded and revealed a total of 15 barrier categories, four of which were listed earlier in the survey: transportation, determining eligibility for homeless services, school records, and school selection. Of the four previously listed barriers, no more than three Local Education Agencies (LEAs) reported issues.

Instrumentation

Survey data were sent via email, in a Microsoft Excel file, to the researcher by the NYSED Homeless Education Program Associate. The survey was created by the consulting firm, Key Survey. The survey included direct questions from section 1.9 through 1.9.2.5.2 from the Consolidated State Performance Report: Part 1. Questions focused on the number of LEAs receiving McKinney-Vento subgrants, the number of homeless students, and information regarding primary nighttime residences, homeless subgroup types, support services for, and barriers to education access and success.

Among the open-ended responses, the barrier with the highest frequency listed across both years dealt with the enrollment process (17). However, in 2007-2008, 13 Local Education Agencies (LEAs) cited the enrollment process as a barrier, while only four LEAs listed the process as a barrier

Findings

Survey responses were analyzed individually by year and across two years as seen in *Table 4.*

Table 4. Barriers to the education of homeless children and youth

Barrier	2008	2009	Total	Change
Transportation	20%	10%	16%	-10%
School records	19%	8%	14%	-11%
Determining eligibility for homeless services	15%	5%	10%	-10%
Immunizations	15%	5%	10%	-10%
Other medical records	11%	5%	8%	-6%
School selection	5%	0%	3%	-5%

in 2008-2009. Special education placement (8) and family issues (6) were the second and third highest ranked barrier. It was noted that the following barriers were not present in 2007-2008 data, but listed with the frequency of one in 2008-2009: coordination between agencies, English as a Second Language assessment, family relocation without notification to district, incarcerated youth placement, school records, school selection, student involvement in disciplinary action, teen pregnancy issues, and youth order of protection.

In general, LEAs in all regions except New York City (0%) experienced the greatest challenges with obtaining school records, transportation, and determining eligibility for homeless services. In all regions, 13% or more of the LEAs experienced a high frequency of issues related to obtaining school records, with districts in the Finger Lakes Region (46%) and Niagara Region (33%) experiencing the greatest amount of issues. Districts in the New York City Region (0%) and Saratoga-Capital Region (5.9%) reported little to no issues with barriers. Districts in all regions (13% or more) excluding New York City (0%), experienced a higher frequency of barriers surrounding the issue of transportation, with LEAs in the Niagara Region (33%) and Hudson Valley Region (27%) being most impacted. LEAs in all regions (12% or more), other than in New York City (0%) and Long Island (3.2%), reported a high frequency of the barrier related to determining eligibility for homeless services. Districts in the Niagara Region (33%) and the Saratoga-Capital Region (24%) experienced the highest total percentage with the eligibility barrier.

A total of ten supports were not reflected in the 2007-2008 data, but listed by Local Education Agencies (LEAs) in 2008-2009: coordination between schools and agencies, assistance with finding permanent housing, civic responsibility training, early childhood care and education, end of year celebration for families, on-site medical and mental health services for families, on-site registration at shelters, parenting workshops, referrals for medical, dental, and other health services, and summer activities.

Conclusions

1. What types of barriers to education access and success exist for homeless students in New York State LEAs that receive McKinney-Vento subgrants?

According to Helm's dichotomy, the six barriers presented in the New York State Education (NYSED) survey are subsumed in the category barriers to school access: transportation, school records, determining eligibility for homeless services, immunizations, other medical records, and school selection.

As seen in **Table 4**, the data indicate that the frequency of the New York State Education survey listed six barriers decreased from 2007-2008 to 2008-2009; specifically, four of the six showed a 10% decrease. Although the New York State Education Department (NYSED) did not explore the reasons for the decrease, Stronge's (1993) dis-

cussion of the Chicago Public Schools' initiative is germane. In that initiative, the Chicago Public Schools dismantled barriers by creating awareness; reviewing and revising policy, practice, and procedures; and coordinating efforts. Similarly, in an effort to address barriers to access, it is conjectured that New York State McKinney-Vento subgrant funded LEAs may have reviewed and, in turn, revised their policy, practice, and procedures with respect to homeless students. If that is in fact what occurred, then the decreases may be reflective of those actions.

In the current study, responses to the specific categories indicated that of the six barriers, transportation presented the biggest challenge to Local Education Agencies (LEAs), with a total of 16% of LEAs experiencing this problem. Helm (1992) pointed out that, "transportation was not addressed in the original McKinney Act as an education-related problem" (p. 26). Although amendments to the McKinney Act were enacted in the 1990s to remedy the transportation problem, it continues to surface as a major barrier to the education of students experiencing homelessness in the literature (Helm, 1993; Gargiulo, 2006; Stronge, 1993; Stronge & Reed-Victor, 2000; White-Adams, 2008).

Open-ended survey responses regarding barriers were coded and analyzed. The survey yielded a total of 15 barrier categories, 4 of which were school access barriers previously listed as choices in the New York State Education Department (NYSED) survey: transportation, determining eligibility for homeless services, school records, and school selection. Five additional barrier categories were also found to be barriers to access: enrollment process, language, coordination between agencies, family relocation without notification to the district, and youth order of protection. Examination of the data showed that in 2007-2008, LEAs reported the greatest barrier to access was the enrollment process (N=13). Yet this same barrier in 2008-2009 was reported by only four LEAs. This reflects a decrease of more than half of the previous year.

Six remaining open-ended barrier categories dealt with school success, thus relating to a student's progress after initial enrollment in school: special education placement, family issues, English as a Second Language assessment, incarcerated youth placement, and teen pregnancy issues. Special education placement was indicated as the greatest challenge by Local Education Agencies (LEAs), with four LEAs reporting this barrier in both years of the survey. This is noteworthy given that the New York State Education (NYSED) survey choices excluded barriers to school success, yet the findings indicated that the LEAs response to the open-ended question fell in that category. Clearly schools have concerns about the success of students experiencing homelessness and are putting efforts toward combating barriers to success.

Further, the results of this study showed an increase in the number of barriers reported in the open-ended response section of the survey from 2007-2008 to 2008-2009. In 2007-2008, seven barriers were listed: enroll-

ment process, special education placement, family issues, transportation, determining eligibility for homeless services, language, and student involvement in disciplinary action; in 2008-2009, 14 barriers were listed: enrollment process, special education placement, family issues, transportation, determining eligibility for homeless services, language, coordination between agencies, English as a Second Language assessment, family relocation without notification to district, incarcerated youth placement, school records, school selection, teen pregnancy issues, and youth order of protection. The increase in barriers reported may be attributed to better record keeping on the part of Local Education Agencies (LEAs), the ability to better identify barriers, or the fact that LEAs simply did not previously encounter the barrier.

This study's findings support the work of Wehlage et al. (1989). Wehlage and colleagues summarized characteristics of at-risk youth into three categories: family and social background, personal problems, and school problems. Examination of the survey barriers and the open-ended response barriers, indicate that many of them are consistent with Wehlage et al.'s general characteristics of at-risk youth. The majority of the barriers to homeless students reported in the New York State Education Department (NYSED) survey fell in Wehlage et al.'s family and social background category.

Recommendations

After undergoing several revisions, with its most recent in 2002, the McKinney-Vento Homeless Assistance Act serves as a guide to school districts still dealing with barriers to the education of homeless students. In an attempt to provide homeless students equal access to a free and appropriate public education, the law guarantees, immediate enrollment for homeless students, school selection, and the policies and procedures focused on eliminating barriers to homeless children and youth.

Much of Stronge and Reed-Victors' work focuses on making students visible to people and agencies. In order to combat barriers to school access and school success for homeless students, Stronge and Reed Victors' promising practices can help guide Local Education Agencies (LEAs):

- Building awareness

- Securing parental involvement and support

- Providing early childhood education opportunities

- Addressing special needs of special populations

- Coordinating and collaborating in-service delivery (p. 6)

Wehlage, et al. (1989) research found at-risk students benefit from a support system, whereby schools function as a community to promote academic engagement and school membership. Several recommendations were made, to include:

- Development of strong alternative schools and programs unlike the traditional school model

- Systemic reform of policies and practices within existing comprehensive secondary schools to promote school membership and academic engagement

- Creation of community partnerships that address the broad range of needs of at-risk youth

The results of this study found a variety of barriers to school access and success to the education of homeless students in New York State McKinney-Vento subgrant funded schools. The majority of barriers cited dealt with barriers to access. The frequency of barriers experienced by LEAs differed by region.

The findings of this study demonstrated that a high percentage of McKinney-Vento subgrant funded schools are providing a multitude of supports to their homeless population, most supports targeting issues surrounding school success. Regional differences in supports emerged.

Based on results of this study, the following recommendations for Local Education Agencies and policymakers are noted below:

- Review all district regulations, policies, and procedures to ensure alignment with the McKinney-Vento Homeless Assistance Act of 2002.

- Conduct on-going professional development for all district employees regarding the definition of homeless, as well as the rights of homeless students and their families.

- Create awareness about barriers to the education of homeless students, as well as effective supports.

- Work to create partnerships within the community, in order to promote seamless transitions for homeless students and make a wide variety of resources available.

- Ensure that all transportation barriers are minimized by appropriate coordination and collaboration.

- Widely publicize contact information for the district's designated homeless liaison, as well as other resources within the district.

- Ensure immediate enrollment and placement of homeless students by removing the barrier of obtaining school records and medical information.

- Implement research-based interventions that have a positive impact on student achievement for at-risk populations.

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Kerri A. Canzone-Ball, Ed.D. is currently a K-12 Supervisor of Special Education in the Ballston Spa Central School District. She recently received her doctorate in Educational Administration and Supervision from St. John's University.

Creative Collaborations for Addressing Students with Special Needs: A Preschool Experience

By Audra Cerruto, Ph.D., and Marjorie Schiering, Ed.D.

Introduction

There is a tremendous amount of evidence that supports the benefits of inclusion classroom settings for preschool children (Kontos & File, 1993; Odom, 2000; Purcell, 2007; Mogharreban & Bruns, 2009). Both students with disabilities and typically functioning students demonstrate academic and social growth in such a setting. The skills of the classroom staff, specifically the preparedness of general education teachers to work with students who have special needs, greatly impact the overall quality of programs (Wolery & McWilliam, 1998, Seery, Davis, & Johnson, 2000).

This article describes a multi-year collaborative project with a special education teacher training program at a small private college, and a small private preschool in the same suburban town on Long Island. The goal of this project was for the higher education institution to investigate and to provide professional development support to the preschool staff in order to facilitate professional reflection, development, and use of new pedagogical strategies for diverse learners. Additionally, methodology utilized within the curriculum and self-confidence among staff were addressed. Furthermore, the collaborative efforts provided opportunities for teacher candidates in a master's teacher training program for special education to utilize their newly acquired skills. Together, the preschool teachers, college teaching faculty, and the teacher candidates worked together to provide an enriching environment in which these young students would be engaged in learning through the use of interactive educational strategies, manipulatives, and games.

Literature Review

Research in the area of early childhood suggests that the key component to a successful inclusive environment is adequate teacher training, which can be achieved through professional development workshops. Dinnebeil, McInerney, Fox, & Juchartz-Pendry (1998) reported that insufficient knowledge was a barrier when working with and caring for a young child with a disability. Seery, Davis, & Johnson (2000) related that a lack of specialized training and in-service workshops to address the needs of young children with disabilities impact the level of confidence and attitude of teachers in diverse classrooms. Leatherman (2007) reported that the vast majority of teachers "felt they needed more in-service training and education to experience more comfort in their jobs" (p. 602) and to "make their inclusive classrooms more successful" (p. 603).

Purcell (2007), through the use of interviews, examined the challenges and obstacles educational programs face while providing inclusive experiences for young children with disabilities. It was reported that providing a "variety of training and support opportunities for the teaching and related service staff so that everyone involved has the needed skills and so these skills can be further upgrades is critical" (p. 97).

Odom (2000) examined five themes that influence inclusive programs. One theme addressed teachers' concern about "their lack of knowledge about children with disabilities" (p. 21). He suggested professional support to create productive learning environments. Pankake and Palmer (1996) concurred with Odom and reported that support in the form of staff development is important. In order for staff development to be effective, it should directly connect to the specific problems teachers experience in the classroom setting.

Our observations of inclusion classes indicate that teachers without specific training in special education are not as well prepared to address the variety of challenges children with disabilities face in the academic arena when they are contrasted with special education teachers.

Maurer (2010) has suggested that professional development programs for teachers should have three goals: fostering a sense of community, providing time for reflection, and having a good fit. Similarly, Leko & Brownell (2009) reported that professional development must align with teachers' goals and needs, be meaningful, and provide strategies for implementation. Weiner (2003) felt that for professional development to be successful there must be "ongoing learning from experience, reflection, theorizing about how best to meet the needs of students individually and collectively, and ongoing learning though collaboration with colleagues" (p. 12). West, Jones, and Stevens (2006) emphasize the importance of the reflective practitioner and view the teachers as a learner. McLeskey & Waldron (2002) support this by arguing that "sit and get" professional development is not effective. In order for professional development to have an impact, the programs must be designed to meet the individual needs of the teachers at a particular school in a specific setting.

The authors of this study explored the need for a staff development program at the preschool level to address the unique needs of the local community. A local private preschool expressed concern that the needs of diverse young learners were not being met in inclusive classroom settings. The classroom teachers were spending an overwhelming amount of time addressing behavioral issues which detracted from activities centered on the core curriculum. Students functioned on a variety of self- regulation levels that challenged each teacher. As a result of these concerns, a collaborative project was initiated with these authors and their institution of higher education and the preschool. The purpose of the project was to provide professional development workshops on topics that the preschool teachers requested.

Additionally, the collaboration between the graduate program and the preschool created an opportunity for graduate students who were "teachers-in-training" to practice some of their newly acquired skills in a classroom setting. The teacher candidates who volunteered to participate in this collaborative project, engaged in intensive behavior management training. They learned how to conduct a Functional Behavior Assessment and to create a Behavior Intervention Plan with students of concern. They were able to implement their knowledge in the preschool classrooms and work collaboratively with their college professors and the classroom teachers who participated in the staff development workshops to address the needs of young learners. It was the overall goal that a community of learners, college professors, graduate students, and preschool teachers, would be created to improve the education of young children.

Professional development workshops

In order to create workshops that addressed the needs of the teachers, engaged the teacher as being reflective practitioners, and fostered a sense of community, this qualitative study explored the teachers' and assistant teachers' interests and areas of concern.

To determine the topics of interest and worry, a 'needs assessment survey' was conducted. The staff identified the following topics for workshops: (1) multiple intelligences theories, (2) learning styles theory with teaching and learning strategies, and (3) behavior management. Based on the results of the survey a series of 10 workshops were presented to the staff over the course of three-years by the faculty of the Division of Education at Molloy College. Prior to each workshop, a survey was administered to determine each staff member's level of confidence and knowledge on the workshop topic. A follow-up survey was administered immediately after the workshop.

The professional development workshops aimed to personalize the state curriculum by using student-learners' hands-on activities that connected literacy with educational gaming for a variety of tactile and kinesthetic modality implementations and applications; to sharpen observational skills and applied behavior management strategies; to explore one's teaching and learning preferences and profiles; and to foster techniques for self-reflection and self-actualization.

Based on Likert scale surveys administered to staff prior to and following workshops, staff members reported their levels of knowledge and comfort applying the topics in the classroom setting. The following charts demonstrate the staff members' responses to the: (1) Multiple Intelligences, (2) Learning Styles, (3) Functional Behavior Assessments (FBA), Behavior Intervention Plans (BIP), and 1-2-3 Magic workshops. The Likert scale is as follows: sa=strongly agree, a=agree, n=neutral, d=disagree, sd= strongly disagree. The sample size was 12.

Overall, the teaching staff reported increases in levels of knowledge and feelings of comfort regarding application and implementation of workshop topic content in their respective classrooms. For example, 7.7% of the staff reported "strongly agreeing" and 46.2% reported "agreeing" that they were well informed about Multiple Intelligences theory prior to the first workshop on Multiple Intelligences. As noted in **Table 1**, the remaining responses fell within the "disagree" category. Following the workshop 69.2% "strongly agreed" and 30.8% "agreed" that they were well informed about Multiple Intelligence theory. Prior to the same workshop 23.1% "strongly agreed" and 46.2% "agreed" that they felt comfortable applying information about Multiple Intelligence theory in their classrooms. The other responses fell within the "disagree" and "strongly disagree" categories at 15.4% each. After the workshop 38.5% "strongly agreed" and 61.5% "agreed" that they felt comfortable applying their new knowledge to the classroom setting. These results may suggest that the workshop was a positive learning experience (See **Table 1**).
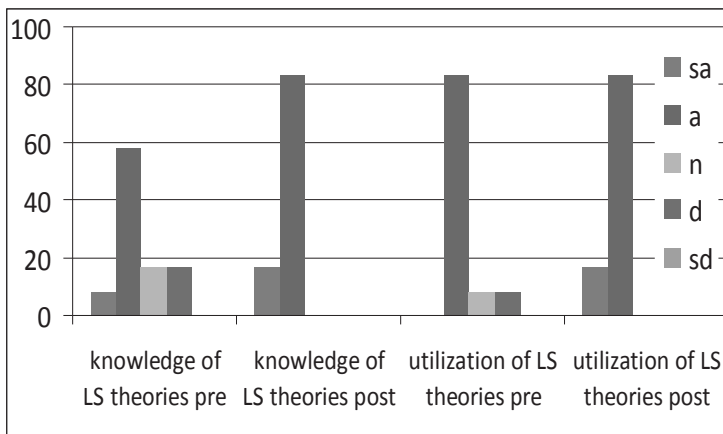

Table 1. Multiple Intelligences workshop
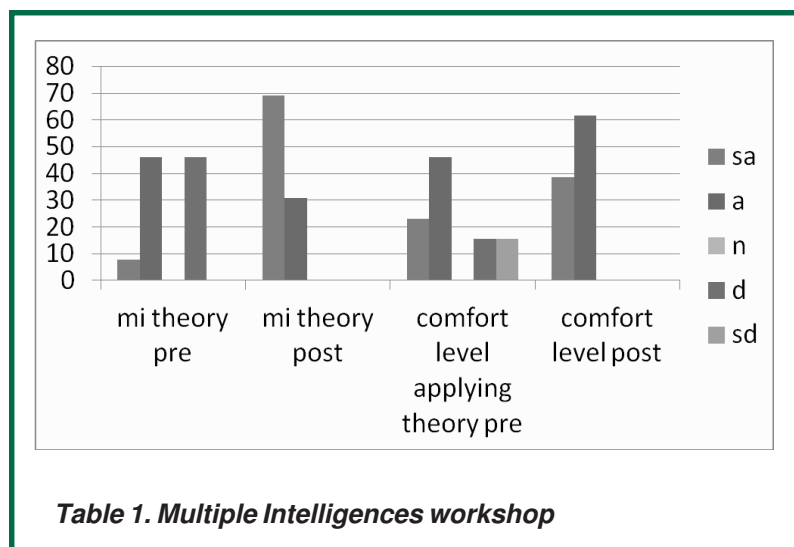
Table 2. Learning Styles Theories workshop

Prior to the second workshop, Learning Styles theories, 8.33% of the staff reported "strongly agreeing" and 58.33% reported "agreeing" that they were familiar with Learning Styles theories. The remaining responses fell within the "neutral" and "disagree" categories at 16.67% each. Following the workshop 16.67% "strongly agreed" and 83.33% "agreed" that they were well informed about Learning Styles theories. Prior to the same workshop 0% "strongly agreed" and 83.33% agreed that they utilize teaching strategies that address varied learning style preferences in their classrooms. The remaining responses fell within the "neutral" and "disagree" categories at 8.33% each. After the workshop 16.67% "strongly agreed" and 83.33% "agreed" that they will apply their knowledge of learning styles theories to the classroom setting. This workshop was an intensive, half-day, hands-on experience that appeared to have been a challenging and positive learning experience (See *Table 2*).

The third workshop included two-sessions on behavior management principles and programs. First, the staff engaged in a workshop regarding the 1-2-3 Magic behavior management program. 0% of the staff reported "strongly agree", 25% "agree", 0% "neutral", 66.7% "disagree", and 8.3% "strongly disagree" that they were knowledgeable about 1-2-3 Magic. Following the workshop 50% "strongly agreed" and 50% "agreed" that they were knowledgeable about 1-2-3 Magic. Prior to the same workshop 8.3% "strongly agreed" and 66.7% "agreed" that they felt comfortable applying information about the behavior management program in their classrooms. The remaining 25% reported that they "disagreed" that they felt comfortable applying information. After the workshop 58.35% "strongly agreed"

and 33.3% "agreed" that they felt comfortable applying their new knowledge to the classroom setting. The remaining 8.3% reported that they "disagreed" to feeling comfortable applying their knowledge in the classroom. These results may suggest that the workshop was a positive learning experience (See *Table 3*).

The second part of the behavior management workshop addressed Functional Behavior Assessments/Behavior Intervention Plans. 7.7% of the staff reported "agreeing", 15.4% "neutral", 53.8% "disagreed" and 23.1% "strongly disagreed" that they were well informed about FBAs and BIPs prior to the workshop. Following the workshop 40% "strongly agreed" and 60% "agreed" that they were well informed about FBAs and BIPs. Prior to the same workshop 30.8% "strongly agreed" , 30.8% "agreed", and 38.5% "disagreed" that they felt comfortable applying information about behavior management their classrooms. After the workshop 80% "strongly agreed" and 20% "agreed" that they felt comfortable applying their new knowledge to the classroom setting. These results appear to suggest that the workshop was a positive learning experience (See *Table 4*).

Despite the limitations of this study, such as a small sample size, and the use of Likert scales to measure changes in teaching and learning, the enthusiasm, energy, and motivation of the participants to apply their knowledge in the classroom setting was evident to the workshop presenters. The teaching staff appeared committed to engaging in the learning process and bringing this information into their classrooms.
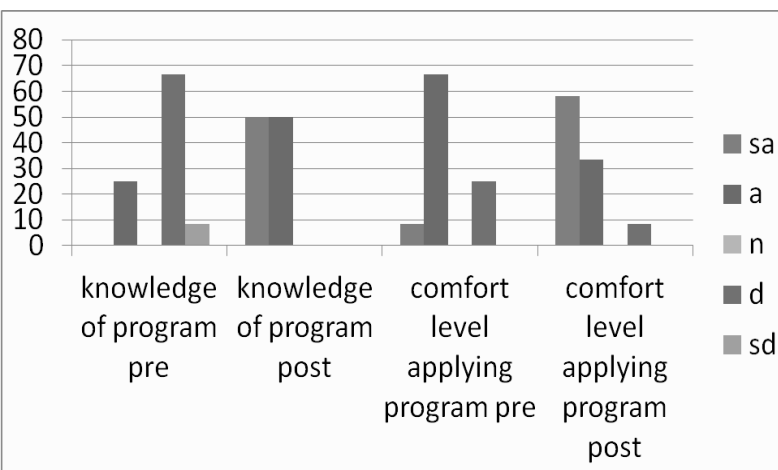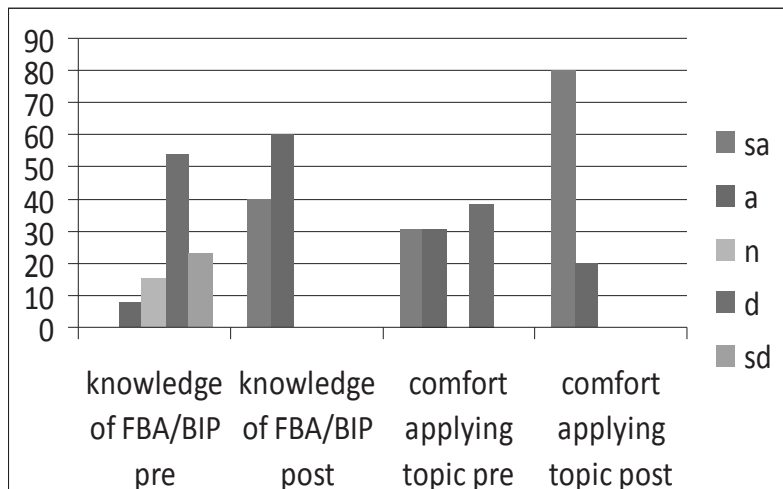

Table 3. 1-2-3 Magic workshop

90
80
70
60
50
40
30
20
10
0

knowledge of FBA/BIP pre | knowledge of FBA/BIP post | comfort applying topic pre | comfort applying topic post

Legend: sa, a, n, d, sd

Table 4. Functional Behavioral Assessment/Behavior Intervention Plan workshop

Application of Workshop Topics

Some of the workshops resulted in collaborative projects with the staff of the preschool, the college faculty, and graduate special education teacher candidates to apply their knowledge of conducting a Functional Behavior Assessment and designing a Behavior Intervention Plan in the preschool setting. The graduate students conducted a series of observations and completed a Functional Behavior Assessment for students identified by the preschool staff. Together the graduate students, preschool staff, and teaching faculty of the college created Behavior Intervention Plans for the young students. Again, the preschool teachers participated in applying knowledge from the professional workshops directly into their classrooms with the assistance of teacher candidates. This collaboration resulted in the development of individualized behavior management strategies for the targeted preschool students.

Reflections from the graduate students revealed the importance and value of implementing theories and skills in the classroom setting to develop knowledge of special education principles and confidence in teaching ability. One candidate stated, "I felt this was one of the greatest experiences…[I] actually put my knowledge to work… the hands-on experience creating a BIP for a student gave me the experience to feel confident in my abilities as a future educator" (Student M.A.). Another student reported that the collaboration with the preschool "made my experience s in the graduate program come to life…developing FBA/BIPs are strategies that I will be able to use in the future in any classrooms for student who may have behavioral issues" (Student E.M.).

Teachers at the preschool program reported an impact on their teaching and learning as a result of this collaboration. One teacher reported "…not only has there been a positive impact on the children, I have also learned a great deal about myself" (S.H). Additional teacher responses to the staff development series and collaboration with the college staff and student body include: "When we feel more confident as teachers and through positive interactions with both parents and children we feel better about ourselves. When you feel good about yourself, whether it be a teacher or a student, life has more meaning and we are much more willing to try something new or challenging. A positive self image is so important for everyone. If we can help a child feel better about himself, we are better teachers" (S.P.).

Reflections

The Creative Collaborations Program, in its entirety, was designed to provide a multi-dimensional approach and application of teaching strategies by knowing oneself as a learner and teacher, how to handle behavioral issues in the classroom, and addressing varied techniques to meet the needs of diverse preschool students. Ultimately, this Service Learning program provided an opportunity to link a college and preschool in the same community through the education and confidence building of the contributors and participants.

Although this project is currently ongoing, one outcome emerged quickly. The teaching and learning process, at all educational levels, is a dynamic and interconnected experience. Through the use of small and large group discussions, and periods of individual reflection, the authors find that teachers and students become most effective, intentional, and purposeful individuals. This growth and development positively impacts diverse learners of all ages. "As we teach, we learn, and as we learn, we teach" (Schiering, 2000).

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Audra Cerruto, Ph.D., and Marjorie Schiering, Ed.D., are Professors in the Division of Education at Molloy College, Rockville Centre, New York.

Principal Autonomy: How It Relates To Academic Achievement And Superintendent Leadership Responsibilities

By Timothy Sigerson, Karen Ames,
Eliana Levey, Matthew J. Murphy,
Elsa-Sofia Morote, Ed.D., and Albert Inserra, Ed.D.

Abstract

This study seeks to examine the perceptions of 32 board of education presidents in New York on superintendent leadership responsibilities and the relationship between principal autonomy, allocating resources to support goals, ensuring board support of goals and student achievement. Five superintendent leadership responsibilities were used as variables: (1) creating research-relevant goals, (2) monitoring goals, (3) allocating resources to support goals, (4) ensuring board support of goals, and (5) collaborative goal setting with academic achievement. We found that there was a strong correlation between principal autonomy, the five superintendent leadership responsibilities and academic achievement. A structural equation model with 70 percent variance of principal autonomy is explained by the leadership responsibilities of allocating resources to support goals, ensuring board support of goals, and academic achievement.

Purpose

With the continuing cry for accountability reform for schools, and the increased pressure on school principals to demonstrate higher levels of student performance, the question arises as to whether or not the level of autonomy a principal is given by the superintendent and the board of education president has an impact on academic achievement. Waters and Marzano (2006) reported that an increase in principal autonomy was associated with an increase in student achievement. Similarly, Shulman and Sullivan (2005) reported that a successful superintendent allowed administrators to implement their own initiatives as long as they were aligned with the district-level goals.

The purpose of this study was to examine how academic achievement and superintendent leadership responsibilities predicted principal autonomy. There were five variables examined in this study as defined by Waters and Marzano (2006). The five superintendent leadership responsibilities were: (1) creating research-relevant goals, (2) monitoring goals, (3) allocating resources to support goals, (4) ensuring board support of goals, and

(5) collaborative goal setting. These variables provided the basis of inquiry to determine whether or not the perceptions of the board of education president on the leadership responsibilities of the superintendent influenced academic achievement (Murphy, 2009). Principal autonomy was one of the superintendent leadership responsibilities as defined by Waters and Marzano that we used as a dependent variable.

This study was intended to answer the question: Which of the board presidents' perceptions of superintendent leadership responsibilities, mediated by academic achievement, predicted principal autonomy?

Literature Review

Superintendents can have a positive impact on student learning, primarily through the promotion, support and development of principals as instructional leaders (Cudiero, 2005). The American Association of School Administrators in the 2007 article, *The Primacy of Superintendent Leadership*, suggested Superintendents provide autonomy for principals to lead their schools, but also expect alignment to district goals and use of resources for professional development (Waters and Marzano, 2007). School districts that experience high levels of student achievement do so by developing principal efficacy and supporting a set of practices used by the superintendent and the board of education to encourage principal autonomy.

Leaders who create schools and districts capable of sustained substantive improvement are not laissez-faire in their approach to education but rather are skillful in implementing the concept of simultaneous loose and tight leadership. The concept also has been referred to as "directed empowerment" (Waterman, 1987) or a "culture of discipline within an ethic of entrepreneurship" (Collins, 2001). This leadership approach fosters autonomy and creativity (loose) within a systematic framework that stipulates clear, non-discretionary priorities and parameters (tight) (Dufour, 2007). The traditional bureaucracy of education where the superin-

tendent manages and the principal acts as the instructional leader is quickly evolving as a tighter instructional link between school and district leaders (Kultgen, 2010).

Following the trajectory of the history of this reform movement, the future portends a collaborative instructional leadership between all stakeholders under the guidance of the superintendent. Organizational theorists have long argued that organizational efficiency may be enhanced by augmenting employees' professional autonomy and by affording them greater decision-making power over their daily activities (Luthans, 1992). Therefore, public institutions such as schools have supported an increase in professional autonomy (Huber, Sutcliffe, Miller, & Glick, 1995).

School leaders "exercise a measurable, though indirect, effect on school effectiveness and student achievement," (Hallinger & Heck, 1998). Principals influence school performance by shaping school goals, direction, structure, and organizational and social networks. Furthermore, successful principals guide the school policies, procedures and practices that contribute directly to student learning (Hallinger & Heck, 1998).

Factors that affect the influence of autonomy on school outcomes include principal professionalism, flexibility in governance, a systematic understanding of leadership, funding arrangements and accountability practices (Southern Regional Education Board, 2009). These categorical implications are part of a broader scope of board support for the superintendent to delegate these autonomous responsibilities to the principal.

School autonomy over budgets, staffing and curricula affect how principals handle key leadership functions (Center on Reinventing Public Education, 2003). Autonomy and authority; granted to very few principals, are needed to exert powerful leadership for student learning. Principals are bound tightly by district and state regulations and policies (Institute for Educational Leadership, 2000). Principals who feel their authority is more commensurate with their responsibility reported that their superintendents and school boards supported decentralized decision-making as much as possible (Southern Regional Education Board, 2009).

Waters and Marzano's (2006) study discovered new boundaries for autonomy. Rather than allowing administrators complete control, they found that when the superintendent provided specific autonomic parameters, the district administration had a positive effect on student success. The data discovered by the Waters and Marzano meta-analysis proposed that when the superintendent implemented three specific parameters, an atmosphere of defined autonomy resulted. The first defined autonomy parameter was the goal setting process that resulted in non-negotiable goals for achievement and instruction. Furthermore, Waters and Marzano noted that when schools aligned resources and continually monitored and evaluated progress toward non-negotiable goals, high levels of student achievement occurred. The second parameter encourages strong school-

level leadership and responsibility for school success among principals. The third and final parameter related to the superintendent creating a shared understanding and commitment between the district and schools. When all administrative personnel honored and shared an understanding of defined autonomy, district level leadership contributed positively to student achievement (Waters & Marzano, 2006).

Design

This study explains, by employing structural equation modeling, the theoretical model that asserts that allocating resources to support goals, ensuring board support of goals and academic achievement affect principal autonomy. A causal pattern was used in order to analyze the extent to which allocating resources to support goals, ensuring board support of goals and academic achievement correlate to principal autonomy. After performing a stepwise regression, we found that two of the five superintendent responsibilities, allocating resources to support goals and ensuring board support of goals were the strongest predictors of principal autonomy. Lastly, a structural equation model was designed.

Data

The data comes from a larger study conducted by Matthew J. Murphy (2009). Murphy's survey consisted of a set of instructions, a demographic section and finally a list of 52 items measuring six superintendent leadership responsibilities with a Likert-type scale as defined by a seven-member jury (Murphy, 2009). For the purpose of the study, the six leadership responsibilities of the superintendent were defined as follows: (1) Creating research-relevant goals (? = .895): the responsibility of the superintendent to ensure that the district creates long term achievement and instruction goals based on relevant research (Waters & Marzano, 2006; Murphy, 2009). (2) Providing principal autonomy (? = .888): the responsibility of the superintendent to provide independence to principals to lead their schools within the boundaries defined by the district goals (Waters & Marzano, 2006; Murphy, 2009). (3) Monitoring goals (? = .849): the responsibility of the superintendent to monitor and evaluate the implementation of the district instructional program to reach the achievement and instruction goals (Waters & Marzano, 2006; Murphy, 2009). (4) Allocating resources that support the goals (? = .875): the superintendent's responsibility to ensure resources are dedicated and used for professional development of staff that is aligned with the instruction and achievement goals (Waters & Marzano, 2006; Murphy, 2009). (5) Ensuring board support of goals (? = .867): the responsibility of the superintendent to ensure that the district instruction and achievement goals are aligned with the board goals and that the board supports these goals (Waters & Marzano, 2006; Murphy, 2009). (6) Collaborative goal setting (? = .729): the responsibility of the superintendent to set achievement and instruction goals by including all relevant stakeholders, central office staff, building-level administrators, and board members (Waters & Marzano, 2006; Murphy, 2009). School districts were defined as high or low performing by the com-

pilation of three years of Math A regents results in New York State. The academic achievement variable was defined as a binary variable where low = 1 and high = 2. This study used 32 surveys submitted by board presidents from the larger study that also surveyed superintendents.

Results

Bivariate correlations were produced for all of the variables in this study, including the superintendent providing principal autonomy, creating research-relevant goals, monitoring goals, allocating resources to support goals, ensuring board support of goals of goals, collaborative goal setting and academic achievement (**Table 1**).

All five superintendent leadership responsibilities were found to be correlated to principal autonomy at the .01 significance level including creating research-relevant goals (r = .60), monitoring goals (r = .62), allocating resources to support goals (r = .78), ensuring board support of goals of goals (r = .76), and collaborative goal setting (r = .69). Academic achievement (r = .43) was also correlated with the principal autonomy at the .05 significance level (**Table 1**).

Through the use of a regression analysis, we tested the hypothesis that academic achievement and the other five leadership concepts predict principal au-

tonomy. Using a step-wise approach we found that allocating resources to support goals and board agreement are significant predictors of principal autonomy, $R2 = .68$, adjusted $R2 = .65$, $F (2, 29) = 30.16$, $p < .01$, although correlation shows all variables are significant. When running the structural equation model we chose to use academic achievement because it is a binary variable (**Table 2**).

A structural equation model is represented in **Figure 1** with the independent variables of allocating resources to support goals, ensuring board support of goals and academic achievement. Academic achievement was originally rejected in the stepwise regression, because it was treated as a normalized variable, but kept for the structural equation model. The value of .30 shows the correlation between allocating resources to support goals and academic achievement, which indicates 9.0 percent of the variance of allocating resources to support goals relates with academic achievement. The value of .76 is the correlation between allocating resources and the board of education support, which indicates 57.8 percent of the variance of allocating resources relates with board of education support. The value of .36 shows the correlation between board of education support and academic achievement, which indicates 13.0 percent of the variance of board of education support relates with academic achievement.

Table 1
The bivariate correlations among the six leadership responsibilities and academic achievement (N=32)

		Research-Relevant Goals	Monitoring Goals	Allocating Resources	Ensuring board support of goals	Collaborative Goal Setting	Academic Achievement
Principal Autonomy	R	.60**	.62**	.78**	.76**	.69**	.43*
	P	.00	.00	.00	.00	.00	.01
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Table 2
Regression analysis to predict principal autonomy

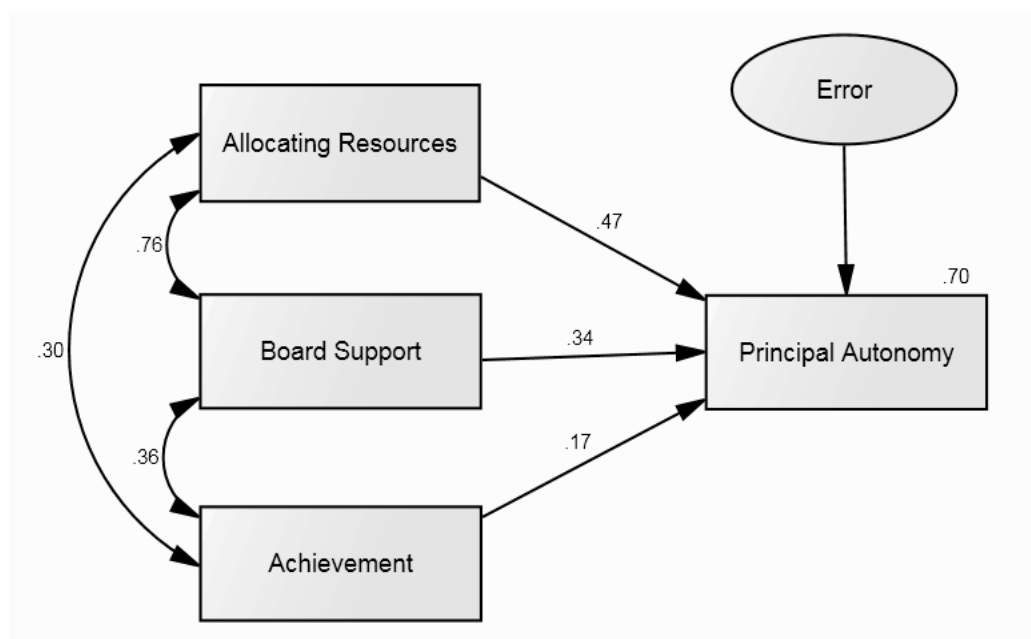|		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
1	(Constant)	6.875	4.064		1.692	.101
	Allocating Resources	.793	.116	.781	6.860	.000
2	(Constant)	7.472	3.783		1.975	.058
	Allocating Resources	.489	.166	.482	2.948	.006
	Ensuring board support of goals	.305	.127	.393	2.403	.023
a. Dependent Variable: Principal Autonomy						

Figure 1
Structural Equation Model (SEM): Interrelationship of Variables on Principal Autonomy

Also, **Figure 1** displays the following influences utilizing the standardized beta weights: value .47 is the effect of allocating resources on principal autonomy, value .34 is the effect of board of education support on principal autonomy, and value .17 is the effect of academic achievement on principal autonomy. The entries .47, .34, and .17 are standardized beta regression weights. This predication has an $R^2 = 0.70$, which indicates 70 percent variance of principal autonomy is explained by the allocating resources to support goals, ensuring board support of goals and student achievement.

Discussion/Conclusion

Early research on the impact of principal autonomy on school effectiveness was generally inconclusive, probably due to unreliable data and lack of explicit linkages between autonomy, teaching and learning. More recent research confirms the links between autonomy and student outcomes (Australian Education Union, 2007).

In 2005, during the mass restructuring of the New York City Public Schools, the largest urban school district in the United States, Eric Nadelstern, the Chief Academic Officer for New York City Schools, narrowly defined autonomy as an opportunity to demonstrate that if you give principals a chance to make important decisions that they and their teachers need to make about how kids learn best, then more kids will be more successful (Coalition of Essential Schools, 2005).

Principals can make a difference. Principals are concerned with the amount of autonomy and decision-making authority districts are willing to provide (Southern Regional Education Board, 2009). Eric Nadelstern pondered the question, "Is autonomy a reward or a pre requisite?" He concluded, "I believe that autonomy is a pre requisite- that the people closest to the kids and the classroom, principals, teachers in consultation with parents and at the high school level the kids themselves, are the people who are best positioned to determine what kids need to learn" (Coalition of Essential Schools, 2005).

It is our conclusion that principals do need autonomy in order to produce student academic achievement. However, we believe that a "defined" autonomy, as described by Waters and Marzano (2006) is necessary. The principal, the superintendent and the board of education must be aligned in their goals in order to successfully achieve desired academic results. All stakeholders must be invested in the outcome and success of their district. The principal must feel a level of autonomy but must not be left to make all decisions alone. Therefore, we believe that "defined" autonomy combined with a collaborative working relationship can predict student academic achievement.

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Timothy Sigerson is a Doctoral Student in Educational Administration Leadership and Technology at Dowling College, and serves as an Assistant Principal of Comprehensive Model School Project MS 327 for New York City Public Schools.

Karen Cohen Ames is a Doctoral Student in Educational Administration Leadership and Technology at Dowling College, and serves as Director of Instruction and Student Achievement for New York City Public Schools.

Eliana Levey is a Doctoral Student in Educational Administration Leadership and Technology at Dowling College, and serves as a Middle School Principal in the Deer Park Public Schools.

Matthew Murphy, Ed.D., is Director for Mathematics at Hauppauge Public Schools.

Elsa-Sofia Morote, Ed.D. is an Associate Professor in the Educational Administration, Leadership, and Technology Program at Dowling College.

Albert Inserra, Ed.D., is Associate Professor in Educational Administration, Leadership, and Technology Program at Dowling College.

HOW ARE MEMORY FUNCTIONS INVOLVED IN ALGEBRAIC MISCONCEPTIONS AND ERRORS?

By Cristina Eccius Wellmann

Abstract

Memory functions begin when a stimulus from the environment is received. Memory registers information, manages information, stores information over time and retrieves information when it is needed.

When an algebraic error occurs, often it is associated with a failure somewhere in memory. This paper analyses what part of memory might be responsible if a specific algebraic mistake occurs among freshman in a business school. Teachers should explore if an error could be the result of improper or inadequate perception of the information? Is it possible that memory retrieval of information was incorrect or not precise? Does the student apply procedural techniques automatically, without a minimum of meta-cognition?

Knowing where in memory a mistake is produced helps teachers to identify false conceptions. The freshman in this study demonstrated that some errors were the result of incomplete or selective sensory memory functions, other errors were produced in the working memory because there was an improper retrieval from declarative and/or procedural memory.

Keywords: *Memory Functions, Algebraic Errors, Algebraic Misconceptions, Declarative and Procedural Memory, Sensory Memory*

Introduction

Algebraic mistakes and misconceptions are very common among business school freshmen. Any algebraic error might be explained by a failure somewhere in memory. Teachers and professors can help their students better, if they know more about where and how memory contributes to math errors.

An error like:

$$\frac{y \cdot (y+2) + (y+2)}{y+2} = \boxed{y^2 + 2y}$$

may have several explanations. If the student has not seen the plus sign, it might be a problem when s/he perceives the information; otherwise, if s/he retrieves from long term memory that "same things" in the numerator and denominator can be cancelled out, s/he might have a failure in procedural or declarative memory.

In finance, some students fail to perform compound interest accurately when they have to calculate with powers. Why do students often fail in these calculations? Why do they often multiply instead of powering? The answer might be found in declarative memory retrieval. In business school, freshmen tend to know a lot of mathematics, but why do they make mistakes in the performance of some calculations?

Investigation questions

Two research questions guiding this investigation are:

1. How is memory involved in algebraic errors?

2. Can one wrong answer come from different memory failures?

This paper attempts to show some algebraic errors among freshman in business school and how memory failures contributed to the errors. The examples of freshmen's math processes in this paper were taken from a diagnostic test and they reveal how sensory memory, working memory, and declarative and procedural memory may be responsible for these errors.

First, I provide an overview of human memory functions reported by investigators and I connect these functions to algebraic performance. Further, I report the methodology for this study, and afterwards the results, where the freshmen's productions are discussed in terms of memory failure. Five examples were selected from a 42 item diagnostic test to help the reader see different possibilities of memory failures even in one item, based on incorrect freshmen performances.

Theoretical framework

A major area of research in memory concerns the functions of the different forms of memory and their implications related to algebraic errors (Radatz, 1979; Malle, 1993; Tietze, 2000; Eccius, 2008). Radatz (1979) analyzed errors made while information was processed and concluded that five conditions contributed to these errors:

a) a lack of semantic understanding

b) difficulties to obtain visual - special information

c) a deficient learning of facts, skills and previous concepts (ignorance of algorithms, inadequate knowledge of basic facts, incorrect procedural knowledge, insufficient mastery of symbols)

d) incorrect associations and rigid thinking (lack of flexibility encoding and decoding information)

e) application of irrelevant rules and strategies.

These errors can be made during perception of information, the storage and/or the retrieval of information or the recall process in memory.

In a very simple way, Atkinson and Shiffrin (1968); and Baddeley (2004) considered human memory to have three major constituents. Information is taken from the environment as a stimulus and registered in the sensory memory. Sensory memory, associated with perception, has various subsystems for different sense modalities; visual, auditory and tactile (haptic). Every person focuses the attention in different aspects of the information s/he receives (Gagné, 1985). Baddeley (2004) offered a visual description of the function of memory in *Figure 1*.

In mathematics, some information may be focused in an imprecise or incomplete way during instruction or the application of information may be mistaken when trying to solve, transform or simplify an algebraic equation or expression. Perhaps the information (an algebraic expression) is not perceived with all its details or only some of the elements are perceived. For example; Davis, Jockusch and McKnight, (1978, in Malle, 1993), investigated errors of "binary confusion" where students erroneously made operations of multiplication as an addition or used powering procedures as a multiplication.

Which details are important when perceiving an algebraic expression?

$$\frac{x(x+2)+3}{x}$$

If students do not register the plus sign after the multiplication of x (x+2) in the numerator, they might incur in errors of simplification, canceling the x in the numerator with the x in the denominator. Nolte (1991) and Eccius (2008) stated that some linguistic applications may contribute to some mathematical errors. It is common to hear students say x three, when they mean x^3; and it is not difficult to imagine why they multiply instead of powering.

Shevarev (1946; cited by Malle, 1993) identified some algebraic errors that occur when students do not focus their attention on general and specific characteristics of algebraic

Figure 1 - Braddeley (2004); Model of Human Memory
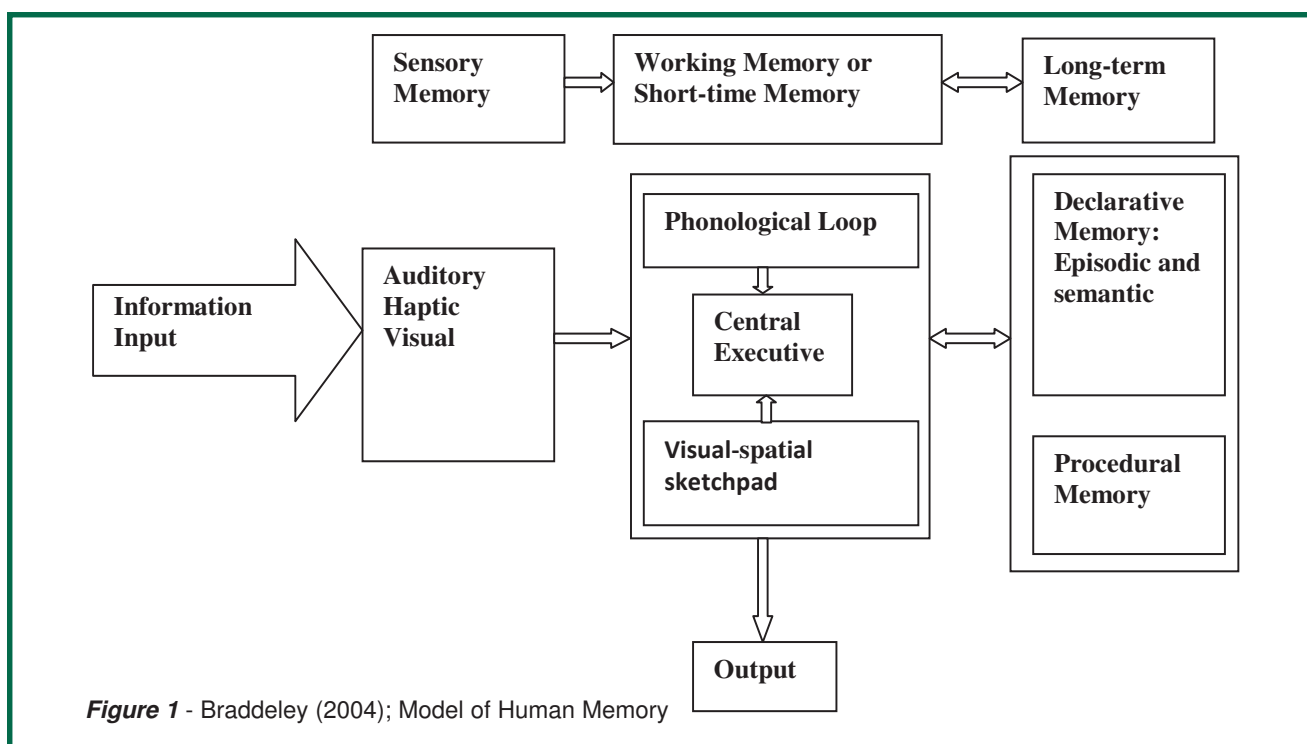
rules. The expressions: $(A^n)^m$ and $A^n \times A^m$ have the same general characteristics (the base is A, and two exponents) but different specific characteristics (the first one is a power of a power, the second one is a multiplication of two bases A, with their respective exponents). If a student cannot distinguish these differences s/he might have problems with the application of the exponent rules.

Once sensory memory perceives information, only that information on which the person focuses one's attention will be transferred to the working memory. Short-term memory (working memory) is the place where an active processing of existing information occurs. Information from the environment is placed in memory within a relationship to the knowledge stored in the long-term memory. In the working memory information is processed and (partially) controlled so that a person is aware of these processes.

Baddeley and Hitch (1974) divided the working memory in three modules: the phonological loop, for holding speech based information or sub-vocal articulation of a visually presented item; the visuospacial sketchpad, for visual concepts; and the central executive, for controlling the different systems. When overload of one of the systems takes place, the central executive process takes over its function. For the intention of this paper I am going to use the working memory as one unit.

Short-term memory or working memory has two mayor functions: on one hand, it needs to retrieve information from long-term memory, to be able to process new information (for example: learning a new algebraic rule, putting it in connection with earlier information); on the other hand, information processed in the working memory is stored in the long-term memory. For errors in arithmetic and algebra, we have to distinguish between two different possibilities of causes: was the information incorrect, imprecise or erroneously stored, or might the error just be produced in the working memory?

Misconceptions in certain algebraic topics (Gagné, 1985) make it very difficult for a student to learn correctly a related topic. If students retrieve an incorrect context or information from long term memory, it will be impossible for a teacher to help that student learn correctly new related information, even if the student wants to learn. Gagne stated that the retrieval phase occurs so quickly and automatically that often students are not aware that their context is wrong.

For the purpose of this paper, long-term memory will be divided in declarative memory and procedural memory. Declarative memory is responsible for storing and remembering facts and events. Facts and meanings are stored in the semantic memory and are independent of incidents and events or incidents in the episodic memory. Knowledge stored in the declarative memory can be verbalized. Procedural memory is related to the way things are done; it is linked to skills. We are unable or only slightly able to verbalize skills.

In mathematics, we can distinguish between declarative and procedural memory. For example, when we perform an addition of numbers, like: 2 435 + 1 867, simultaneously we use information from the procedural and the declarative memory. The fact, that $5+7 = 12$ is declarative knowledge. The manner in which we do the addition, first the units, then the tens, and so on, is a procedural knowledge. In algebra we can also differentiate between retrieving procedural or declarative knowledge from long-term memory. Often students automatically perform (procedural memory) simplifications in algebraic fractions like:
$$\frac{(x+3)\,(x-5)}{(x+3)}$$
canceling the factor $(x+3)$ in the numerator and denominator. A very high propensity to automatism without a good metacognition is dangerous, because some freshmen act automatically and fail to determine if the procedure is possible or not.

How can algebraic rules be stored in memory? It is not possible to store every algebraic example ever studied. Human memory generalizes, and creates schemes (Malle, 1993). For examples like:
$$\sqrt{16 \cdot b^2} = \sqrt{16} \cdot \sqrt{b^2} \quad \text{and} \quad (4 \cdot b)^2 = 4^2 \cdot b^2$$
Patterns like $\sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$ and
$$(a \cdot b)^3 = a^3 \cdot b^3,$$ are created.

To store the mathematical process in long-term memory, a general scheme is developed:
$\Diamond\,(a \circ b) = (\Diamond a) \circ (\Diamond b)$.

The problem overwhelms students, if they do not have the related metacognition. This scheme is only applicable for a multiplication (or division), but not if there is an addition or subtraction in between a and b.

This paper does not pretend to be exhaustive in its analysis of mathematical errors among freshman in business school. There are many other algebraic errors, and the intention of this paper is to show some erroneous processes of freshmen, and analyze them in terms of where in memory the error might be produced.

Analyzed Items:

Items and processes to be analyzed in this paper were taken from a 42 item diagnostic test (**Appendix 1**). A first criterion was the effect that some algebraic errors have on business school freshmen in their subjects like finance, operations and economics. Other criteria were:

a) "high percentage wrong response," and

b) the ease to show and analyze where in memory the failure could have been.

1) $-8^2 =$

Item One is related to the "binary confusion" reports by Davis, Jockusch and McKnight, (1978, in Malle, 1993) and is associated to financial mathematics in:

$$M = C (1 + i)^n$$

Freshmen often multiply by n, instead of powering.

2) $\dfrac{y \cdot (y + 2) + (y + 2)}{y + 2} =$

Item Two item was selected, because it is particularly rich in interpretations of freshmen's performances, in relation of how the simplification was performed. One and the same erroneous solution may have different failures of memory.

3) $6 - \dfrac{2x}{3} = 9$

Item Three represents problems with the resolution of this equation where freshmen have difficulties in solving annuities equations like, where x is a payment:

$$x + \frac{x}{1.03} = 2\,500$$

4) $b^{3x+1} b^{1-3x} =$

Item Four indicates that some freshmen did not store information with all of the proper details (Shevarev, 1946; cited by Malle, 1993). Have freshmen recognized a multiplication of two bases "b", with their respective exponents?

5) $\dfrac{\sqrt[3]{z^4}}{\sqrt[3]{z}} =$

Item Five illustrates how some freshmen interpret the division and the operation signs (square roots). Do they think that operation signs are the same as factors?

Method

Freshmen math procedures in a diagnostic test (**Appendix 1**) were analyzed and some exemplars were selected to discuss where in memory (sensory memory, working memory or long-term memory) the errors might be produced. Not all misconceptions can be discussed in this paper. The intention is to show the reader how these errors are created in different parts of human memory.

Subjects:

In July, 2011, 327 freshmen at School of Business were tested.

Instrument:

From the 42 item diagnostic test (**Appendix 1**) items with a high percentage of wrong responses were selected for analysis.

Process of analysis:

Since the test was not a multiple-choice test, inference can be made by the written procedures of students. To know where in memory the error was produced, freshmen were interviewed. Interviews were non- structured and students were asked directly to explain why they proceeded as they had in a particular question. They were asked to describe their own process. For a follow up question, they were asked if they could express verbally the characteristics of the mathematical question. If the student did not know why s/he acted in a given way, s/he was asked more specifically about what algebraic rule s/he applied, and if s/he could explain why s/he applied the rule that way. Also, students were asked if they knew when they could not apply a specific rule. Student responses for this paper were transcribed and translated from Spanish to English.
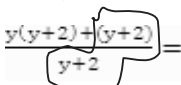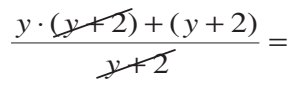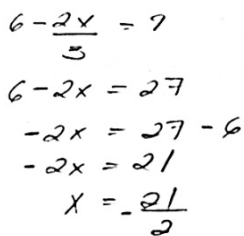
Application of the test:

Students answered the test without a calculator. They had sufficient time (i.e. one hour), and test scores did not affect their grades or standing in class. Freshmen with a specific wrong answer were asked to have an interview. The overall performance of freshmen in the diagnostic test is not of interest for this paper. I concentrated on the procedures and performances of freshmen and the interpretation of where in memory their errors were produced. Freshmen interviews about what they thought, why they acted or performed in a given way, and a examination if their errors will be integrated into the interpretation of their performance.
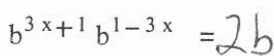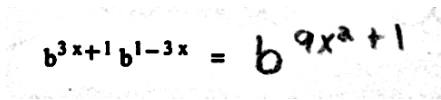
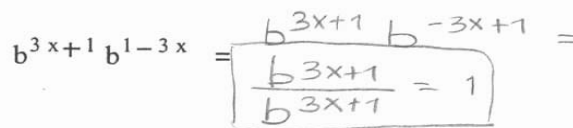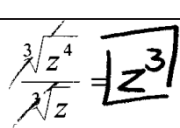| Test Item 1	*Freshman's process or solution*
$-8^2 =$	16
	Where in memory might the error be produced?
	Visual similarity: 8^2 with $8 \cdot 2$:
	a) Binary confusion. Freshmen performed a multiplication instead of a potentiating.
	b) A not complete or imprecise perception, SENSORY MEMORY failure.
	A contradiction to these confusions is that the minus sign was multiplied twice or powered.
	Implications for business school's students:
	Compound interest: $M = C(1 + 0.03)^2$ May be: M=C(2.06)

Results

The selected items and selected freshmen's processes are discussed in terms of where in memory the failure could have been. It should be clear for the reader that not all freshmen answers to these items could be integrated to the study.

Test Item 2	Freshman's process or solution
$$\frac{y \cdot (y+2) + (y+2)}{y+2} =$$	$$\frac{y \cdot (y+2) + (y+2)}{y+2} = y^2 + 2y$$ *Where in memory might the error be produced?* This particular process may have several interpretations. An error of SENSORY MEMORY: the plus sign was not perceived. This converted the simplification item in a simplification of factors in the numerator and denominator. The numerator consists only of factors and may be canceled with the factor (y+2) in the denominator. Freshman's answer in the interview: "They are all factors", and when s/he was confronted with the plus sign: "I did not see the plus sign". The scheme "equal factors in the numerator and the denominator" may be canceled. Problem with DECALRATIVE MEMORY in the LONG-TERM MEMORY. S/he does not notice that the plus sign invalidates the stored scheme. Freshman's answer to the interview: "The second (y+2) is a factor and can be canceled with the (y+2) in the denominator". An important fact is, that in the test item the second y+2 is put in brackets, this could give freshmen the impression, that it is a factor. PROCEDURAL MEMORY failure (LONG-TERM MEMORY). Procedure based on a pattern stored: a/a = 0 (with an error, a/a = 1). A not applicable procedure was retrieved. Freshmen were asked about how they visualize the expression, and the pattern they "see", was: $$\frac{y(y+2) + (y+2)}{y+2} =$$ This is a typical pattern and another error is committed, a/a is not 0, it is 1, but freshmen omitted this fact. This is a failure of DECLARATIVE MEMORY in LONG-TERM MEMORY.
Test Item 2	Freshman's process or solution
$$\frac{y \cdot (y+2) + (y+2)}{y+2} =$$	$$\frac{y \cdot (y+2) + (y+2)}{y+2} = 2y+2$$ *Where in memory might the error be produced?* If the procedure of the freshmen is analyzed it is clear, that s/he canceled in the way: $$\frac{y \cdot (y+2) + (y+2)}{y+2} =$$ Freshman's argument for canceling is: "both are factors". This might be a problem of the DECLARATIVE MEMORY in the LONG-TERM MEMORY, because the freshmen's argument is correct, but it is not correct in terms of the algebraic fraction presented. (y+2), is factor of y, but is not a factor of the whole numerator. The metacognition failed, the fact does not permit the cancel process, the way the freshmen did.

Test Item 3	Freshman's process or solution
$6 - \dfrac{2x}{3} = 9$

Where in memory might the error be produced?

This procedure shows a very ingrained freshmen's error. Freshman's answer is: "I passed the 3 multiplying to the other side of the equation". When asked about the 6, they answer: "that does not have any effect on the procedure".

This might be a failure in DECLARATIVE MEMORY or in PROCEDURAL MEMORY, in LONG-TERM MEMORY:

In the declarative memory, because freshmen do not store the facts of how equations may be transformed to equivalent equations, both sides of the equation have to be multiplied by 3. Students often stored the effects, and not the facts, without metacognition.

In an equation like: $\dfrac{x}{3} = 9$, the effect of multiplying by 3 may be thinking of "the 3 is passed to the other side of the equation". The procedure of "passing", multiplying is often a non reflected action. So it might be also a failure of PROCEDURAL MEMORY in LONG-TERM MEMORY.

Implications for business school's students:

The equation in finance:

$x + \dfrac{x}{1.03} = 2\ 500$ is often solved with an error due to the memory failures mentioned above. |

Test Item 4	Freshman's process or solution
$b^{3x+1} b^{1-3x} =$

                Where in memory might the error be produced?

Freshman's comment: "3x + 1 + 1 − 3x = 2; b two is 2b".

The student applied the correct algebraic rule, but has a problem with a "binary confusion". Instead of leaving the b2; s/he transforms it to 2b. The confusion is between a power and a multiplication. |
| $b^{3x+1} b^{1-3x} =$ |

Where in memory might the error be produced? |

Freshman's answer: "It is a multiplication"

The student does not perceive all characteristics of this item. This may have happened during the learning phase or when the item was presented to the student to work with.

In the first case, student will be unable to retrieve a correct algebraic rule, because his storage was deficient, and the failure lies in the DECLARATIVE MEMORY. In the second case, the student is not able to analyze the item, he does not perceive the specific characteristics, and cannot distinguish which rule s/he has to apply. In this case, the failure is in the SENSORY MEMORY.

$b^{3x+1}b^{1-3x} =$	

$$b^{3x+1}b^{1-3x} = \frac{b^{3x+1} \cdot b^{-3x+1}}{b^{3x+1}} = \frac{b^{3x+1}}{b^{3x+1}} = 1$$

Where in memory might the error be produced?

Freshman's answer in the interview: "When we have a base with a negative exponent, we may change the base to the denominator with a positive exponent. That is what I have done. If we have the same expression in the numerator and denominator, the result is 1."

The student has knowledge about negative exponents, but s/he did not realize that the 1 must change the sign too. This is a failure in the DECLARATIVE MEMORY and requires metacognition.

Test Item 5	Freshman's process or solution
$\dfrac{\sqrt[3]{z^4}}{\sqrt[3]{z}} =$	$\dfrac{\sqrt[3]{z^4}}{\sqrt[3]{z}} = z^3$

Where in memory might the error be produced?

The procedure of canceling the root sign, may have two different interpretations.

Freshman's answer: "Two equal "things" in the numerator and denominator may be canceled." This answer is a failure of PROCEDURAL MEMORY, because the student learned a skill, where s/he cancels "equal things" in the numerator and denominator.

Freshman's interview: "The root signs are like factors, they can be canceled". This student's answer is a failure in DECLARATIVE MEMORY; the student does not differentiate between a factor and an operation sign.

Conclusions

For teachers and professors it should be of great importance to know where in memory an error may be produced. It is of little help for students to listen to the teacher explain the correct way of solving or transforming an equation or an algebraic expression, if an error in memory has been implanted within the student's brain.

Failure to capture the correct understanding may happen during the learning phase, that is to say, when knowledge is stored in the long-term memory (declarative or procedural memory), or when information is perceived to work within the short-term memory. If information is perceived in a selective way, and is not focused on the important facts, it is possible that learning will be incorrect or misapplied. New topics are very difficult to learn, if students have previous false information related to the topic. If students have misconceptions in memory and the retrieval process is automatic, students will not be aware of their errors.

Failure may take place in the perception phase, in sensory memory. If an algebraic expression is not perceived with all of its details, and is transferred to working memory with "defects", the working memory or short-term memory retrieves erroneous information from the long term memory. Errors, as exposed in the previous section, may be produced in different parts of memory and should be treated selectively. What should a teacher or professor do, when student show misconceptions? They have to clarify the understandings and beliefs of their students, and shed light on the character of misconceptions. Help students to focus their attention on the important facts, during learning and during the perception phase of an exercise. When students verbalize declarative knowledge, teachers can recognize if a student is learning accurately.

Teachers must make students aware that procedural knowledge is important and if they do not store a procedure accurately, they will misapply it. Students often cannot succeed in other classes, like finance, business, operations and economics because their mathematical skills and abilities are low.

For the universities it should be important to transmit research in the area of mathematics education to high school and middle school teachers. The knowledge of where in memory an error might be produced will help teachers and professors facilitate student learning. Diagnostic or formative assessments that guide teachers in refocusing their instruction to meet the learning needs of their students should help them focus on the memory issues that students encounter in mathematics.

The present paper makes evident that teachers and professors often do not put sufficient attention on what students really store in long term memory and what they perceive. For example, in the questions we examined, the algebraic rules were not accurately stored with all of their details and adequate metacognition? Teachers must use diagnostic and formative assessments to examine if a student's perception of a mathematical problem is satisfactory.

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Dr. Cristina Eccius Wellmann is a Professor in the School of Business and Economics, Universidad Panamericana at Guadalajara, Mexico.

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Appendix 1

Administrated Test

SCHOOL OF ECONOMICS AND BUSINESS
ACADEMY OF MATHEMATICS
LOCATION OF MATHEMATICS

A) Calculate:

1. $25 - 5 \cdot 2 + 4 =$

2. $2 + 3 \cdot \sqrt{3} - 4 =$

3. $9 \cdot 3 \div 6 \cdot 0 =$

4. $-8^2 =$

5. $\dfrac{8}{7} \cdot \dfrac{14}{2} \cdot \dfrac{9}{4} =$

6. $\dfrac{21}{45} \div \dfrac{7}{15} =$

7. $\sqrt{0.16} =$

8. $\sqrt{\dfrac{1}{9}} =$

9. $\sqrt[3]{-64} =$

10. $\sqrt{4^2 + 3^2} =$

B) Simplify the expressions:

11. $10^{-7} \cdot \dfrac{10^4}{10^{-2}} =$

12. $b^{3x+1} b^{1-3x} =$

13. $\dfrac{(x-5)^{m+2}}{(x-5)^m} =$

14. $\dfrac{x^{\frac{3}{2}}}{x^{\frac{2}{5}}} =$

15. $(-3x^{-4})^2 =$

16. $\sqrt[3]{\sqrt[6]{y^{36}}} =$

17. $\dfrac{\sqrt[3]{z^4}}{\sqrt[3]{z}} =$

18. $\sqrt{x^2 + y^2} =$

C) Perform and simplify the following algebraic operations:

19. $\dfrac{25x^{-1}y^4 z^{-2}}{-5x^2 y^{-1} z^{-4}} =$

20. $14x^2 - 6xy + 8xy - 3y^2 =$

21. $3 \cdot (x-2) + 4 \cdot (3-x) - (x-5) =$

22. $(z^2 - 5z + 4) \cdot (z-1) =$

23. $\sqrt{x^2 + y^2} =$

D) Factorize the algebraic expressions:

24. $z^2 - 16z + 64 =$ 25. $9y^2 + 6y + 1 =$

26. $x^2 + 1 + 3x(x^2 + 1) =$ 27. $x^2 - 12x + 35 =$

28. $y^3 - 9y =$

E) Simplify the algebraic fractions:

29. $\dfrac{(x-5)(x+3)}{x+3} =$ 30. $\dfrac{y \cdot (y+2) + (y+2)}{y+2} =$

31. $\dfrac{(z+4) \cdot (z-1) + 2}{z+4} =$ 32. $\dfrac{3}{a+b} - \dfrac{2}{a-b} =$

F) Solve the equations:

33. $x \cdot (3 - x) - 4 \cdot (1 + x) + x \cdot (x - 3) = 0$

34. $6 - \dfrac{2x}{3} = 9$

35. $\dfrac{x+3}{x-4} = 0$

G) Solve the quadratic equations:

a) Perform with a factorization:

36. $x^2 - 4x + 3 = 0$ 37. $2x^2 + 2x = 0$

b) Perform using the quadratic formula:

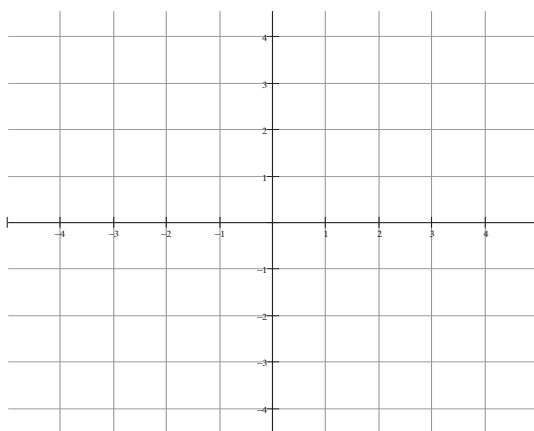38. $2x^2 - x - 15 = 0$ 39. $z^2 - 9 = 0$

H) Calculate the intersection of the two lines:

40. $x - y = 2$

$y - 2x = 1$

I) Graph the function:

41. $y = \dfrac{1}{2}x + 1$

BOOK REVIEW

The Answer Is in the Room:
How Effective Schools Scale Up Student Success
By Alan M. Blankstein

Reviewed by Michael Keany

I must confess that I like Alan Blankstein's straight-forward, common sense approach to education. This approach is reflected in his writing, as typified in his new book, *The Answer Is in the Room: How Effective Schools Scale Up Student Success,* published by Corwin Press. His writing is artful, as might be expected from someone who began his career as a music teacher and now serves as the founder and president of the HOPE Foundation, whose honorary chair is Archbishop Desmond Tutu. I've loved Blankstein since his award-winning book, *Failure Is Not an Option,* was published. His newest book is a little gem, full of insight and just the right blend of evidence, resources and the all-important inspiring stories. In fact, this new book applies the lessons learned from working with schools in his *Failure is not an Option* program.

The basic tenet in the book is that the answer to a better educational system resides within us, if only we ask ourselves the right questions. The secret is that there is no secret. We know how to improve achievement and we have great practitioners in communities ready to do wondrous things. Through an examination of real cases, Blankstein asks us to celebrate what we know how to do best. All we have to do, he says, is to examine our successes and commit to positive change. In an era in which everyone and his uncle has some idea about educational reform, Blankstein reminds us that we are the experts and our voices need to be heard. He provides inspiration and reminds us that we already have the tools to make the difference. Reading this short book is a breath of fresh air in the ideological blather with which we are assaulted each day. I am convinced that we have been beaten down and need to draw upon our inner reserves, as Blankstein points out, to make sense out of the strange times in which we live.

Most compelling is Blankstein's view that we already have the capacity. We need to hear that message. We have begun to doubt ourselves and our capabilities. We do know of many success stories but somehow we don't believe them, and because of that, we have not brought those ideas to scale. There needs to be a commitment to inquiry, planning, and action. Blankstein provides the inspiration - the ingredient we have lacked.

He takes us on a world tour of success, with stops in South Africa, Vietnam, and yes, American schools. He preaches that we need professionally-driven change, not government imposed mandates. He dignifies the professionals and I thank him for that. His stories (and he is a good story-teller)

emphasize the need for trust, empowerment, accountability and motivation. The leader is so crucial to establishing this effort. Several administrators I know who have read the book, keep it close by for reassurance and recommitment. His message is a curious blend of courage and humility, but it works. It's no wonder to me that Blankstein serves on Harvard's International Principals Center's Advisory Board.

Citing wisdom from top educational experts and building on what is already working, Blankstein offers tools for finding excellence in schools, scaling these practices across learning communities, and transforming low-performing schools into high-performing schools. His five-step process includes:
• Identifying and assessing excellence
• Creating an action plan
• Assigning resources such as time, materials, etc.
• Transferring excellence in the form of knowledge and skills throughout the school and district
• Sustaining the excellence

Also included are effective strategies for sustaining student gains, closing gaps within and between schools, building leader capacity, and increasing community commitment.

All of this is not "rocket science" to anyone who has made a successful career in education but it does help to be reminded and encouraged that the answers lie within us.

The chapter headings outline nicely Blankstein's cogent, practical, yet motivating approach.
1. Why We Can't Wait to Scale Student Success!
2. A Process to CREATE Sustained Student Success
3. The Courage to Commit to the Work
4. Resources are in the Room
5. Taking Stock of Excellence in the Room
6. An Action Plan for Engaging the Entire Learning Community
7. Transference of Knowledge and Skills Throughout the Learning Community
8. Embedding the New Learning in the Culture for Sustainability

He concludes with seven tools to help find the "answers in the room."

This is not a deep work but, because of that, it reminds us that perhaps we make our life too difficult. We should examine closely what we know is successful, put aside our petty arguments over philosophy and have the courage, and the humility to make a real difference in the lives of our students.

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Professor Linda Faucetta, *Director,* Graduate
The School of Education, St. John's University/Oakdale
(631) 218-7775 *faucettl@stjohns.edu*

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