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ABSTRACT

This cross-sectional study used primarily quantitative methods to investigate the superior achievement of 4th- and 5th-grade students at Alaska's Kenai Peninsula Borough School District who as young elementary students had attended K-2 primary school, compared to peers who had attended a K-6, K-8, or K-12 configured school. Since this study was limited to a single school district that included all four elementary school configurations in communities that were found to be similar, variables that historically confuse the application of results to conclusions were systematically eliminated as causal factors. To study the effect of the remaining variables on student outcome, educational instructors that had experience teaching in both a K-2 and other configurations within the district were surveyed. The survey findings revealed the magnitude of the variance between causal agents known to affect future student success that exists in the K-2 versus other configuration elementary schools. In order of decreasing magnitude, the following variables are more prevalent in the K-2 environment than in other configurations, and their increased presence related to superior student achievement in later years: Resources, Parental Involvement, Collaboration (among administrators, teachers, and special services personnel), Foundation (ability to establish social and emotional competence, language, cognition, teaching strategies that lead to next levels of accomplishment), Relevant Teacher Training, Teacher Efficacy (with regard to aligning primary students' interests and abilities), High Expectations, Principal's Leadership, Teacher's Stability, and School Climate. (A copy of the survey is included. Contains 14 references.) (Author/HTH)

Update on the Relationship Between Elementary Grade Span and Student Achievement: Identification of Human Interactions and Behaviors In a Kindergarten-2nd grade Configured Young Primary Elementary Which Result in Superior Student Achievement Observed in the 4th and 5th Grade

by: H.S. Norwood

ABSTRACT

What human interactions are taking place within the Kindergarten-2nd grade configured young primary school versus a wider-span elementary configuration that lead to improved student success in later years? This cross sectional study used primarily quantitative methods to investigate the superior achievement of 4th and 5th grade students in the Kenai Peninsula Borough School District who, as young elementary students, had attended a young primary school configured as a K-2 (kindergarten through second grade) versus 4th and 5th grade students who had attended an elementary within a larger grade-span school (K-6th grade, K-8th grade, or K-12th grade). Although a plethora of research has been documented on the relationship between grade span of schools and student achievement, these studies list causal agents that affect student achievement yet declare that variance among compared school districts and the communities they serve limit the applicability of the conclusions. What makes this study unique is that it was performed within a single school district, the Kenai Peninsula Borough School District. Since this study was limited to a single school district that included K-2, K-6, K-8, and K-12 structured elementary schools in communities that were found to be similar, variables that historically confuse the application of results to conclusions were systematically eliminated as causal factors. To study the effect of the remaining variables on student outcome, educational instructors that had experience teaching in both a K-2 and Other Configured Elementary environment (K-6, K-8, K-12) within this district were surveyed. The results of the survey revealed the magnitude of the variance between causal agents known to affect future student success that exists in the K-2 versus Other Configured Elementary schools. In order of decreasing magnitude, the following variables are more prevalent in the K-2 young primary environment versus a wider grade-span elementary and their increased presence relates to superior student achievement in later years: Resources (dedicated to young primary education), Parental Involvement, Collaboration (between administrators, teachers, and special services personnel), Foundation (the ability to establish social and emotional competence,

language, cognition, teaching strategies that lead to next levels of accomplishment), Relevant Teacher Training, Teacher Efficacy (with regard to aligning young primary students' interests and abilities), High Expectations (with regard to being able to develop social and emotional competence in students), Principal's Leadership (disposition to implement early learning programs, guidelines and standards), Teacher's Stability (disposition to implement early learning programs, standards, and guidelines), and School Climate (environment that promotes a positive learning experience).

INTRODUCTION

The crucial link of providing comprehensive early childhood (preschool) and young primary (K-2) education toward future achievement of the student is well documented in literature written by young childhood education advocates (National Association for Education of Young Children and the National Association of Early Childhood Specialist in State Departments of Education, 2002). However, in modern history, the development of a school's grade configuration by public school administrators is determined by economic considerations such as transportation and limited financial resources due to declining enrollment at the expense of educational implications (Giblin, 2001). School size and grade configuration become dictated by geographic location and the community's desire to keep elementary students in close proximity to home (Renchler, 2000). Under ideal conditions, schools would be built for particular programs and philosophies rather than letting size and configuration of buildings dictate the program to be used. Yet exemplary schools of all configurations exist which would lead to the conclusion that "student performance can be attributed less to the building shape or grade-level configuration than simply to effective teaching and leadership" (Hooper, 2002). That sentiment presents the primary question this research attempts to answer: "What human interactions are taking place within the K-2 configured school versus a wider-span elementary configuration that lead to improved student success in later years?

Proponents of bigger schools, a typical consequence of having wider grade spans, argue the benefits that arise from having the opportunity to provide more and better services, the mutual student benefits of having older students mentor younger students, and the purposeful meaning of education that older students represent to younger ones. These proponents state that every transition from one narrowly configured school to another disrupts the social structure in which learning takes place as well as lowers achievement and participation of many students (Howley, 2002). Others state that frequent school changes make it harder to establish a sense of community within the school due to frequent turnover in student population.

Yet research on the topic of "Are Bigger Schools Better?" is of great concern to other educational experts who have observed the benefits of dedicating resources toward developmentally appropriate expertise in K-2 configured schools. One school district was surprised by the observed benefits that resulted from concentrating on educational and psychological needs of children after a separation of a single K-5th grade school into separate K-2 and 3rd-5th schools was warranted due to changing enrollment (Raze, 1985). In the final analysis, the compared written research on the affect grade-span has on student achievement is non-conclusive and seriously wanting (Howley, 2002). Despite the likelihood that grade span, or grade configuration has a significant influence on the success of school systems and the students they serve, empirical research on the topic in the last decade has been sparse (Renchler, 2000). The massive amount of literature that does exist is more concerned with the middle school configuration, specifically where to place 6th graders.

Because of it's unique structure, the Kenai Peninsula Borough School District (KPBSD) presents a unique opportunity to analyze the variance in later student outcomes that may be caused by the exposure (or lack of exposure) to variables that are known to affect academic performance and learning foundation during the crucial young primary years. Due to demands for increased accountability being mandated nationwide for all school districts, 4th and 5th graders throughout the district were required to take the normative achievement test known as the Cat/6 for the first time in the spring of 2002. Variance in the test results throughout the peninsula was reported by the local press, which prompted an interest in determining the underlying cause. Cursory review of

the data seemed to indicate that 4th and 5th graders that attended a K-2 structured elementary school during their young primary years exhibited superior achievement to those who did not.

The KPBSD is approximately the size of the state of New Jersey and requires 4 hours to traverse by vehicle. Several of the 43 total schools that comprise the district are only accessible by boat or air. The communities that developed throughout the Kenai Peninsula of Alaska naturally wanted their children to attend schools close by instead of requiring them to take prohibitively long bus rides. This evolution resulted in schools structured with various grade spans. The unique capability of the KPBSD to shed light on the "Is Bigger Better?" debate is better illustrated by comparing the data from the U.S. Public Primary/Elementary School Grade Configurations-Number of Schools and Percentages of Configurations (1996-1997) to the school configuration statistics of the KPBSD (see below table). The similarities between the tables show that the KPBSD can be used as an approximation of school configurations observed nationwide. What is unique, of course, is that the wide variance in KPBSD school structures is still administered by the programs and directives of a single administration. This feature, plus the remarkable similarities between communities, eliminates many of the variables that cause confusion in prior studies.

U.S. Public Primary/Elementary School Grade Configurations
Number of Schools and Percentages of Configurations, 1996-1997

	PreK-3rd, Pre K-4th	Pre-K-5th	Pre K-6th	Pre K-8th
	K-3rd, K-4th	K-5th	K-6th	K-8th
	1st-3rd, 1st-4th	1st-5th	1st-8th	1st-8th
Number of Schools	4,910	20,570	15,578	4,543
Percentage of Total Schools	10.7	45.1	34.2	10.0

Kenai Peninsula Public Primary/Elementary School Grade Configurations
Number of Schools and Percentages of Configurations, 2001-2002

	K-2nd	K-5th	K-6th	K-8th	K-12
Number of Schools	2	0	9	2	1
Percentage of Total Schools	14.3	0	64.2	14.3	7.1

The KPBSD is also unique in the nation for having a purposeful sampling group of individuals who have provided instructional guidance in the same school district at both a K-2 and an Other Configurated Elementary school (K-6, K-8, and K-12). These principals, teachers, and special

service providers are uniquely qualified to identify the variance in strategies, resources, and attitudes that exists between K-2 and Other configurations that are related to later achievement. Fourteen of these individuals exist. Twelve completed a survey crafted to examine the magnitude of the difference in variables that exists between K-2 and Other Configured Elementary schools that are known to influence student achievement.

What are the variables that are known to influence student achievement? In October of 2002, the KPBSD's Dr. Gary Whiteley issued a report to the school board, which included his summary from the literature on the predictors and indicators of academic performance. This list was used in this study as a partial list of variables that directly influence students' success (Whiteley, 2002). Dr. Whiteley's list included, in random order, Socio-Economic Status (of the student), Parents' Level of Education, Teacher Efficacy, Meaningful Parental Involvement, School Climate, Principal's Leadership, High Expectations, Well Trained Teachers, Stable Teachers, Class Size (i.e., Pupil to Teacher ratio or PTR) and School Size. Literature from the National Association for Education of Young Children (NAEYC) and the National Association of Early Childhood Specialist in State Departments of Education (NAEC/SDE) added two more variables to the list of known causal agents, Resources and Foundation. Although all the listed variables are known to influence future achievement, the tie of young primary education to future outcomes is especially relevant to the variable Foundation. Lastly, parental observations from those who had children attending both a K-2 and Other Configurated Elementary during the primary years added the variable called Collaboration.

This study subjected the overall Cat/6 scores for KPBSD 4th and 5th graders to statistical analysis to validate the presence of significant variance between those students who had attended a K-2 versus Other Configured Elementary school (K-6, K-8, or K-12). Data provided by the KPBSD administration were used to determine if variables related to socioeconomic factors, school size, and pupil to teacher ratio (PTR) were the cause of any observed difference between student achievement. Simultaneously, educational instructors (principals, teachers, and special services personnel) who had experience within the KPBSD teaching at both a K-2 and Other Configured Elementary were asked to complete a comparative-5 point Likert-style survey that was designed to reveal the source if variance in the early primary education process. The following research questions guided this study:

Did variance exist in the achievement of 4th and 5th graders who attended a K-2 young primary in the KPBSD versus those that did not?

What variables known to effect student outcome could be eliminated from the explanation of any observed variance?

What variables remained to be examined by instruction providers that have experience teaching within the same school district at both a K-2 and Other Configuration Elementary?

METHODS

METHODOLOGY OVERVIEW

1. Determine schools that were in test group and schools that were in control group.

2. Perform t-test on average 4th grade achievement scores to determine if variance in achievement was significant. Repeat process for average 5th grade achievement scores.

3. Develop list of variables reported in the literature to influence student achievement. Determine which variables do not correlate to student achievement in the KPBSD and eliminate them from study.

4. Develop 5-point Likert-style tool that can quantify magnitude of variance in causal factors known to influence future student achievement that exists between K-2 and Other Configured Elementary schools. Special interest should be paid to the variable that links future outcomes to previous learning experiences.

Include open-ended comment section on Likert tool to capture any other variable that might qualitatively be identified as affecting student achievement.

5. Locate educational instructors (principals, teachers, and special service personnel) who have taught in both a K-2 configured KPBSD elementary school and an Other Configured Elementary (K-6, K-8, and K-12) and ask them to take the survey.

6. Reduce data from Likert tool and report on the magnitude of variables known to affect student achievement.

DETERMINATION OF THE SCHOOL TEST POOL

There are 42 brick and mortar schools in the KPBSD (as opposed to the distance education programs also in existence). Of those schools, 28 include young primary education in their configuration. Of those schools, 3 use teaching strategies governed by specific charters and 11 are designated small schools (some of which are accessible only by plane or boat). This study was limited to schools within the KPBSD that include a kindergarten, are non-chartered, and not designated as a small school. Elimination of charter schools was required so that any observed variance in achievement would not lead into discussion of programs that are not routinely used in the KPBSD. Elimination of small schools was necessary because the academic results for these schools were averaged together yet they had variance in grade-span structure. Since the information could not be disagreggated, small schools were eliminated from the study.

Fourteen schools remained in the study which represented 84% of total population of the 28 schools that had a kindergarten in their grade span (statistics calculated from the 2002-03 KPBSD Enrollment Report). Two of the fourteen schools had the K-2 configuration. These schools fed into their respective 3-5th grade span schools. These two 3-5th grade schools, then, comprised the test group of 4th and 5th grade test scores. The 4th and 5th grade scores from the remaining 12 elementary schools, with grade span configurations that varied from K-6, K-8, or K-12, comprised the control group.

UNIT OF ANALYSIS/OPERATIONALIZATION OF STUDENT ACHIEVEMENT

The Cat 6 is a normative test administered to 4th and 5th graders nationwide. The results are given in terms of percentile. For example, an individual's score of 69 in a category would indicate that 69 percent of those who took the test in that category had scored lower than the individual in question. This study used the class average scores from 4th and 5th graders as reported in the KPBSD

Assessment Results 2001-2002 document (See Table 1). Nine categories of achievement are assessed in the Cat/6. (1) Reading Score and (2) Reading Vocabulary Score comprise the Reading Composite Score. (3) Language Score and (4) Language Mechanics Score comprise the Language Composite Score. (5) Math and (6) Math Computation Score comprise the Math Composite Score. The average of the Composite Scores for all 4th graders determined the 4th Grade Overall Composite Score for the school and was reported in the Assessment report. The average of the 5th graders' scores determined the 5th Grade Overall Composite Score. Additionally, and not part of the Overall Composite score, are test results for (7) Science, (8) Social Studies, and (9) Spelling.

CHECK FOR SIGNIFICANT VARIANCE IN STUDENT ACHIEVEMENT BETWEEN TEST AND CONTROL GROUPS

For the 12 schools that comprised the control group, a spreadsheet was made which listed the nine categories of assessment in the columns and each of the 12 member schools of the control group in successive rows. The averaged school scores for 4th graders were entered into the spreadsheet. From these data the mean and standard deviation for each of the nine assessment categories for the control group were calculated. The exercise was repeated, in a separate spreadsheet, for the two schools that comprised the test group scores.

These data, which compared the 4th grade achievement of test and control groups, were fed into the one tailed t-test algorithm available on the Internet provided by Simple Interactive Statistical Analysis (http://home.clara.net/sisa/t-test.htm). The one-tailed t-test was used because of the presumption that a variance existed in outcome due to differences in the configuration of schools.

It was recognized that a trend of variance, should it exist, could not be externally validated since the Cat 6 assessment tool had only be administered once, in the spring of 2002. However, since the KPBSD 5th graders had also been tested, repeating the evaluation of significant difference with the scores from this grade level would provide additional validity. The 5th grade scores were thus subjected to the same statistical evaluation undertaken with the 4th grade scores.

DESCRIPTION OF VARIABLES KNOWN TO EFFECT ACADEMIC PERFORMANCE

Listed in random order, Dr. Gary Whiteley summarized the predictors and indicators of academic performance as the following: Teacher efficacy (TE =circumstance of professional are within his/her grasp), Meaningful parental involvement in child's educational program (PI), School Climate (CLIMATE), Principal's leadership and ability to set goals and focus for the school (PRIN), High expectations for all students including quality programs for all students (EXPECT), Well-trained teachers (TRAINT), stable teachers (STABT), Class Size (which equivalent to pupil-to-teacher ratio or PTR), and school size (SSIZE). Two variables, which can be lumped together into defining Socio Economic Status (SES), are Poverty Level of the Student (POV) and Parent's Level of Education (PLE).

Dr. Whiteley's assessment concurs with others found in literature (Hooper, 2002). Effective school leaders (the variable PRIN) who design systems to meet the needs of their students are breakthrough thinkers who are creators of circumstance rather than creatures of circumstance. Student success is more than the physical structural setup; it is contingent on the appropriate selection of sequencing of curriculum, effective teaching practices (TE), and alignment of the written, taught and tested curriculum.

The National Association for the Education of Young Children (NAEYC) and the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE) more precisely describe the unique features of early childhood learning that are crucial to success in later years. Young children's development varies greatly and is heavily dependent on experience. Young children respond especially well to early learning environments. However, the settings in which young children are educated vary in sponsorship, resources and organization. A well-aligned continuum of standards may result in less variance and better transitions from infant-toddler care through preschool programs to kindergarten and into the primary grades as teachers collaborate to create a continuous pathway across educational settings. Toward that end, prior research has repeatedly shown how powerful early social and emotional competence are to predict later success, and good early learning environments help build this competence. For instance, educational professionals should not engage in programs that do not have an objective foundation. Classroom practices and teaching strategies should be aligned with young children's interests and abilities, connecting their current developmental levels while guiding them to the next levels of accomplishment. Professional development (periodic Inservice Training) should expand teachers' and administrators' knowledge, skills, and disposition toward implementation of early learning standards. Standards need to be influenced by expectations for younger children, rather than expectations driven by what has been developed for older learners.

These statements by NAEYC, NAECS/SDE and others indicated that two important variables remained to be identified that tie early and young primary learning experiences to future success. The variable of resources (RES) logically, pertains to the emphasis and materials allocated to the young primary learning process. Perhaps the most important variable of all is harder to define yet includes concepts related to developing the building blocks of a students' ability, his or her foundation (FOUND). Using the language of NAEYC and NAECS/SDE, FOUND can be visualized as the capability of a school to attend to the developmental needs of the young primary student as well as to provide a "comprehensive approach" to learning (which includes academic as well as in-depth attention to language, cognition, physical development, and social/emotional competence development. As a direct tie to future success, FOUND includes the concept of using classroom practices and teaching strategies that better connect with the students' current development level while guiding them toward the next levels of accomplishment. FOUND also includes alignment of teaching strategies, relationships and curriculum content coordinated with assessment tools.

One last variable to later academic performance tied to the young primary education was not clearly stated in any of the written literature but was observed and reported by parents who had experience with children attending both K-2 and an Other Configured Elementary school within the KPBSD. These parents described a much greater degree of collaboration that existed between all staff members in schools that had a the smaller curriculum range, K-2. Thus the variable of Collaboration (COLLAB) was included as a variable in the education process that might affect a student's future success. Since an individual's propensity to collaborate with others may be related to their own sense of confidence, some thought was given toward including this variable as a part of Stability of the Teacher (STABT). However, further consideration of what may cause an individual to temporarily become unstable (divorce, death of family member) seemed clearly different than one's propensity to collaborate, thus COLLAB remained a separately studied variable.

OPERATIONALIZATION OF VARIABLES THAT WERE EASY TO QUANTIFY

POV, the student's poverty level, was operationalized as the averaged percent poverty level determined for each school by the KPBSD. This annual report on school poverty is prepared by the KPBSD administration as part of an application for what is referred to as "Title I funding". These data required no mathematical treatment from the researcher. Poverty levels for each school in the study are shown in Table 2. A regression analysis was performed between POV reported for all 14 schools in the study and the 4th Grade Overall School Composite Score reported for each of these schools. If a relationship were identified, the data for the test and control group schools would be disaggregated to check for relevance between students who attended a K-2 young primary school and those that did not.

PTR, the Pupil to Teacher ratio that is sometimes referred to as Class Size, was determined from the KPBSD's Enrollment Report for FY 2002-03 (G. Whiteley to School Board). This report lists the current enrollment and teacher assignments for each school. The PTR is calculated on the report and required no mathematical operation by the researcher. A regression analysis was performed on the PTR reported for each of the 14 schools in the study and the 4th Grade Overall Composite Score reported for each school in the study (raw data for the regression is shown on Table 2). If a relationship were identified, the data for the test and control group schools would be disaggregated to check for relevance between students who attended a K-2 young primary school and those that did not.

SSIZE, the variable School Size, was also determined from the Enrollment Report. Like PTR, this variable required no mathematical reworking by the researcher. A regression analysis was performed on the SSIZE reported for each of the 14 schools in the study and the 4th Grade Overall Composite Score reported for each of these schools (raw data for the regression is shown on Table 2). If a relationship were identified, the data for the test and control group schools would be disaggregated to check for relevance between students who attended a K-2 young primary school and those that did not.

PLE, the variable Parents' Level of Education, was determined from the spring 2001 Community Survey that the KPBSD commissioned from the University of Maine's Center for Research and Evaluation (UMCRE). This professionally performed mailed questionnaire-survey asked parents for feedback on 29 education-related topics. UMCRE reported a return rate of 23% and cautioned generalization of results to the entire population. Yet, UMCRE was interested in soliciting opinions from randomly chosen parents who had students in all 43 public schools and the parents who choose to home school. Using the KPBSD Enrollment Report with the Community Survey data, it was determined that the response rate from parents whose children attended the test pool of 14 schools was 25%. If one assumes that 25% of the responding parents had two children enrolled in the test schools (a plausible assumption for the 12 test schools who have wide grade spans), the response rate for parents whose children attended schools in this study could be adjusted to a respectable 33%. If 50% of the parents who responded have two children enrolled in the test school the response rate could be assumed to be 50%. In summary, the KPBSD administration believes the data of the Community Survey to be representative of the population.

As it was a Community Survey, UMCRE appropriately aggregated the respondent data into subcommunities of the Kenai Peninsula identified as the Kenai, Soldotna Area, Nikiski, Homer Area, Soldotna City, Seward Area, and K-12 Self-contained. The survey results, including PLE (the parents' level of education), were aggregated in this manner and could not be separated. UMCRE had inquired about the parents' level of education by having survey respondents indicate

what level of education they had completed. This researcher assigned a 6 point scale with 0=no highschool up to 5=Graduate Degree. A Subcommunity PLE Score was then calculated by prorating the percentage of respondents in each educational category to the assigned 6-point scale. The results appear in Table 3. Then the 4th Grade Overall Composite Score for both the test and control group schools was assigned to its appropriate subcommunity and an Average Subcommunity Achievement Score was determined. A regression analysis was run on the Subcommunity PLE Score and the Average Subcommunity Achievement Score for the purpose of determining if a causal relationship existed.

OPERATIONALIZATION OF VARIABLES THAT WERE HARD TO QUANTIFY

The remaining variables identified to influence student achievement were not quantifiable by existing statistics. For this reason, a 5 point Likert style survey was developed and given to educational instructors who had experience in both the K-2 environment and an Other Configured Elementary.

TE, Teacher Efficacy, was described by using descriptors from the NAEYC and NAECS/SDE literature. TE is defined as "the existence of teaching strategies that are aligned with the young primary students' interests and abilities". This statement seemed compatible to Dr. Whiteley's descriptor of a teacher having mastered the profession of educating. The Likert tool was used to gauge whether TE was more prominent in the K-2 elementary versus an Other Configured Elementary. The magnitude of the difference that TE exists within the K-2 environment versus an Other Configured Elementary was gauged using Question 17 on the survey.

PI, (meaningful) Parental Involvement, defied description due to the wide variance of interpretation. Some educators might interpret the variable as a parent who is generally supportive of school yet other educators might interpret the variable as being a daily volunteer in the classroom. For this reason, the Likert tool deferred the question by simply inquiring if "more meaningful parental involvement was evident in the K-2 elementary structure versus Other Configured Elementary". The magnitude of the difference that PI exists within the K-2 environment versus an Other Configured Elementary was gauged using Question 2 on the survey.

CLIMATE, (positive) School Climate, was defined by using descriptors from the NAEYC and NAECS/SDE literature. CLIMATE was defined as the existence of a positive learning environment. A second definition described CLIMATE as an environment that was non-fragmented, coordinated, and promotes communication. The Likert tool gauged whether or not a positive CLIMATE was present more in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that CLIMATE exists within the K-2 environment versus an Other Configured Elementary was gauged using Questions 11 and 13 on the survey. Note that question 13 was reversed coded; it tested whether a positive environment existed more in an Other Configured Elementary versus a K-2.

PRIN, Principal's Leadership and Ability, was defined using descriptors from the NAEYC and NAECS/SDE literature. PRIN was defined as "an administrator's knowledge, skill, and disposition to implement early learning programs/standards/guidelines". The Likert tool gauged whether or not the variable PRIN was present more in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that PRIN exists within the K-2 environment versus an Other Configured Elementary was gauged using Question 6 on the survey.

EXPECT, High Expectations, was defined using descriptors from the NAEYC and NAECS/SDE literature. EXPECT was defined as "the ease of building a young primary student's social and emotional competence" and "the content of young primary learning standards that are based on the processes and sequences of young children's learning and development". The Likert tool gauged whether or not the variable EXPECT was present more in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that EXPECT exists within the K-2 environment versus an Other Configured Elementary was gauged using Questions 10 and 14 on the survey.

TRAINT, Well Trained Teachers, was partially defined using descriptors from the NAEYC and NAECS/SDE literature. TRAINT was defined as "having a higher level of professional development" and the existence of "in-service training that is relevant to subjects covering young primary education". The Likert tool gauged whether or not the variable TRAINT was present more in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that TRAINT existed within the K-2 environment versus an Other Configured Elementary was gauged using Questions 5 and 20 on the survey

STABT, Stable Teachers, was defined using descriptors from the NAEYC and NAECS/SDE literature. STABT was defined as a teacher's propensity to "have knowledge, skill, and *disposition* to implement learning programs/standards/guidelines". It is the requirement of disposition that defines this variable as related to stability rather than efficacy. Since the implementation of new learning programs, standards, or guidelines might be met with anxiety related to change, the propensity to embrace such changes seemed to define the stability of the teacher. The Likert tool gauged whether or not the variable STABT was present more in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that STABT existed within the K-2 environment versus an Other Configured Elementary was gauged using Question 7 on the survey.

SSIZE, School Size, was defined using descriptors from literature that promoted the benefits of larger school grade spans. This variable was included in the Likert tool to provide an alternate means to the regression analyses described above that was used to determine if SSIZE influenced student achievement in the KPBSD. SSIZE was defined as "not having frequent student turnover which results in a better school identity and sense of community" and "the propensity that older role models in a school have to provide the young primary learner an understanding of the purpose of education". The Likert tool gauged whether or not the variable SSIZE was present more in the Other Configured Elementary versus the K-2 structured elementary (i.e., it was reversed coded). The magnitude of the difference that SSIZE existed within Other Configured Elementary versus the K-2 was gauged using Questions 15 and 16.

SES, Socio Economic Status, was defined using descriptors from simple definition as well as the parents' level of education. SES was defined as "the parent's level of education" and "the socioeconomic status of the student". The linkage between student poverty level and parents' level of education is the basis of much prior research and will not be discussed in length here. The Likert tool gauged whether or not the parents' level of education was greater and the poverty level of the students' was lower (i.e., reverse coded) for students' that attended a K-2 elementary versus an Other Configured Elementary. The magnitude of the difference that SES existed between the K-2 Elementary and the Other Configured Elementary was gauged using Questions 1 and 3 (reverse coded). This variable was included in the Likert tool to provide an alternate means to the regression analyses described above that determined if PLE (Parent's Level of Education) and POV (student's poverty level) influenced student achievement in the KPBSD.

RES, Resources, was defined by generally accepted concepts regarding the word "resources" and whether or not their existence was "more dedicated to young primary education". The Likert tool gauged whether or not the variable RES was present more in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that RES existed within the K-2 environment versus an Other Configured Elementary was gauged using Question 4 on the survey.

FOUND, development of the student's Foundation, was defined using descriptors from the NAEYC and NAECS/SDE literature. FOUND was defined as "catering to the developmental needs of the young primary student", using a "more comprehensive approach to teaching" (defined as academic as well an in-depth attention to language, cognition, physical development, social and emotional competence). The linkage part of FOUND with regard to predicting future achievement was defined as "use of classroom practices and teaching strategies that better connect with the student's development level while guiding them toward he next levels of accomplishment", and "alignment of teaching strategies, relationships, and curriculum content that is coordinated with assessment tools". NAEYC and NAECS/SDE literature implied this variable was a major link between young primary education and later achievement by building the foundation for learning, using assessment tools for intervention where needed, and guiding the student toward the next level of achievement. The Likert tool gauged whether or not the variable FOUND was more present in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that FOUND existed within the K-2 environment versus an Other Configured Elementary was gauged using Questions 8, 9, 18, and 19 on the survey.

COLLAB, an educator's propensity to Collaborate, was defined as "the inclination to collaborate and plan continuity in curriculum with my fellow teachers, administrators, special services staff". The Likert tool gauged whether or not the variable COLLAB was more present in the K-2 structured elementary versus an Other Configured Elementary. The magnitude of the difference that COLLAB existed within the K-2 environment versus an Other Configured Elementary was gauged using Question 12 on the survey.

SURVEY CONSTRUCTION AND APPLICATION

The Likert-style survey appears as Figure 1. The construction is "comparative in style" meaning that the respondents were asked to judge the *magnitude of the difference* that the variable existed in the K-2 versus Other Configured Elementary.

The respondents to the survey were limited to those individuals who were a) currently employed by the KPBSD b) had worked in the environment of a KPBSD K-2 structured elementary, c) had worked in the environment of an Other Configured KPBSD Elementary (K-6, K-8, K-12). It is believed that none of the respondents realized prior to being approached by the researcher the unique experience they have which results in their capability to describe differences in the two working environments. This select group of individuals is uniquely qualified to describe the differences in human interactions that are taking place within the K-2 structure (versus wider-spanned elementary schools) that lead to improved student success in later years. Because these educators were well read and possibly biased toward other research that was not performed by individuals with their core competency, the questions were intentionally formulated with the prefix "I believe...." to remind them that their observations and experience were being solicited rather than their preconceptions from past literature.

The KPBSD administration assisted with the distribution of the survey by sending it via email to the KPBSD elementary principals. Follow up phone calls from the researcher emphasized the importance of seeking out every potential member of the respondent pool. Since the educators in the K-2 structure were aware of others teachers who met the qualifications, snowball sampling was useful in identifying two respondents. Lastly, after being challenged on the representativeness of the respondent pool by the class professor and truthfully unable to report whether or not each principal had prioritized the project, this researcher used the Enrollment Report information to write an email to every potential educator who had a probability of qualifying as a respondent. Three more respondents were identified with this process.

Some problems related to the technology of an emailed survey caused respondents temporary frustration. Several of the respondents did not know how to send the survey back as an attachment. By sending it back as an email, the formatting on answer choices was lost. For these respondents, the emailed comments were collected and the individual was called by telephone for the purpose of transcribing responses. Wherever possible, a hardcopy of the survey was used to alleviate the need of responding electronically.

The total possible pool of respondents that met the qualifications included two administrators, ten teachers, and two special service instructors. One of the teachers did not respond due to being out of town. One of the special service instructors became frustrated with the format of the survey and did not finish it (perceived flaws of the survey instrument are discussed below).

Respondents were promised confidentiality (anonymity was impossible to assure due to use of email). Respondents were reminded by memorandum that their own observations and experiences should rule over conclusions stated in prior research. They were instructed to choose from a position range of "Highly Agree" (+1.0), Somewhat Agree (+0.50), Neutral or Don't Know (0), Somewhat Disagree (-0.50), and Highly Disagree (-1.0) for each of the 20 questions. They were instructed that "Highly Agree" meant that they agreed with the statement to a large degree. Due to the construction of the survey, a response of "Highly Agree" usually implied that a variable existed in a greater magnitude at the K-2 configured elementary versus Other Configured Elementary. The respondents were instructed that the "Highly Disagree" selection meant that they disagreed with the condition as stated in the question. This typically would imply that the condition existed at the Other Configured Elementary more predominantly than at the K-2 structured elementary. The respondents were instructed to choose the Neutral position (0) if they didn't think the condition existed more or less in either kind of elementary or just didn't know. The respondents distinguished themselves as a member of the administration, teaching or special services staff. They indicated their level of education. They were encouraged to write down any comments.

Criticism of the tool regarding the absence of reverse coding requires explanation. The wording of each question, by necessity of including descriptive variable language, exceeded the suggested word limit for a Likert tool. Since the construction of the survey was of comparison nature, it had seemed less confusing during survey construction to use the same question architecture rather than confusing the respondent with liberal use of reverse coding. However, the absence of more reverse coding might (and did) lead to a conclusion that the survey was biased. One early responder to the survey did not finish the survey beyond Question #2, but wrote a comment that indicated "I highly disagree with all the statements because I believe (the situations) could exist at all types of elementary schools". The comment would indicate that the Neutral column should have been selected rather than the Very Much Disagree. The researcher contacted the responder by email for the purposes of encouraging completion of the survey to clear up ambiguity but did not receive a response. The survey data from this individual could not be included in the final analysis due to the

ambiguity of coding. Learning from this lesson, every other responder was contacted to reiterate the instructions regarding responding to the survey. Those who had turned in their survey were offered the opportunity to reconsider responses. In summary, it is believed that those who responded were clear on the meaning behind choosing a position of agreement, neutrality, or disagreement. Perhaps the frustrated responder was in concurrence with Responder T-7. Overall, Responder T-7 rated the K-2 configuration as more favorable than the Other Configured Elementary schools yet commented: "I believe there are exceptions, and have taught a K-6 program that was very progressive as well as a very positive environment. Much of it is dependent on the dedication of the staff." Certainly, the data validate this statement. Two schools with wide grade spans in the control group show impressive 4th and 5th grade Overall Achievement Scores. Yet this study, as all studies of this type, is interested in the average trend.

RESULTS

The result of the t-test between the nine categories of 4th grade average achievement of control and test groups was p=0.0156. This result indicated that the variance was significant and not explained by experimental error. The mean for the test group was 59.56 (standard deviation=3.04) and that for the control group was 56.21 (standard deviation=2.97). [1]

The result of the t-test between the nine categories of 5th grade average achievement of control and test groups was p=0.0139. This result indicated that a variance was significant and not explained by experimental error. The mean for the test group was 58.722 (standard deviation = 6.503) and that for the control group was 52.313.(standard deviation = 4.368). [1]

A significant difference in mean achievement scores between 4th graders who had attended K-2 configured elementary school and those who did not was observed. The results were corroborated by the 5th grade results. Perhaps the study of variables known to affect student achievement would shed light on the cause(s) of the variance.

The regression analysis performed on the variable Poverty Level (POV) and 4th Grade Overall Composite Score indicated no causal relationship existed between the two. The plot appears as a scatter graph of POV for each school expressed as a function of 4th Grade Overall Composite Score. The correlation coefficient was -0.33. In summary, within the KPBSD the poverty level is not a factor that influences the averaged achievement observed from both test and control group schools. It was not necessary to disaggregate data between test and control groups.

[1]Readers who may not be familiar with the effort required to increase normative point differences may be interested to learn of a grant program that was made available to KPBSD schools in the early 90s that evaluated the cost of increasing normative grade equivalents of the Iowa Test of Basic Skills (ITBS). One school in the KPBSD used $8,795 for per classroom (18 classrooms total) to employ various strategies that yielded a 2.6 point improvement in math, 2.5 point improvement in reading, and 2.4-point improvement in language arts. A second KPBSD elementary used $5,883 per classroom (18 classrooms total) to increase math, reading, and language art scores by, respectively, 2.7 points, 2.6 points, and 2.8 points. A third KPBSD school used $8,249 per classroom (13 classrooms total) to increase math equivalent scores in the range of 3.1-3.6 points, reading equivalent scores in the range of 2.9-3.9 points, and language scores in the range of 2.6-4.7 points. Hopefully this short diversion from the research project at hand has helped emphasize that the observed increases in achievement apparent of 4th and 5th graders who attended a K-2 school during their young primary years as compared to those who did not is, indeed, significant.

The regression analysis performed on the variable Subcommunity Parent Education Level (PEL) and Average 4th Grade Subcommunity Achievement Score indicated no causal relationship existed between the two. The plot appears as a scatter graph of Subcommunity PEL as a function of Average 4th Grade Overall Subcommunity Achievement Score. The correlation coefficient was 0.02. In summary, within the KPBSD, the Parent Education Level is not an influential factor regarding the averaged achievement observed from both test and control group schools. It was not necessary to disaggregate data between test and control groups.

The above results were corroborated by the Likert survey responses that evaluated the Socio-Economic Status (SES). The mean response for Question 1 was -0.17. The mean response for Question 3 was +0.04 (reverse code). Thus the SES variable averaged -0.065, close to the 0 or Neutral/Unknown position. These results indicated that those with experience working in the environment of K-2 and Other Configured KPBSD Elementary schools do not identify socioeconomic factors as essentially different in any elementary school configuration. Be that the case, SES is not a factor responsible for the variance in Average 4th Grade Overall Composite Score observed between the K-2 and Other Configured Elementary schools.

Class size as determined by Pupil to Teacher ratio (PTR) has somewhat more, but still unimpressive, correlation to Average 4th Grade Overall Composite Scores. Instead of a scatter plot, this graphic shows a relatively straight line on the ordinate in a band from 21-25 PTR through the range of Average 4th Grade Overall Composite Scores. The correlation factor for the regression analysis was 0.39. Thus, although somewhat more of a defined line can be drawn for Average 4th Grade Overall Composite Scores as a function of PTR, the correlation is still poor. Class size is not a major factor that influences student achievement. It was not necessary to disaggregate data between test and control groups.

The regression analysis performed on the variable School Size (SSize) and the Average 4th Grade Composite Score for each school indicated no causal relationship existed between the two. The plot for this comparison appears a scatter graph of Average 4th Grade Composite Scores expressed as a function of total school population. The correlation coefficient was -0.20. In summary, within the KPBSD, the size of the school does not influence the averaged 4th grade achievement observed for both test and control group schools. It was not necessary to disaggregate data between test and control groups.

The above result was corroborated by the Likert survey responses that also evaluated School Size (SSIZE). The Likert survey inquired if the frequency of student turnover that results in a K-2 structure as compared to a wider span elementary negatively impacts school identity or a sense of community. The mean response for this question (Question 15) was +0.17 (Reverse coded). The Likert survey also inquired if older role models give the young primary learner a sense of understanding as to the purpose of education. The mean response for this question (Question 3) was -0.08 (Reverse coded). Thus the SSIZE variable responses averaged +0.05, close to the 0 or Neutral/Unknown position. Those with experience working in the environment of K-2 and Other Configured KPBSD Elementary do not identify School Size as being significantly different in their experiences. If it is not different it cannot be a significant factor toward influencing student achievement. Furthermore, the results of the Likert survey may mean that the K-2 span school does not sacrifice a sense of community or require older students to give young primary learners a sense of understanding the purpose of education.

An alternate opinion came from Responder T-4 who wrote: "My experiences have taught me that older role models for primary children are very valuable."

The magnitude of the remaining variables being more present in the K-2 structure and more absent in the Other Configured Elementary was indicated by the results of the survey. Table 4 lists the results of the survey sorted by variable. The calculated mean from all respondents (Overall Response Mean) appears toward the right. The mean response from the two administrators who supplied feedback (A-1 and A-2) appears to the right of the Overall Response Mean. The mean response from the nine teachers that supplied feedback (T-1 through T-9) appears in the far right column. Recall that the respondents were to base their replies on their own experience from working in both a K-2 and Other Configured Elementary. The survey results (Table 4) show that the averaged years that the respondents taught in the K-2 environment and Other Configured Elementary schools was 9.9 and 7.4 years, respectively.

Differences between the perspective of the administration responses and those of teachers were expected and will not be explored at length in this study. Yet it is interesting to note areas of vastly different perspective. The leadership role of the principal (variable PRIN) differed by 0.83, almost a full point. Question #14, related to the variable FOUND, differed by 0.69 points. And Question # 13 related to the K-2 elementary being less fragmented and more coordinated than Other Configured Elementary schools (part of the CLIMATE assessment) differed by 0.61 points.

Survey responders indicated that the availability of Resources (RES) dedicated to young primary learning was significantly more prevalent in the K-2 configured elementary as opposed to the Other Configured Elementary. The mean response for Question 4 was +0.67. Thus, the averaged respondents' reply was 34% between the Somewhat Agree and Very Much Agree positions.

Responder T-7 commented:"A K-2 configuration is by its nature more effective for those ages because all of their resources are directed specifically at those ages. A K-6 configuration has a much broader scope and consequently has a wider range to cover."

Survey responders indicated that Parental Involvement (PI) is more prevalent in the K-2 configured elementary than the wider span elementary. The mean response for Question 2 was +0.63. Thus the averaged respondents' reply was 26% between Somewhat Agree and Very Much Agree.

The mean averaged result for PI seemed to concur with Responder T-7's comment: "Generally, parents show more concern or interest in their children when they are in the young grades and that seems to diminish more as they get older."

An alternate opinion came from Responder T-4 who commented: "Parents who are going to be active in their childs' education will be regardless of school configuration".

Survey responders indicated that the degree of Collaboration (COLLAB) between fellow administrators, teachers, and special services a personnel was significantly greater at the K-2 configured elementary versus the Other Configured Elementary. The mean response to Question 12 was +0.58, 16% between the Somewhat Agree and Very Much Agree positions.

Collaboration was continually sited in the open ended comments section as a primary difference between K-2 and Other Configured Elementary Schools.

Responder T-1 wrote: "I love teaching at a K-2 school. Very collaborative environment."

Responder T-2 wrote: "We collaborate and have interventions while assessing individual student needs."

Responder T-7 wrote: "Other things that affect a school is whether or not there are many of the same grades within a building or just one of each, or if you teach in a multi-grade classroom. When I taught in school with multiple grades I was much more likely to be motivated as there were other teachers in your same grade to collaborate with."

It is also noteworthy that the frustrated special services respondent whose data was not included in the final analysis had previously commented on the level of collaboration and intervention that had been observed at a K-2 environment. This individual reported that, during a weekly collaboration and intervention meeting, an experienced teacher was puzzled as to why many students in her class just "weren't getting it" one year. The teacher asked for a peer to observe her teaching for the purpose of providing feedback so that the teacher might be able to reach these students. This anecdote reveals a high level of self-esteem in the teacher to be able to ask for help as well as an overall team approach to the process of instruction.

Survey responders indicated that the attributes that make up the variable Foundation (FOUND) were more prevalent in the K-2 configured elementary versus the Other Configured Elementary. The mean responses to Questions 8 and 9, which have to do with the building blocks of social and emotional competence and use of a comprehensive approach (includes cognition, language and physical development), were +0.33 and +0.63, respectively. The mean responses to Questions 18 and 19, which tied early learning processes to later achievement, were +0.46 and +0.42. In retrospect, the response to Question 19 may have received a higher rating had references to use of coordinated assessment tools been removed from the question. Still, the existence of assessment tools is a guideline desired by the NAEYC that is linked to student success. The overall mean average of Questions 8,9,18, and 19 that were used to measure the magnitude that FOUND exists in K-2 configuration versus Other Configured Elementary was +0.46, just below the Somewhat Agree position.

Survey responders indicated that the Teacher Training (TRAINT) was more relevant to young primary education in the K-2 configured elementary as opposed to the Other Configured Elementary. However, the responses to the two questions related to this variable were significantly different and, in retrospect, perhaps should have been separated. Responders were not as certain that a teacher with higher level of education would be found in the K-2 Configured school as the mean score for Question 5 of +0.13 indicates. However, responders overwhelmingly agreed that inservice training provided for the K-2 educators was more relevant than that provided in a wider grade range school. The mean score of +0.79 for Question 20 was represented the highest affirmative agreement of any other position. The mean score of Questions 5 and 20 was +0.46.

Responder T-7 commented:"I will often not attend a particular conference or workshop because they are geared to K-6 and I know as a (young primary) teacher even that is too broad for me to get specific information that is useful for this age level. In a K-2 I get information on trainings that are offered whereas in a larger areas I was unaware of the information."

Further analysis of the responses regarding teacher training reveals that the two administrators who supplied feedback Somewhat Agreed (+0.50 position) that the education level of the teaching staff

in the K-2 elementary school was higher than that found in Other Configured Elementary schools. The administrators' assumption seems to be accurate; note that most of the respondents had completed requirements for a Masters degree (see Table 4).

Survey responders indicated that the conditions that describe Teacher Efficacy (TE) for young primary education is more prevalent in the K-2 configured elementary versus those in the Other Configured Elementary. The mean score for Question 17 was +0.42.

Responder T-1 stated: "I do think that it's often the teacher who makes the difference."

Responder T-3 provided the comments related to both Teacher Efficacy (TE) and Teacher Training: "I really feel that a K-2 school can best address the needs and learning styles of young children. Our training, inservices, and concerns can be focussed on the young learner."

Survey responders indicated that the existence of High Expectations (EXPECT) was more prevalent in the K-2 configured elementary versus an Other Configurated Elementary. The mean response to Question 10 (related to the expectation of building social and emotional competence in children) was +0.58 and that for Question 14 (processes and sequencing and content of programs related to child's development) was +0.21. The wide variance in administrators' versus teachers' responses (+0.81 points) was very interesting to note on question #14. In retrospect, Question 14 caused confusion because it appeared to some as a two-part question. Four of the respondents indicated that they were confused at the need to make judgment on the learning standards at use in schools with wide grade spans. This researcher believes that EXPECT would have rated even higher than the average mean of +0.40 had the ambiguity in Question #14 been eliminated.

Survey responders indicated that the Principal of a K-2 school is more inclined to have the knowledge, skill, and disposition to implement early learning programs, standards and guidelines that the principal in an Other Configured Elementary. The mean response to Question 6 which measured PRIN, at +0.33 is 66% between the Neutral position and Somewhat Agree. Note the wide variance in responses between administrators and teachers (0.83 points).

Survey responders indicated that the Teacher Stability (STABLE T) with regard to having the disposition to implement learning programs, standards, and guidelines is more inclined to exist in the K-2 school versus an Other Configured Elementary. The mean response to Question 7 of +0.29 can be visualized as 58% of the distance between the Neutral position and Somewhat Agree. Note again the wide difference between the responses of the administrators (who have to manage the unstable employee) and those of the teachers. The two groups varied in mean response by 0.62 points.

Surprisingly, survey responders indicated that the Climate (CLIMATE) of the K-2 school is just marginally differentiated from that in the Other Configured Elementary. The problem may well be lack of cohesiveness between Questions 11 and 13. Question 11 inquired if the K-2 structure promoted a positive learning environment compared to that in an Other Configured Elementary. The mean average response to Question 11 was +0.33. Responders who were teachers in the aggregate adopted the Neutral or Unknown position when answering Question 13 which inquired if the young primary education was more fragmented, less coordinated, and resulted in less communication in the Other Configured Elementary as opposed to the K-2 configuration. Administrators were less dubious, and Somewhat Agreed (+0.50) that the atmosphere in an Other Configured Elementary school was more fragmented and less coordinated than that of a K-2

structure. The Overall Mean Averaged response of Questions 11 and 13 of +0.17 was 34% of the distance between Neutral and Somewhat Agree positions.

Responder T-7 identified a potential new variable, (School) Safety that may be significantly different in the K-2 versus an Other Configured Elementary. Responder T-7 stated "There are advantages to both [configurations]" and added "The[K-2 structure] is more than likely to provide a safer environment because the students are not exposed to various traits that exist in the broader scope of a K-6." Whether or not Safety is a variable to future student success needs to be explored in further research.

DISCUSSION AND CONCLUSIONS

The results of the t-tests indicated that a significant variance, not explained by experimental error, existed in the achievement of KPBSD 4th and 5th graders who attended a K-2 configured elementary and those who attended an Other Configured Elementary (K-6, K-8, or K-12). The results of the regression analyses indicated that the variance was not due to student poverty level or their parents' level of education. This conclusion was confirmed by the observations of educators that had taught in both a K-2 and an Other Configured Elementary. The results of other regression analyses indicated that the variance was not due to class size, or school size. Educators that had taught in both a K-2 and an Other Configured Elementary confirmed that school size was not a variable that significantly affects student success. The elimination of these variables concentrated the effort to reveal the source of variation in student success on other variables that are admittedly more difficult to operationalize yet reveal the human interactions that take place within the K-2 configured school that lead to improved student success in later years.

The respondents to a survey designed to reveal the differences between the K-2 approach to young primary education and that in use at Other Configured Elementary schools within the KPBSD were a unique set of individuals that had an average 9.9 years of experience employed at a K-2 configured elementary and 7.4 years employed in an Other Configured Elementary. The fact that they had these experiences in one school district is unique and eliminates any variance that otherwise may have been caused by policy, procedure or program of education.

In order of decreasing importance, these responders revealed the variance in student achievement is caused by differences in the presence of the following causal factors:

1) Resources dedicated to young primary education
2) Parental Involvement
3) Collaboration between administrators, teachers, and special services
4) Foundation (the establishment of social and emotional competence, language, cognition, alignment of teaching strategies to lead to the next levels of accomplishment)
5) Relevant Teacher Training
6) Teacher Efficacy with regard to aligning young primary students' interests and abilities
7) High Expectations regarding the ability to develop social and emotional competence in students
8) Principal's knowledge, skill, and disposition to implement early learning programs, standards, and guidelines
9) Teacher's stability in the form of a disposition to implement early learning programs, standards, and guidelines.
10) A School Climate that promotes a positive learning experience.

It was interesting that the first item of importance that was related to personal behavior of an educator was identified as Collaboration, the tendency to collaborate (Item #3). Many of the respondents commented on the importance of collaboration and intervention toward early identification and correction of a student deficiency (developmentally as well as academically) in a team-oriented and highly cooperative atmosphere. Why this spirit of collaboration is hindered in the wider grade span school is a question for further research.

The greater ability for the K-2 school to develop a sound foundation for the student is a direct link to future achievement. NAEYC lists the ability to establish social and emotional competence in a child as the one item paramount to future success. Item #7, High Expectations, seems to indicate that the K-2 educator has high expectations that they will be able to develop social and emotional competence in students. The resources and activities dedicated to being able to establish what is defined in the variable Foundation and the High Expectations that K-2 teachers' have that they shall be able to establish a child's Foundation need to be determined and shared with other schools.

The highest degree of affirmative response indicated that more relevant training regarding young primary education (Item #5-Relevant Teacher Training) was provided to the K-2 educator versus the young primary educator that teaches in a wider span grade school. It seems logical that in service training organizers should recognize "one size does not fit all" and provide the same programs the K-2 educators are receiving to the K-2 teachers employed in a wider grade span school. It also seems logical that young primary educators that receive relevant training on a periodic basis will be more effective (Item #6-Teacher Efficacy).

These recommendations for action and further study seem to provide a beginning for closing the gap of student achievement observed in later years. The issues related to Principal's Leadership, Teacher Stability, and School Climate could form a second tier of study after the primary sources of variance in student outcome have been addressed. Lastly, a potential variable, (School) Safety, was identified and needs to be explored to determine if it can impact future student success.

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REFERENCES

Giblin, Thomas R. "Recommendations for Elementary School Grade Configuration." Feb 01. Available online: http://elps.k12.mi.us/news/february/grade_config. htm.

Peterson, Donna R., Kenai Peninsula School Board Assessment Results 2001-2002. Kenai Peninsula Borough School District. August 02.

Hooper, Don W. "Configurations Alone Don't Breed Success." School Administrator v. 59 no 3, March 02: 44-46.

Howley, Craig B. "Grade-span Configurations." School Administrator v. 59 no 3, March 02: 24-29.

O'Brien, Annmarie. "Class Size Reduction Project Final Report." University of Alaska Institute of Social and EconomicResearch. Anchorage AK, Jul 1996.

Raze, Nasus. "Primary and Intermediate Grade Configurations: A Review of the Literature." South Allegheny School District 1985.

Renchler, Ron. "Grade Span." ERIC Clearinghouse on Educational Management. University of Oregon School of Education Sept. 01.

Smith, Lori. Kenai Peninsula Borough School District Community Survey. Orono, Maine: University of Maine Center for Research and Evaluation, College of Education and Human Development, June 01.

Whiteley, Gary. "Enrollment Report to Members of the School Board." Kenai Peninsula Borough School District, Soldotna, AK, October 28,2002.

Whiteley, Gary, "Comprehensive Schools, Staffing and Student Achievement." Kenai Peninsula Borough School District, Soldotna, AK, Oct 2002.

"Executive Summary Early Learning Standards: Creating Conditions for Success." National Association for the Education of Young Children and the National Association of Early Childhood Specialists in State Departments of Education, Nov. 02: 15 p.

"KPBSD Poverty Report School Year 01-02", Kenai Peninsula Borough School District, Soldotna, AK, Oct 02.

"T-test Online." Simple Interactive Statistical Analysis.
Available Online: http://home.clara.net/sisa/t-test.htm

"Correlation stuff." University of Oregon
Available Online: http://uoregon.edu/cgi-bin2/nuts/correl.cgi

Figure 1. Survey

PLEASE MAKE BOLD, UNDERLINED, OR ITALICIZE YOUR ANSWER

1. In my experience, the parents' level of education is/was greater for students I teach/taught in the K-2 elementary configuration compared to parents involved with an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
2. I believe that more meaningful parental involvement is evident in a K-2 elementary school environment compared to the environment of an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
3. In my experience, the socio-economic status of the students that attend/attended the K-2 school I work/worked at is/was less than that I observe/observed at an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
4.I believe that the resources in a K-2 elementary school configuration are more dedicated to young primary education compared to the resources in an Other Elementary Configuration	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
5. In my experience, the administrators, teachers, & special services staff in the K-2 elementary environment have a higher level of professional development compared to the staff in an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
6.I believe that the administrator's knowledge, skill, and disposition to implement early learning programs/standards/guidelines is greater in the K-2 elementary environment compared to the administrator in an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
7.I believe that teachers' knowledge, skill, and disposition to implement learning programs/ standards/guidelines is greater in the K-2 elementary environment compared to teachers in an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
8.I believe that the developmental needs of a young primary student are not as well tended to in an Other Elementary Configuration compared to a K-2 configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
9.I believe that a "more comprehensive approach"* to teaching is evident in the K-2 elementary environment than the approach used in an Other Elementary Configuration. *"comprehensive approach" includes academic as well as in-depth attention to language, cognition, physical development, social and emotional competence development.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree

10.I believe that it is easier to build a young primary student's social and emotional competence in a K-2 elementary school configuration compared to an Other Elementary School Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
11.I believe that the K-2 elementary configuration provides a more positive learning environment compared to that provided by an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
12.In the K-2 elementary school configuration, I feel/felt more inclined to collaborate and plan continuity in curriculum with my fellow teachers, administrators, special services staff than I did/do at an Other Elementary School Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much
13.I believe that young primary education is more fragmented, less coordinated, and suffers from less communication in an Other Elementary Configuration compared to a K-2 configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
14.I believe that the content of young primary learning standards in the K-2 environment is more likely to be based on the processes and sequences of young children's learning and development and that the content of young primary learning standards in the Other Elementary Configuration is more likely to be simplified versions of expectations developed for older children.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
15.I believe that the frequent student turnover in a K-2 configuration compared to an Other School Configuration negatively influences the school identity and sense of community.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
16.I believe that having older role models in the school building everyday gives the young primary learner an understanding of the purpose of education.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
17.I believe that the classroom practices and teaching strategies in the K-2 elementary environment are more aligned with the young primary students' interests and abilities than those practices and strategies used in an Other Elementary Configuration	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
18.I believe that the classroom practices and teaching strategies in the K-2 elementary environment better connect with the students' current development level while guiding them toward the next levels of accomplishment than those practices and strategies used in an Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree

19.There is more alignment of teaching strategies, relationships, and curriculum content coordinated with assessment tools in the K-2 elementary configuration than those observed in the Other Elementary Configuration	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree
20.In-service training is more relevant to subjects covering young primary education in a K-2 elementary school versus Other Elementary Configuration.	Very Much Agree	Somewhat Agree	Neutral	Somewhat Disagree	Very Much Disagree

I'm best described by the following (please embolden): Administrator Teacher Special Services

Years respondent has worked in K-2 type school configuration: _____

Years respondent has worked in an Other Elementary Configuration: _____

Degree/certifications/ endorsements received by respondent:

_____

_____

_____

_____

PLEASE USE THE BELOW SECTION FOR ANY COMMENTS. COMMENTS ARE OPTIONAL. IF THE COMMENT IS RELATED TO A SPECIFIC QUESTION, PLEASE INDICATE THE QUESTION NUMBER.

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS RESEARCH!

Table 1. KPBSD Cat/6 Assessement Results for 4th and 5th Grade

Table 1a. 4th Grade Assessment Results

Elementary School	Avg Read. Score	Avg Read. Vocab. Score	**Avg Read. Comp. Score**	Avg Lang. Score	Avg Lang. Mech Score	**Avg Lang. Comp. Score**	Avg. Math Score	Avg. Math Comput Score	**Avg. Math. Comp. Score**	**Avg. Overall School Composite Score**	Avg Scienc Score	Avg Soc Stu Score	Avg Spelling Score
Chapman	57	58	**60**	54	65	**58**	67	65	**66**	**60**	61	52	45
K Beach	46	54	**52**	49	46	**48**	47	38	**45**	**50**	50	38	42
M.Canyon	73	78	**76**	79	78	**80**	76	61	**70**	**78**	67	70	69
Mt.View	59	55	**58**	58	56	**57**	51	48	**50**	**56**	55	51	49
Nikiski El	43	45	**44**	40	55	**47**	46	41	**46**	**42**	52	42	47
Nikolaevsk	37	52	**46**	43	54	**49**	41	50	**48**	**41**	37	36	40
Ninilchik	74	76	**76**	73	75	**75**	83	72	**78**	**78**	73	71	54
North Star	65	68	**68**	67	66	**68**	64	74	**70**	**67**	70	65	63
Redoubt	63	59	**62**	58	56	**58**	61	62	**62**	**61**	57	61	55
Seward	50	53	**53**	45	57	**52**	46	43	**45**	**47**	55	51	42
Soldotna	55	64	**61**	50	57	**55**	51	62	**58**	**53**	57	47	43
Sterling	50	49	**50**	50	51	**51**	51	45	**50**	**51**	40	44	42
Tustamena	63	66	**65**	58	60	**59**	62	54	**59**	**61**	61	57	57
W.Homer	65	75	**72**	65	65	**66**	67	60	**65**	**68**	72	68	60

Table 1b. 5th Grade Assessment Results

Elementary School	Avg Read. Score	Avg Read. Vocab. Score	**Avg Read. Comp. Score**	Avg Lang. Score	Avg Lang. Mech Score	**Avg Lang. Comp. Score**	Avg. Math Score	Avg. Math Comput Score	**Avg. Math. Comp. Score**	**Avg. Overall School Composite Score**	Avg Scienc Score	Avg Soc Stu Score	Avg Spelling Score
Chapman	55	54	**53**	47	54	**51**	59	75	**68**	**54**	64	44	44
K Beach	63	61	**64**	62	49	**57**	55	55	**58**	**62**	55	46	51
M.Canyon	74	72	**75**	78	65	**74**	68	52	**63**	**75**	56	59	57
Mt.View	66	59	**64**	64	50	**58**	52	44	**50**	**62**	58	51	43
Nikiski El	45	40	**43**	44	36	**40**	43	33	**40**	**45**	49	31	30
Nikolaevsk	49	41	**45**	54	51	**53**	43	46	**46**	**49**	34	32	35
North Star	58	57	**59**	57	60	**59**	50	44	**49**	**56**	52	52	43
Redoubt	62	60	**62**	63	65	**65**	57	50	**56**	**62**	59	51	48
Seward	49	50	**51**	44	43	**43**	42	40	**42**	**46**	51	51	38
Soldotna	61	58	**60**	59	50	**56**	55	52	**57**	**60**	55	55	49
Sterling	65	66	**67**	63	59	**62**	57	51	**54**	**63**	50	52	57
Tustamena	59	58	**60**	58	58	**59**	50	47	**51**	**57**	49	40	40
W.Homer	69	67	**70**	68	58	**64**	66	59	**64**	**69**	65	63	50

Table 2. Variables with Statistics

Elementary School	Avg.4thG Overall School Composit Score	% Poverty Level	Pupil to Teacher Ratio	Total School Size
Chapman	60	47.30	20.1	94
K Beach	50	27.73	22.9	436
M.Canyon	78	28.21	22.8	114
Mt.View	56	34.87	22.9	344
Nikiski El	42	55.50	24.9	199
Nikolaevsk	41	NA	11.7	35
Ninilchik	78	34.95	24.7	74
North Star	67	34.31	24.8	273
Redoubt	61	32.04	23.6	413
Seward	47	30.06	23.5	353
Soldotna	53	32.35	24.2	290
Sterling	51	35.59	21.9	219
Tustamena	61	35.50	23	230
W.Homer	68	32.42	22.9	226

TABLE 3: Determination of Subcommunity PLE Score and Averaged 4th Grade Subcommunity Achievement Score

Community Survey Subcommunity	KPBSD Schools in Subcommunity	EDUCATION LEVEL OF PARENTS IN PERCENT						Subcommunity PLE Score	Average 4th Gr Subcommunity Achievement Score
		No HS	Some HS	HS GED	AA Tech	BS	Grad		
Kenai	Mountain View	0.0	1.1	32.5	24.0	29.0	13.4	**3.2**	**56.0**
Soldotna Area	Kbeach/Ster/Tus	0.0	1.4	42.1	26.8	19.9	9.8	**2.9**	**54.0**
Nikiski	Nik/North Star	0.0	3.1	50.3	19.1	16.8	10.7	**2.8**	**54.5**
Homer Area	WHomer/McN/Chap	0.3	1.8	33.5	16.5	29.3	18.9	**3.3**	**68.7**
Soldotna City	Redoubt/Sold	0.0	1.7	33.9	22.9	24.0	17.5	**3.2**	**57.0**
Seward Area	Seward	0.0	0.6	25.2	34.2	24.5	15.5	**3.3**	**47.0**
K-12 Self Contained	Nin/Niko	0.0	8.4	48.6	20.6	16.8	5.6	**2.6**	**59.5**

TABLE 4: RESULTS OF LIKERT SURVEY

Survey Question Number	Survey Variable Reference	A-1	A-2	T-1	T-2	T-3	T-4	T-5	T-6	T-7	T-8	T-9	SS-1	**Overall Response Mean**	Admin. Response Mean	Teacher Response Mean
Q-11	CLIMATE	0	1	0.5	0.5	0	-0.5	0.5	-0.5	-0.5	1	1	1	**0.33**	0.50	0.22
Q-13	CLIMATE	0	1	0	1	0	0.5	-0.5	-0.5	0.5	-1	-1	0	**0.00**	0.50	-0.11
Q-12	COLLABE	0	1	1	1	0	0.5	0.5	0.5	1	0.5	0.5	0.5	**0.58**	0.50	0.61
Q-10	EXPECT	0.5	1	0.5	0.5	1	0.5	0.5	-0.5	0.5	1	1	0.5	**0.58**	0.75	0.56
Q-14	EXPECT	0.5	1	0.5	1	0.5	-1	0.5	0	0	-0.5	-0.5	0.5	**0.21**	0.75	0.06
Q-8	FOUND	0.5	1	0	1	0	-1	1	-0.5	0.5	1	0.5	0	**0.33**	0.75	0.28
Q-9	FOUND	1	1	1	0.5	1	0	1	0	0.5	1	0.5	0	**0.63**	1.00	0.61
Q-18	FOUND	0.5	1	0.5	1	0	-0.5	0.5	-0.5	1	1	0.5	0.5	**0.46**	0.75	0.39
Q-19	FOUND	0	1	1	1	0.5	-0.5	0	-0.5	0.5	1	0.5	0.5	**0.42**	0.50	0.39
Q-5	TRAINT	0	1	0.5	0	-0.5	-0.5	0	-1	0.5	0.5	1	0	**0.13**	0.50	0.06
Q-20	TRAINT	0	1	1	1	1	0.5	1	0.5	1	1	1	0.5	**0.79**	0.50	0.89
Q-2	PI	1	1	0	0.5	1	-0.5	0.5	1	0.5	1	1	0.5	**0.63**	1.00	0.56
Q-6	PRIN	1	1	1	0	1	0	0.5	-1	1	0	-1	0.5	**0.33**	1.00	0.17
Q-4	RES	1	1	1	1	1	-1	0	0	1	1	1	1	**0.67**	1.00	0.56
Q-15	SSIZE Rev C	0	0.5	-1	-0.5	0	0	-0.5	0.5	1	-1	-1	0	**0.17**	-0.25	0.28
Q-16	SSIZE Rev C	0.5	0.5	0	0	0.5	1	-0.5	0.5	-0.5	-1	-0.5	0.5	**-0.08**	-0.50	0.06
Q-1	SES	-1	0	0	0	0	-0.5	0.5	0	0	-1	-0.5	0.5	**-0.17**	-0.50	-0.17
Q-3	SES-Rev Cod	0	0.5	0	0	0	-0.5	-0.5	0	0	0	0	0	**0.04**	-0.25	0.11
Q-7	STABLET	0.5	1	0.5	0	1	-0.5	0	-1	-0.5	1	1	0.5	**0.29**	0.75	0.17
Q-17	TE	0	1	0.5	1	0	0.5	0	-0.5	0.5	1	0.5	0.5	**0.42**	0.50	0.39
Respondent Teach Exper																
Years Taught in K-2		4	12	5	13	18	1	15	7	5	6	10	23	**9.9**		
Year Taught in Other El		6	16	12	1	3	2	3	3.5	13	14	12	3	**7.4**		
Respondent Education																
Cert/Endorsemt				X	X		X									
Bachelors		X	X	X	X	X	X	X	X	X	X	X				
ME/MS/MA		X	X	X	X	X		X	X	n prog		X	X			
Phd																

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