International Electronic Journal of Elementary Education
Vol. 6, Issue 2, March, 2014.

IEJEE
International Electronic Journal of Elementary Education

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ISSN: 1307-9298

Abstracting and Indexing:
Scopus, ProQuest, DOAJ, Education Research Complete™, Google Scholar, EDNA, Index Copernicus, Norwegian Social Science Data Services, NewJour, Open J-Gate.

ISSN:1307-9298

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Dear *IEJEE* reader,

It's a great pleasure for me to present you one of the most comprehensive issues of *International Electronic Journal of Elementary Education; Volume 6, Issue 2.*

In eleven papers, eighteen scholars are addressing and exploring important educational topics like *academic self-concept, developing reading skills among children with reading difficulties, theory of mind, self-concept, gender-role orientation, student's perspective on leadership, children's enjoyment, interest, and comprehension of graphic novels compared to heavily-illustrated and traditional novels, the role of non-challenging education and teacher control as factors for marginalization of students in diverse settings, teachers' thinking styles and their attitutes to teaching, mathematic teacher candidates' problem solving skills, a comparative study of education of linguistic minority students in Los Angeles and Oslo, the role of drawings in evoking interest for a carrier as math teacher* and *underrepresentation of male in teacher education.*

International Electronic Journal of Elementary Education (IEJEE) is an open access journal. Papers published in IEJEE are accessible for everybody. *IEJEE* is an international, multi-disciplinary, peer-reviewed journal that is online published three times in a year. One of our issues is an annual special issue with a clear focus on a given current and important topic.

The topic of the next special issue of IEJEE is ***READING FLUENCY*** and the special issue editor is Dr. Timothy Rasinski, professor of literacy education at Kent State University, USA.

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I thank to all of the authors of this issues. I also would like to express my deep gratitude to Dr. Turan TEMUR, Dumlupinar University, Turkey; Dr. Gökhan ÖZSOY, Aksaray University, Turkey; and Hasan TABAK, Gazi University, Turkey; H. Gül KURUYER, Aksaray University, Turkey; Mustafa BAKIR, Dumlupinar University, Turkey for their tirelessly works for coordination and quality assurance of submission, correspondence with authors, reviewing, revision, and publishing processes.

Sincerely,

Kamil ÖZERK, University of Oslo

Editor in Chief

ISSN:1307-9298

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International Electronic Journal of Elementary Education, 2014, 6(2), 185-198.

A Structural Equation Modelling of the Academic Self-Concept Scale

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Received: 14 August 2013 / Revised: 28 January 2014 / Accepted: 08 February 2014

Abstract

The study aimed at validating the academic self-concept scale by Liu and Wang (2005) in measuring academic self-concept among university students. Structural equation modelling was used to validate the scale which was composed of two subscales; academic confidence and academic effort. The study was conducted on university students; males and females from different levels of study and faculties. In this study the influence of academic self-concept on academic achievement was assessed, tested whether the hypothesised model fitted the data, analysed the invariance of the path coefficients among the moderating variables, and also, highlighted whether academic confidence and academic effort measured academic self-concept. The results from the model revealed that academic self-concept influenced academic achievement and the hypothesised model fitted the data. The results also supported the model as the causal structure was not sensitive to gender, levels of study, and faculties of students; hence, applicable to all the groups taken as moderating variables. It was also noted that academic confidence and academic effort are a measure of academic self-concept. According to the results the academic self-concept scale by Liu and Wang (2005) was deemed adequate in collecting information about academic self-concept among university students.

Keywords: Academic Self-Concept Scale, Structural Equation Modelling, University Students, Malaysia.

Introduction

Academic self-concept is referred to as students' perceptions about their levels of competencies within the academic realm (Ferla et al., 2009; Lips, 2004; Wigfield & Eccles, 2000; Wigfield & Karpathian, 1991). Broadly academic self-concept is the way how students feel about themselves as learners (Guay et al., 2003). Specifically, academic self-concept is a composite view of oneself across various sets of specific academic domains, abilities, and perceptions (Trautwein et al., 2006). This is based on

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self-knowledge and evaluation of values formed through experiences with the interpretation of one's academic environment (Eccles, 2005; Bong & Skaalvik, 2003). Academic self-concept has been noted of its tendency to decline among students from early to mid adolescence, and also, it can extend to adulthood (Liu & Wang, 2005). Marsh (1989) explained that academic self-concept reaches its lowest point in middle adolescence, but, also found out that academic self-concept increased through early adulthood. In other findings it has been noted that as students grow older their academic self-concept becomes relatively stable (Guay et al., 2003). Academic self-concept has been noted to vary as students move through grades in which their academic self-concept tends to rise in the direction of their academic achievement (Liu & Wang, 2005; Jacob et al., 2002), while others studies found out that it tends to become weaker (Marsh & Yeung, 1997; Marsh et al., 2002). Generally, it has been highlighted that academic self-concept influences students' academic achievement (Awad, 2007; Marsh, 2006; Cokley, 2000; Marsh et al., 2002, 1999). However, although various researchers concur with the academic self-concept changes, only a few studies have tackled changes in the instruments of measure of academic self-concept across various groups of students they measure (Matovu, 2012).

In another issue, several studies have tested the validity of academic self-concept instruments across age (Marsh, 1990; Marsh et al., 1988), gender (Byrne & Shavelson, 1987; Marsh, 1993), and other groups. There are no documented studies that have validated the Liu and Wang (2005) academic self-concept scale across gender, levels of study, and faculties among university students using structural equation modelling. Validation of an instrument is one way of improving its performance over time. Academic self-concept instruments which have been validated over time have become better and more effective in measuring academic self-concept (Byrne, 2002; Marsh et al., 1999). The validation of the academic self-concept scale in this study was done because it had been noted that weak theoretical bases, poor quality of measurement instruments, methodological shortcomings, and lack of consistent findings had merged academic self-concept instruments (Byrne, 1984; Shavelson et al., 1976).

The third issues is that gender differences in academic self-concept have been reported in some studies; males and females possessing different conceptions about their competencies in academic abilities (Ireson et al., 2001; Wigfield et al., 2001; Marsh, 1989). Studies have postulated that males show higher academic self-concept than females (Kling et al., 1999). In other studies it has been posited that males tend to exhibit higher academic self-concept in science courses while females in non-science courses (Harter, 1999; Marsh, 1989). Jacob et al. (2002) articulated that gender differences start as early as elementary school and remains stable throughout adolescence to adulthood. With such existing differences this called for the validation of the academic self concept scale to find out whether it was invariant across the groups it was measuring. In another study it was highlighted that small stereotypic gender differences linearly declined in mean levels of academic self-concept with age, and modest differentiation between academic competencies among students (Marsh, 2006). This can also be the same situation in other groups defined by self-concept and academic achievement (Worrell et al., 1999).

Fourth, Byrne (1996) and Hattie (1992) cited two major issues in which any research concerning the self-concept should focus; (a) the development of instruments affording to collect valid and reliable scores and (b) attention to cross-cutting concerns in the development of academic self-concept measures which have also been addressed in this study. Specifically, lack of the above cited issues reported in the literature have led to the validation of the academic self-concept scale and further studies on academic self-concept (Marsh, 1990; Marsh et al., 1988; Marsh et al., 1991).

According to developed theories and models that explain academic self-concept and academic achievement, there has been no much proof on whether prior academic self-concept influences academic achievement or, prior academic achievement causes subsequent academic self-concept (Marsh et al., 2002; Matovu, 2012). In the self-enhancement model academic achievement is due to the consequence of academic self-concept (Bong, 2001; Skaalvik & Skaalvik, 2005). Secondly, the skill-development model highlights that academic achievement determines academic self-concept (Marsh, 2006; Marsh et al., 2005, 2002, 1999). Third, academic self-concept and academic achievement are reciprocal (Guay et al., 2003). The extensive debate among researchers concerning whether prior academic self-concept influences academic achievement, or, prior academic achievement causes subsequent academic self-concept has been considered an egg-chicken question (Marsh et al., 2002). This also calls for more understanding of the influence of academic self-concept on academic achievement, and to validate further the instruments that measure academic self concept (Byrne, 1996; Shavelson et al., 1976).

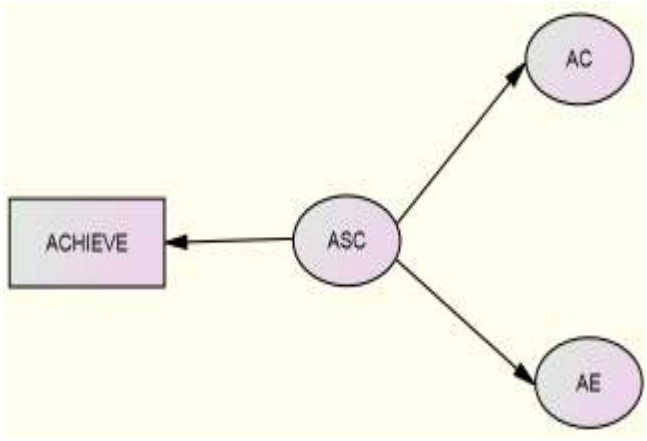

Figure 1. Academic self-concept - Academic achievement hypothesised model

ACHIEVE = Academic Achievement, ASC = Academic Self-Concept, AC = Academic Confidence, AE = Academic Effort

Measure

The aim of the study was to validate the academic self-concept scale developed by Liu and Wang (2005) to test for its variability and reliability in measuring academic self-concept among university students. The academic self-concept scale was developed in reference to the general academic status scale (Piers & Harris, 1964), the academic esteem subscale (Battle, 1981), and the school subjects self-concept (Marsh et al., 1983). The original academic self-concept scale by Liu and Wang (2005) had to two sub scales; (a) academic confidence, and (b) academic effort each with 10 items. The 20 item questionnaire which utilised a 7 point likert scale with designated end points of strongly agree and strongly disagree was used in this study. The items included both negatively and positively worded items to avoid the same answers from the students. Both academic confidence and academic effort items were mixed in the scale; academic confidence items taking odd numbers (1, 3, 5, 7, 9, 11, 13, 15, 17, 19), while academic effort items taking even numbers (2, 4, 6, 8, 10, 12, 14, 16, 18, 20). For the first validation the Liu and Wang (2005) academic self-concept scale item 13 was removed, and in the second validation by Tan and Yates (2007) using Rasch modelling three items (4, 13, and 18) were removed because of their poor in-fit statistics (see the

instrument in Appendix A). These studies were done in secondary schools and primary schools respectively in Singapore.

Research Questions

This study was based on two research questions; (a) whether the Liu and Wang (2005) academic self-concept scale was appropriate to measure academic self-concept among university students, and (b) whether university students' academic self-concept influenced their academic achievement.

Hypotheses

The study was conducted on four hypotheses which included; (a) academic self-concept directly influences academic achievement, (b) the hypothesised model will fit the data collected using the Liu and Wang (2005) academic self-concept scale, (c) the path coefficients of the hypothesised model vary significantly among groups (gender, levels of study, and faculties) as moderating variables, and (d) academic confidence and academic effort are a measure of academic self-concept.

Methods

Sample

The data was collected from a total of 280 students in a public university in Malaysia. The sample composition was of males (50.4%) and females (49.6%) for gender, non science (61.8%) and science (38.2%) for faculties, and undergraduates (50.7%) and postgraduates (49.3%) for levels of study. All the students were randomly selected from their respective groups. For science and non science faculties, the students were selected from the different departments in their respective faculties. The sample was appropriate because it considered the proportions of the different groups in its selection.

Instrument

The data was collected using the original academic self-concept scale by Liu &Wang (2005) which measured academic confidence and academic effort on the general academic self-concept. Academic confidence and academic effort served as endogenous variables to the general academic self-concept. The instrument had 20 items on a 7 point scale on which students responded to indicate their agreement or disagreement with the items. The 20 item original Liu and Wang (2005) academic self-concept scale was validated because there was no literature that it had ever been validated on measuring academic self concept among university students using structural equation modelling.

Structural Equation Modelling

The study applied four stages structural equation modelling using AMOS 18 to test the hypotheses. The study validated the measurement model, confirmatory factor analysis was done to the hypothesised model, metric invariance were calculated, and then later, good fit of the fully fledged academic self-concept and academic achievement model was tested. All these processes allowed the relation to be tested only after ensuring that the latent variables were measured adequately (Barry & Stewart, 1997). In cross validation of the model, moderating effects of gender, levels of study, and faculties were considered. In estimating the hypothesised model using covariance matrix the estimations satisfied the underlying statistical distribution theory by giving appropriate estimates for the properties. This was due to having adopted a maximum likelihood in estimating the full-fledged model. After the model had been estimated a set of criteria were applied to evaluate the model goodness-of-fit. The measures were based on the

conventionally accepted criteria for deciding what constitutes a good fit model, that is, (a) reasonableness of the estimates, (b) consistence of the model that collected data, and (c) proportions of variance of the dependent variables that accounted for by the exogenous variables.

Table 1. *Measurement of the variables of the hypothesised model*

Construct	Items	Measure	M	SD	CR
Academic Confidence	C1	I can follow the lectures easily.	4.35	1.81	.853
	C2	I am able to help my course mates in their school work.	4.66	1.73	
	C3	If I work hard, I think I can get better grades.	5.31	1.64	
	C10	I am able to do better than my friends in most courses.	4.58	1.77	
Academic Effort	E2	I often do my course work without thinking.	5.67	1.36	.861
	E3	I pay attention to the lecturers during lectures.	6.39	1.12	
	E4	I study hard for my tests.	6.49	.97	
	E5	I am usually interested in my course work.	6.48	1.03	
	E6	I will do my best to pass all the courses this semester.	6.84	.46	
	E9	I do not give up easily when I am faced with a difficult question in my course work.	5.80	1.22	

Note: M = Mean, SD = Standard Deviation, CR = Composite Reliability

Results

In this section, the results of the structural equation modelling that addressed the hypotheses of the study are presented.

Measurement model

Confirmatory Factor Analysis using AMOS 18 was used to determine the psychometric properties of the academic self-concept scale and the academic achievement among university students. The results got using the maximum likelihood estimation of confirmatory factor analysis tested the validity of the model which indicated that the hypothesised model fitted the data. In the first run of the data some items had poor loading on their respective factors. The items with poor fit were removed from the model. In the subsequent run, the overall fit of the measurement model was adequate with Relative Chi- Square = 2.386, CFI = .943, RMSEA = .070, SRMR = .048, and p = .000 (see figure 2). All measures were within acceptable values indicating good model

fit (Byrne, 2001, 2006, 2010; Arbuckle & Wothke, 1999; Masrom & Hussein, 2008; Brown, 2006). In other words, measuring academic self-concept did generate the observed covariance matrix; that is to say, there was no evidence to reject the measurement model at this level. From the measurement model the factor loading were substantial and statistically significant at p = .000, and the model was free from offending estimates. The composite reliability for the first order factors was .85 for academic confidence and .86 for academic effort (see table 1). A composite reliability above .70 for a model is adequate (Hair et al., 1998). Also, both convergent and discriminant validity were examined. The convergent validity which is the extent to which indicators of a specific construct converge or share proportion of variance in common was examined using composite reliability and Average Variance Extracted (AVE). Discriminant validity which is the extent to which a construct is truly distinct from other constructs (Bagozzi & Lee, 2002; Shen et al., 2009) was examined as well. The data supported the measurement adequacy with the Average Variance Extracted (AVE) of .68 to academic confidence and .62 to academic effort which were above the threshold (.50) and an evidence of convergent validity (Fornell & larker, 1981; Shittu et al., 2011). Also the AVE for both academic confidence and academic effort were greater than the squared correlation (.42) which was an evidence for discriminant validity that is, supporting the evidence of construct validity of the model. This indicated that the measured variables were more in common with the construct they were associated with than they did with the other constructs (Byrne, 2010).

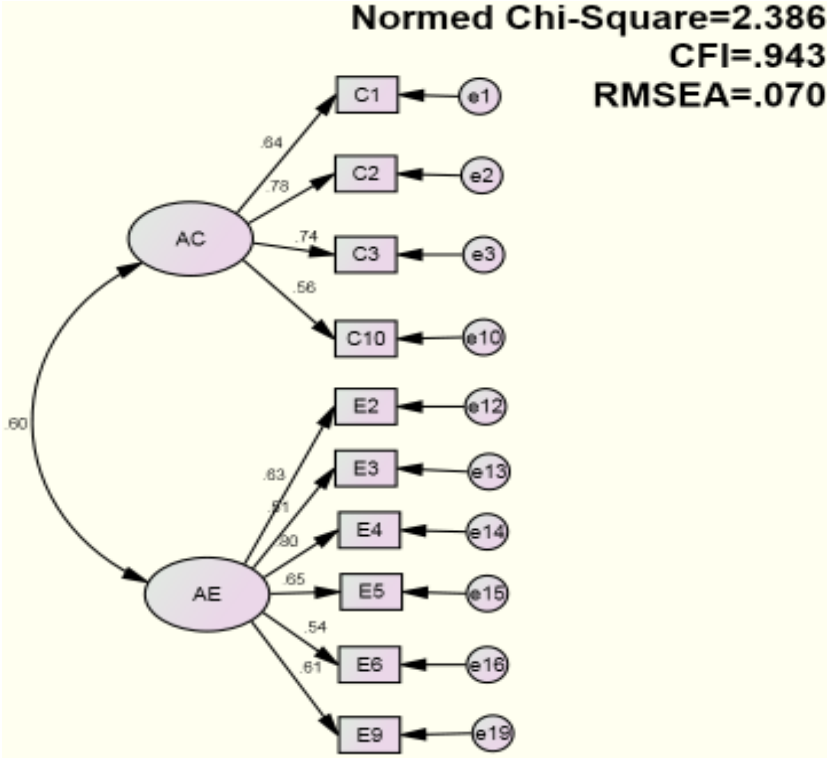

Figure 2. Measurement model of Academic Self-Concept

AC = Academic Confidence, AE = Academic Effort

From the measurement model in figure 2, six items (7, 9, 11, 13, 15 and 17) were removed from the academic confidence subscale, while four items (2, 14, 16 and 20) were also removed from the academic effort subscale (see items in appendix A). This was because the items had poor loadings onto their factors.

Full- fledge model of academic self-concept and academic achievement

Figure 3 shows results of structural equation modelling of the influence of academic self-concept on academic achievement in the full-fledged model. According to the goodness-of-fit statistics, confirmatory modelling yielded consistence in the causal relationship with the data, with Relative Chi-Square = 2.272; CFI = .937, RMSEA = .068, SRMR = .050, and p = .000. All the results got indicated that the indices satisfied their critical cut off scores; that is, the model fitted the data.

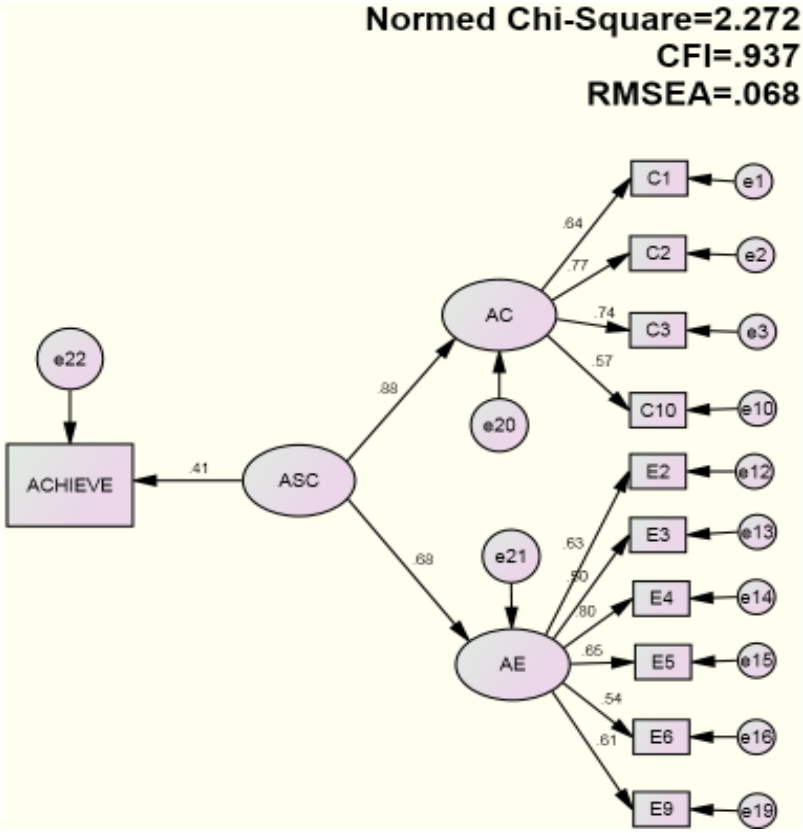

Figure 3. Standardised coefficients of the Academic Self-concept - Academic Achievement hypothesised Model

According to the model in figure 3, the parameter estimates of the derived model were good and free from offending values. According to the coefficients of the causal structure, all path coefficients were statistically significant at .005 levels, showing the practical importance of the model. From the model in figure 3 it can be highlighted that students' academic confidence (β = .88, p < .05) and academic effort (β = .68, p < .05) contributed to their academic self-concept. Also, academic self-concept was influential to the students' academic achievement (β = .41, p < .001). The two endogenous variables explained 61% of the variability in academic self-concept. From the findings, the four hypotheses were supported by the results got in the study.

Gender, levels of study, and faculties' invariance of the model

It was also in the interest of the research to examine the structure invariance of the model among the moderating variables. The model had three moderating variables which included gender (males and females), levels of study (Postgraduate or undergraduate), and faculties (science or non-science). In testing the invariance simultaneous analysis was done on the males (n^1= 141) and females (n^2 =139). Later,

an analysis of the constrained model for the males and females was done whose Chi-Square values were tested against the baseline Chi-Square values for the statistical significance difference. The same procedure was done to test for the invariance in the levels of study (undergraduates; n^1 = 142 and postgraduates; n^2 = 138), and faculties (science; n^1 = 107 and non-science; n^2 = 173) of the university students (see table 2).

The invariance tests across male and female groups resulted in a statistically insignificant change in the Chi-Square value, χ^2 (df = 8) = 16.84, p > .005. Also for undergraduates and postgraduates, χ^2 (df = 8) = 8.76, p > .005, and non science and science faculties, χ^2 (df = 8) = 5.918, p > .005 had also a statistically insignificant change in the Chi-Square value. According to the results, the difference in the Chi-Square values of the constrained and unrestricted model did not produce poor fit. It can be concluded from the results of the invariance tests, that is; gender, levels of study, and faculties in which the students study did not interact with the students' academic achievement. It can also be drawn from the results that the path coefficients did not vary significantly across the three groups (gender, levels of study and faculties). Hence gender, levels of study, and faculties of the students were not invariant on the academic self concept scale among university students.

Table 2. *Results of multiple groups modelling of the hypothesised model*

		Chi-Square	*df*	Critical value	Chi-Square Change
Gender	Unrestricted	150.18	86	21.95	16.84
	Constrained	167.02	94		
Level	Unrestricted	142.67	86	21.95	8.76
	Constrained	151.43	94		
Faculty	Unrestricted	150.88	86	21.95	5.92
	Constrained	156.80	94		

df = degrees of freedom

Discussion

In this study, several findings have been got and have expanded on the knowledge in the area of academic self-concept and academic achievement at large. The results got can explain related issues on students' achievement in relation to their academic self-concept with the studied moderating variables. The results showed that academic self-concept directly influenced academic achievement. These results are similar to those found by Awad (2007), Cokley (2000), Cokley (2002) & Lent et al. (1997) who highlighted that academic self-concept had a relationship with academic achievement. It can also be derived from the results of this study that the higher the academic self-concept the students have the more they will achieve academically. Or, the avoidance of repeated failure can produce good academic achievement (Martin et al., 2004).

It can also be highlighted that academic self-concept through gender, levels of study, and faculties does not influence academic achievement. So, in the current situation where studies are being done on academic self-concept as an influencer to academic achievement, gender, levels of study, and faculties do not moderate

academic achievement. This refutes the findings of Ireson et al. (2001), Wigfield et al. (2001), Marsh & Yeung (1998), Pajares & Miller (1994) who articulated that males and females possess different conceptions about their competence in academic abilities. This was by males having a higher academic self-concept than females (Kling et al., 1999). Basing this on gender this may discourage a particular gender from certain academic choices view themselves as poorly fitting into certain academic areas (Eagly, 1987; Eccles, 1987). This was evidenced in male dominated course where females reported higher levels of academic discrimination than females in female dominated course (Steele et al., 2002). Also the results reject that there is a difference in self-concept of students offering either science based or non-science courses (Harter, 1999; Marsh, 1989). Again the results of this study have differed from the findings of Trautwein et al. (2006) who suggested that academic self-concept may differ as a function of the students' achievement on their reference group. At the same time findings of this study are similar to those of Bong and Skaalvik (2003) that revealed that academic self concept directly influences how students perform at academic tasks.

Conclusion

In analysis of the findings of the study they have applicable implications in the teaching and learning process among university students. In the teaching and learning situation targeted on academic self-concept instructors should be aware that students' academic confidence and academic effort are great contributors to their academic self-concept which determines their academic achievement. Teaching instructors should go an extra mile to develop students' academic confidence and also encourage them to put in more effort in order to achieve highly academically. Secondly, researchers to us the academic self-concept scale by Liu and Wang (2005) in future to find out the academic self concept of university students they should know that it is valid and invariant across students' gender, levels of study and faculties.

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References

Arbuckle, J. L., & Wothke, W. (1999). *Amos 4.0 User's Guide, Small Waters Corporation.* Chicago, IL.

Awad, G. (2007). The role of racial identity, academic self-concept, and self-esteem in the prediction of academic outcomes for African American students. *Journal of Black Psychology, 33*, 188-207.

Bagozzi, R. P., & Lee, K. H. (2002). Multiple routes for social influence: the role of compliance, internalization, and social identity. *Social Psychology Quarterly, 65*, 226-47.

Barry, B., & Stewart, G. L. (1997). Composition, process, and performance in self-managed groups: the role of personality. *Journal of Applied Psychology, 82,* 62-78.

Battle, J. (1981). *Culture-free SEI: Self-Esteem Inventories for children and adults*. Seattle: Special Child Publications.

Bong, M. (2001). Between- and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task-value, and achievement goals. *Journal of Educational Psychology, 93,* 23-34.

Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review, 15*, 1-40.

Brown, T. A. (2006). *Confirmatory Factor Analysis for Applied Research*. New York: Guilford Press.

Byrne, B. M. (1984). The general/academic self-concept nomological network: A review of construct validation research. *Review of Educational Research, 54,* 427-456.

Byrne, B. M., & Shavelson, R. J. (1987). Adolescent self-concept: The assumption of equivalent structure across gender. *American Educational Research Journal, 24,* 365-385.

Byrne, B. M. (1996). *Measuring self-concept across the life span: Issues and instrumentation.* American Psychological Association.

Byrne, B. M. (2001). *Structural Equation Modelling with AMOS: Basic Concepts, Applications and Programming.* Erlbaum Associates, Mahwah, NJ.

Byrne, B. M. (2002). Validating the Measurement and Structure of Self-Concept: Snapshots of Past, Present, and Future Research. *American Psychologist, 57,* 897-909.

Byrne, B. M. (2010). *Structural Equation Modelling with AMOS. Basic Concepts, Applications, and Programming* (2nd edn.). New York: Routledge.

Cokley, K. (2000). An investigation of academic self-concept and its relationship to Academic achievement in African American college students. *Journal of Black Psychology*, *26,* 148-164.

Cokley, K. (2002). Ethnicity, gender, and academic self-concept: A preliminary examination of academic dis-identification and implications for psychologists. *Cultural Diversity and Ethnic Minority Psychology, 8,* 378-388.

Eagly, A. H. (1987). *Sex differences in social behaviour: A social-role interpretation*. Hillsdale, NJ: Erlbaum.

Eccles, J. (1987). Gender roles and women's achievement-related decisions. *Psychology of Women Quarterly*, *11,* 135-172.

Eccles, J. S., (2005). Influences of parents' education on their children's educational attainments: the role of parent and child perceptions. *London Review of Education, 3,* 191-204.

Ferla, J., Valcke, M., & Cai, Y. (2009). Academic self-efficacy and academic self-concept: Reconsidering structural relationships. *Learning and Individual Differences, 19,* 499-505.

Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobserved variable and measurement error. *Journal of Marketing Research 18,* 39-50.

Guay, F., Marsh, H. W., & Boivin, M. (2003). Academic self-concept and achievement: Developmental perspective on their causal ordering. *Journal of Educational Psychology*, *95,* 124-136.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate Data Analysis.* Pearson Education: Upper Saddle River, NJ.

Harter, S. (1999). *He construction of the self: A developmental perspective.* New York: Guilford Press.

Hattie, J. (1992). *Self-concept.* Hillsdale, NJ: Erlbaum.

Ireson, J., & Hallam, S. (2001). *Ability grouping in education*. London: Chapman.

Jacob, J. E., Lanza., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and value: gender and domain differences across grades one through twelve. *Child Development, 73,* 509-527.

Kling, K. C., Hyde, J. S., Showers, C. J. & Buswell, B. N. (1999). Gender differences in self-esteem: A meta-analysis. *Psychological Bulletin*, *125,* 470-500.

Lent, R. W., Brown, S. D., & Gore, P. A. (1997). Discriminant and predictive validity of academic self-concept, academic self-efficacy, and mathematics-specific self-efficacy. *Journal of Counselling Psychology, 44,* 307-315.

Lips, H. M. (2004). The Gender Gap in Possible Selves: Divergence of Academic Self-Views Among High School and University Students. *Sex Roles, 50,* (5/6), 357-371.

Liu, W. C., & Wang, C. K. J. (2005). Academic Self-Concept: A Cross-Sectional Study of Grade and Gender Differences in a Singapore Secondary School. *Asia Pacific Education Review, 6*(1), 20-27.

Marsh, H. W. (1989). Age and sex effects in multiple dimensions of self-concept: Preadolescence to early adulthood. *Journal of Educational Psychology, 81*, 417-430.

Marsh, H. W. (1990). The structure of academic self-concept: The Marsh-Shavelson model. *Journal of Educational Psychology, 82,* 623-636.

Marsh, H. W. (1993). Academic self-concept: Theory measurement and research. In J. Suls (edn.). *Psychological perspectives on the self*. Hillsdale, NJ: Erlbaum.

Marsh, H. W. (2006). *Self-concept theory, measurement and research into practice: The role of self-concept in educational psychology*. Unpublished manuscript, British Psychology Society, 25th Vernon- Wall lecture.

Marsh, H. W., & Yeung, A. S. (1997). The causal effects of academic self-concept on academic achievement: Structural equation models of longitudinal data. *Journal of Educational Psychology, 89,* 41-54.

Marsh, H. W., Byrne, B. M., & Shavelson, R. J. (1988). A multifaceted academic self-concept: Its hierarchical structure and its relation to academic achievement. *Journal of Educational Psychology*, *80,* 366-380.

Marsh, H. W., Byrne, B. M., & Yeung, A. S. (1999). Causal ordering of academic self-concept and achievement: Reanalysis of a pioneering study and revised recommendations. *Educational Psychologist, 34*, 154-157.

Marsh, H. W., Ellis, L., & Craven, R. G. (2002). How do pre-school children feel about themselves? Unravelling measurement and multidimensional self-concept structure. *Developmental Psychology, 38,* 376-393.

Marsh, H. W., Trautwein, U., Lüdtke, O., Köller, O., & Baumert, J. (2005). Academic self concept, interest, grades and standardized test scores: Reciprocal effects models of causal ordering. *Child Development, 76,* 397-416.

Marsh, H. W., Walker, R., & Debus, R. (1991). Subject-specific components of academic self-concept and self-efficacy. *Contemporary Educational Psychology, 16,* 331-345.

Marsh, H.W., & Yeung, A. S. (1998). Top-down, bottom-up, and horizontal models: The direction of causality in multidimensional, hierarchical self-concept models. *Personality and Social Psychology, 75,* 509-527.

Marsh. H. W., Relich, J. D., & Smith, I. D. (1983). Self-concept: The construct validity of interpretations based upon the SDQ. *Journal of Personality and Social Psychology*, *45*(1), 173-187.

Martin, M. O., Mullis, I. V. S., Gonzalez, E. J., & Chrostowski, S. J. (2004). *Findings from IEA's Trends in International Mathematics and Science Study at the fourth and eighth grades*. Chestnut Hill, MA: TIMSS & PIRLS International Study Centre, Boston College.

Masrom, M., & Hussein, R. (2008). *User Acceptance of Information Technology: Understanding Theories and Model.* Venton Publishing: Kuala Lumpur.

Matovu, M. (2012). Academic Self-Concept and Academic Achievement among University Students. *International Online Journal of Educational Sciences, 4*(1), 107-116.

Pajares, F., & Miller, M. D. (1994). The role of self-efficacy and self-concept beliefs in mathematical problem-solving: A path analysis. *Journal of Educational Psychology, 86,* 193-203.

Piers, E. V., & Harris, D. B. (1964). Age and other correlates of self-concept in children. *Journal of Educational Psychology*, *55*(2), 91-95.

Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research, 46*, 407-441.

Shen, A. X. L., Cheung, C. M. K., Lee, M. K. O., & Chen, H. (2011). How social influence affects we-intention to use instant messaging: The moderating effect of usage experience. *Information Systems frontier, 13,* 157-169. DOI 10.1007/s10796-009-9193-9.

Shittu, A. T., Basha, K. M., AbdulRahman, N. S. N., & Ahmad, T. B. T. (2011). Investigating students' attitude and intention to use social software in higher education institution of learning in Malaysia. *Multicultural Education & Technology Journal, 5*(3), 194-208.

Skaalvik, S., & Skaalvik, E. M. (2005). Self-concept, motivational orientation, and help seeking behaviour in mathematics: A study of adults returning to high school. *Social Psychology of Education, 8,* 285-302.

Steele, J., James, J. B., & Barnett, R. C. (2002). Learning in a man's world: Examining the perceptions of undergraduate women in male-dominated academic areas. *Psychology of Women Quarterly*, *26,* 46-50.

Tan, J. B., & Yates, S. M. (2007). A Rasch Analysis of the Academic Self-Concept Questionnaire, *International Educational Journal*, *8*(2), 470-484.

Trautwein, U., Lüdtke, O., Marsh, H. W., Köller, O., & Baumert, J. (2006). Tracking, grading, and student motivation: Using group composition and status to predict self-concept and interest in ninth-grade mathematics. *Journal of Educational Psychology, 98*(4), 788-806.

Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25,* 68-81.

Wigfield, A., & Karpathian, M. (1991). Who am I and what can I do? Children's self concepts and motivation in achievement situations. *Educational Psychologist, 26,* 233-261.

Wigfield, A., Battle, A., Keller, L. B., & Eccles, J. S. (2001). Sex differences in motivation, self-concept, career aspiration and career choice: implications for cognitive development. In McGillicuddy-De Lisi, A., & De, R. (edn.). *Biology, society, and behaviour: the development of sex differences in cognition*. Westport, CT: Greenwood.

Worrell, F. C., Latto, I. K., & Perlinski, M. A. (1999). The relationship of Risk Status to Self-Esteem and Perceived Life Chances. *The Journal of At-Risk Issues, 5*(2), 33-38.

APPENDIX A

1= strongly Disagree, **2** = Disagree, **3** = Disagree some-what, **4** = neither agree nor disagree, **5** = Agree some-what, **6** = Agree, **7** = Strongly Agree

1.	I can follow the lectures easily.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2.	I day-dream a lot in lectures.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3.	I am able to help my course mates in their school work.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4.	I often do my course work without thinking.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5.	If I work hard, I think I can get better grades.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6.	I pay attention to the lecturers during lectures.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7.	Most of my course mates are smarter than I am.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8.	I study hard for my tests.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9.	My lecturers feel that I am poor in my studies.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10.	I am usually interested in my course work.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11.	I often forget what I have learned.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12.	I will do my best to pass all the courses this semester.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13.	I get frightened when I am asked a question by the lecturers.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14.	I often feel like quitting the degree course.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15.	I am good in most of my courses.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
16.	I am always waiting for the lecture to end and go home.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
17.	I always do poorly in course works and tests.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
18.	I do not give up easily when I am faced with a difficult question in my course work.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
19.	I am able to do better than my friends in most courses.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
20.	I am not willing to put in more effort in my course work.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

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International Electronic Journal of Elementary Education, 2014, 6(2), 199-212.

A Study on the Development of Reading Skills of the Students Having Difficulty in Reading: Enrichment Reading Program[1]

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Received: 10 September 2013 / Revised: 24 June 2014 / Accepted: 10 February 2014

Abstract

The aim of this study is to improve the reading skills of the students having difficulty in reading through an enrichment reading program. The current study was conducted by means of one-subject research technique and between-subjects multiple-baseline levels model belonging to this technique. The study was carried out with three participants from fifth grade. In order to collect data for the study, word recognition test, reading texts, Ekwall and Shanker reading inventory and reading comprehension test were employed. In line with the purposes of the study, the collected data were analyzed through qualitative and quantitative tests and the results were explained as qualitative and quantitative. At the end of the study, it was found that some developments occurred on the participants' word recognition skills and aloud reading skills. It was concluded that for the development of the reading skills of the students having reading difficulty, construction of appropriate reading environment and implementation of enrichment reading programs can be effective.

Keywords: Reading Skills, Reading Disability, Enrichment Reading Program.

[1] The study is presented as an oral presentation at 21th National Congress of Educational Science (9-12 September, 2012).

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Introduction

As the literacy level of an individual directly affects his/her recruitment and working life, increasing it may enhance the person's quality of life (Organisation for Economic Co-operation and Development [OECD], 2008). Hence, one of the most important goals for today's educators should be to train individuals with good literacy who can comprehend and question what they read, because there is a close relationship between literacy and academic achievement (Grove & Hauptfleisch, 1982; Moreillan, 2007). Even if they are as intelligent as their peers, those having difficulties in reading cannot improve their reading skills as much as their peers and they cannot perform as well as them. The research shows that almost 30-35% of students in America and England experience difficulties in reading (Blanton, Wood &Taylor, 2007; Exley, 2007; National Council on Teacher Quality, 2006). When the magnitude of this figure is considered, it becomes very important to identify children with reading difficulties, to develop learning environments suitable for these children and to prepare enhancement programs for them. There is no comprehensive study in Turkey determining the number of students having reading difficulties. However, some studies conducted in Turkey (Akyol & Yıldız, 2010; Baydık, 2011; Yangın & Sidekli, 2006) reveal the importance of determining the level of problems faced by the students who are having reading difficulties and providing support programs for these students to improve their reading skills.

As none of the students fail in elementary education, the students having reading difficulties pass their classes; yet, they cannot perform reading at the level expected of their grade; hence, they experience various problems such as anxiety and depression throughout their schooling. They are usually tagged as unsuccessful students throughout their education. Moreover, they cannot get the help needed to resolve their problems and they experience adaptation problems in their classes (Bender, 2012). However, they can be relieved of their problems through a suitable reading environment, teaching program and family support. The important question to be answered at that point is what form the environment, program and support should take. The reading environments to be constructed to eliminate the reading difficulties of students should make students feel relaxed and willing to express themselves. Students should not feel anxious due to the difficulties they experience. In addition to this, students should be supported with materials matching their interests and abilities. While developing reading programs, the teacher and the family should be involved in the process. The program developed should be a long-term program and be based on strategic teaching. The expectations about the reading performance of students should be kept low at first and be increased over time. The teacher and family should always be supportive. The research proves the effectiveness of informing students about the difficulties they experience and strategy-based programs conducted with the cooperation of the teacher and family (Baydık, 2011; Torgesen, 2000; Pikulski, 1997; Westwood, 2008).

The present study is constructed on three bases: reading; reading difficulties; and the use of enrichment reading programs to eliminate these reading difficulties.

Reading and Reading Difficulty

Reading is an interactive process consisting of inferring, knowing correct sounds and comprehension (Kamhi & Catts, 2008). The effective use of these skills in a reading environment enables the reader to comprehend the text. The success of the reading process is determined by variables such as reading attitude, reading purpose, prior knowledge about the text, textual structure, vocabulary knowledge; comprehension is determined by the interaction of the reader with the text (Yıldırım, 2010).

Good readers have automaticity in word recognition and discrimination (Garrod & Pickering, 1999; Pilten, 2009). It can be argued that readers having difficulty with word recognition and discrimination may lose the meaning of the text. Poor readers having reading difficulties as a result of a lack of skills such as perceiving the unity of meaning, using strategies and connecting prior knowledge to new information; hence, they experience reading difficulties (Bonds & Bonds, 1992; Jitendra, Hoppes & Xin, 2000; Moddy, Kennedy & Brady, 1997).

The students having reading difficulties are observed to distract their attention and feel anxious during reading. The main goal of reading is comprehension. As reading difficulties increase the anxiety of individuals, they make reading comprehension more difficult; hence, such have more limited reading experience and this hinders the development of vocabulary knowledge and information accumulation (Lyon, Shywitz & Shywitz, 2003).

The Enrichment Reading Program to Eliminate Reading Difficulties

Correct perception, sound recognition, word recognition, word discrimination, semantics, syntax, linguistic processes and comprehension are basic requirements needed for the acquisition of effective reading skills and healthy reading. Establishing reading environments with respect to these requirements may be effective in overcoming reading difficulties. Teaching through appropriate methods and considering the individual differences in individuals may contribute to the reduction of these difficulties. In addition to this, the early detection of students with reading difficulties and the application of intervention programs for reading difficulties are of great importance. Enrichment reading programs can be a good means of such an intervention.

The enrichment reading program is based on Renzulli's (1976) "Enhanced Triple Model". This model emphasizes that students should be provided with a range of learning strategies and environments complying with their interests and skills so that they can acquire valuable experiences. Enrichment reading programs and applications can be used for gifted children or children having learning difficulties. Through such programs, students are provided with comprehensive reading education, taking their areas of interest and motivation into consideration.

Recent research has proved that enrichment reading programs are one of the applications positively affecting reading, reading comprehension, reading awareness and expression skills (Goodman, 2007; Schreiber, 2003). In this research, the importance of enhancing reading with pre-reading, while-reading and post-reading activities is emphasized. Throughout the reading process, the transfer of prior information into the reading environment, working with different texts and textual structures, making predictions and inferences, setting goals and using strategies are all considered to enhance the reading environment and reading comprehension. The enrichment reading program is an important strategy in improving reading comprehension, writing skills, textual analysis, creativity skills and overcoming reading difficulties. Meanwhile Alexander, Carr and Schwanefluge1 (1995) give important information about students with reading difficulties and also point out the efficiency of enrichment reading programs in the elimination of reading difficulties.

In light of the above-given information, the main purpose of the present study is to improve the reading skills of students having reading difficulties through an enrichment reading program.

Method

The present study employed a single-subject research method and the between-subject multiple baseline model associated with this method. The study was conducted with three participants. The cause and effect relationship between dependent and independent variables was analyzed separately for each participant without making comparison between the participants. In the between-subjects multiple baseline model, the effectiveness of a method on the target behavior is investigated through the participation of more than one participant (Tekin-İftar & Kırcaali-İftar, 2006). Multiple-baseline models consist of two phases: starting level and application level. At the beginning of the study, the reading levels of the students were determined and then the enrichment reading program was implemented. Throughout the application, the students' word recognition and reading out loud performances were compared with their initial performances.

Study Group

The study was conducted with three fifth-grade elementary school students who were having reading difficulties. The participants were selected by means of the purposeful sampling method. While selecting the participants, two criteria were used. The first is that students should not have auditory, visual and mental disorders and the second is that during reading difficulty determination work, their reading level should be determined at the apprehension level. The participants were informed about the study and they participated on a voluntary basis. The required permissions were granted from the participants' families and school authorities. The real names of the participants were not used for ethical reasons. Student 1, Student 2 and Student 3 are children of families of low socio-economic status. Their academic notes for the Turkish Language course are 3, 2 and 3, respectively. As a result of reading difficulty determination work, it was found that:

- Student 1 follows with finger; he skips, makes additions and reads erroneously,
- Student 2 makes additions, reads erroneously and slowly,
- Student 3 follows with finger, does not sound the words correctly and makes additions.

In addition to this, expression level determination work was conducted to gain detailed information about the participants. During the application, it was found that the students did not write the words correctly and during the dictation work, it was found that they had difficulties in organizing their opinions. During dialogues, on the other hand, it was found that they could not organize their opinions and they had difficulties in explaining the stages of opinion organization.

Data Collection Instruments

In order to collect data in the present study, word recognition tests, reading texts, the Ekwall and Shanker Reading Inventory and reading comprehension tests were used.

Word Recognition List. This is a list of 120 words of different syllable numbers; it was developed based on the fifth-grade vocabulary list prepared by Temur (2006).

Ekwall ve Shanker Reading Inventory: In order to determine text reading mistakes and reading aloud levels, the table developed by Ekwal and Shanker (1998) and adapted to Turkish by Akyol (2010) was used. This table enables us to evaluate the students' reading performances and monitor reading aloud processes.

Reading Comprehension Test. This reading comprehension test was developed by the researchers based on Akyol (2010). The test developed to evaluate the reading

comprehension level includes five questions ranging from simple comprehension questions to complex comprehension questions. The test was used to determine the reading comprehension level of the participants.

Reading Texts. In order to determine reading speed, the text called "Anatolian Rugs" was selected. Narrative texts were selected from the books recommended by the Turkish Education Board to be used for the activities developed for the enrichment reading program and to collect data. The texts and activities based on these texts used during the study are presented in Table 1. Activities used with the texts were developed based on the vocabulary level of the enrichment reading program, pre-reading, while-reading and post-reading.

Table.1 *Texts and activities used during the application across the weeks*

Weeks	***Grade Level***	***Reading text***	***Activity***
1st week	5th grade	Anatolian Rugs	Level determination activity
2nd week	State determination activity		Expression skills determination activity
3rd week	1st grade	Pigeon and ant	Fluency in reading
4th week	1st grade	If the dreams of grandfathers were true	Enriching vocabulary reservoir, summarizing, activating prior knowledge
5th week	1st grade	Love for Atatürk and Country	Summarizing, using visuals, text structures
6th week	3rd grade	Traffic	Working on concepts, activating prior knowledge, concept maps
7th week	3rd grade	Shopping	Concept maps, working on unknown words
8th week	3rd grade	Advertisements	Pair reading, use of meaning organizers, improving vocabulary reservoir
9th week	3rd grade	Respected man	Comprehension monitoring, question asking, main idea summarization
10th week	3rd grade	Stars and picture on the sky	Comprehension monitoring, use of meaning organizers, improving vocabulary reservoir, reading fluently, summarizing main idea
11th week	5th grade	Anatolian rugs	Level determination activity

Enrichment Reading Program. After determining the students' reading levels, an enrichment reading program was developed by considering the individual differences of the students and reviewing the related literature. This program was developed to improve the students' reading aloud skills (Lanford, 2009; Scheiber, 2003). The enrichment reading program can be explained under four headings as pre-reading, while-reading, post-reading and vocabulary level. Pre-reading includes activities such as activating prior knowledge, title reading, scanning the text, making predictions about

the associated pictures, determining goals and the desire to learn, generating questions about the text and determining of the way of reading. While-reading includes activities such as paired reading, checking predictions, answering the questions asked during pre-reading and asking new questions, using monitoring strategies, reading by considering the predictions made in relation to the title and pictures and making visualizations in the mind. Post-reading includes activities such as determining whether the words predicted before reading are in the text or not, summarizing the main idea, talking about the text, making use of the summary, using story maps and concept maps and making use of thinking aloud strategies. On the word level, activities such as word recognition and sound recognition were used. In order to establish content validity, expert opinions were sought. A pilot was conducted to determine the functioning of the reading program. The pilot was carried out with two fifth-grade students from an elementary school in Aksaray. In light of the data collected from the piloting, required adjustments were performed and the final form of the reading program was decided.

Procedures. The present study was conducted in 2011. Within the study, an 11-week enrichment reading program was administered to improve the participants' reading skills.

The program implemented in the present study was developed by reviewing enrichment reading program applications (Schrebeir, 2003; Slavin; 1995). Throughout the study, lasting for 11 weeks (75 class hours), the students worked on different texts. Each class hour was 40 minutes long.

During the applications, the students were presented with worksheets for each text. These worksheets contained activities relating to a given text and they were designed so that students could summarize, take notes and answer text-based questions. During the process, the researchers provided guidance for the students about what they would do and what they would pay attention to. The application was conducted in the multi-purpose salon of the school where students were studying.

The processes followed during the study are presented below:

Level Determination Activity. The researchers made the students read the whole text aloud. One of the researchers marked the point to which students came after one minute. While students were reading, the places which they read wrongly were highlighted in the text. In addition to this, the students were asked to read the words aloud which were in the word recognition test. The words read wrongly were marked by the researcher on his copy of the word recognition test. A level determination activity was performed before and after the application.

State Determination Activity. The students were directed to work on words and morphemes. The students were asked to talk about one of their days to determine their expression skills. A short text was left in the middle and the students were asked to predict what should come next. Then the students were asked to frame the opinions they shared or use them to create a story map. A state determination activity was performed before the application to generate detailed information about the students.

Following the state determination activity, students were given reading and reading comprehension activities to improve their vocabulary reservoir, summarizing skills and strategy use within the context of the enrichment reading program. Throughout the program, the students' reading performance was recorded.

Data Analysis

The data collected in the study were analyzed through both qualitative and quantitative methods and the results were explained both qualitatively and quantitatively. The

mistakes committed by the participants during reading were identified, their responses to the reading comprehension questions were evaluated and their reading skills were analyzed throughout the process.

Reliability of the Application

During the application, a setting where the students could express themselves comfortably was established. While students were performing reading aloud, they were video recorded and this made the analysis more reliable. Moreover, field notes were taken and observation results were written up. During the data analysis process, the data collected from the participants were analyzed by the researcher and an independent related field expert. In order to establish their reliability, the data were analyzed in different time periods.

Results

At the end of the study, it was found that the enrichment reading program applied in the present study to improve reading skills contributed to the development of word recognition skills and reading aloud skills of the students having reading difficulties. The findings of the study are presented under two headings: the findings relating to word recognition skills and the findings relating to reading aloud skills.

The word recognition test contains 120 words having different syllable numbers. The students were asked to pronounce the words in the test and the mistakes committed during the pronunciation and the number of pronunciations are presented in Table 2.

Table 2. *The number of mistakes and reading speed before and after the application of the program*

	Student 1		**Student 2**		**Student 3**	
	Number of mistakes (120/-)	**Reading speed (min.)**	**Number of mistakes (120/-)**	**Reading speed (min.)**	**Number of mistakes (120/-)**	**Reading speed (min.)**
Word recognition before the program	78	5. 38	55	3.42	47	4.47
Word recognition after the program	36	3.40	20	2.32	22	2.38

It can be seen that before the application of the program Student 1 could not recognize 78 words, Student 2 could not recognize 55 words and Student 3 could not recognize 47 words, out of the 120 words in the word recognition test. In relation to reading speed, it was found that for Student 1 it was five minutes and 38 seconds; for Student 2, it was three minutes and 42 seconds and for Student Three, it was four minutes and 47 seconds. After the application of the program, it was found that Student 1 could not recognize 36 words, Student 2 could not recognize 20 words and Student 3 could not recognize 22 words. In terms of their reading speed, it was found that for Student 1 it was three minutes and 40 seconds, for Student 2 it is two minutes and 32 seconds and for Student 3 it is two minutes and 38 seconds. As a result of the program, the number of mistakes committed by the students decreased and the time for completing the word recognition test improved. In the word recognition test, there are words which have different numbers of syllables. Before the application of the program, it was observed that with an increase in the number of syllables, more

difficulties were experienced by the students. When the time for completing the word recognition test is considered, it can be argued that the students did not display the performance expected of a fifth-grade student. In addition to this, it can be said that as the student compared the spelling of some words to that of the words they knew before, they showed an inclination to use the words they knew before. Some examples are given below to explain this situation.

Example:

Pronouncing the Word 'Çorap' as 'çorba'

Pronouncing the Word 'Kilim' as 'kimlik'

Pronouncing the Word 'Mareşal' as 'marş'

Pronouncing the Word 'Disiplin' as 'dispilin'

Within the state determination activity conducted before the program, the students were directed to work on words and phonemes while performing the word recognition activities. The students were told some words from the vocabulary list and they were asked to repeat these words. Then they were assigned some tasks relating to the words repeated. For instance, one of these tasks was to pronounce the word '*gösteri'* without pronouncing –i. The findings relating to these tasks are presented in Table 3.

Table 3. *Findings relating to word recognition activity*

	The word repeated by the students	*Task*	*New word pronounced by the students*
Student 1	Esas	Without pronouncing -e	Sas
	Gözlüksüz	Without pronouncing -lük	Göz
	Harp	Without pronouncing -p	Ha
	Hastalık	Without pronouncing -lık	Hasta
	Kanser	Without pronouncing -ser	Kan
Student 2	Gösteri	Without pronouncing -i	Götse
	Gözlüksüz	Without pronouncing -lük	Gözsüz
	Halsiz	Without pronouncing -siz	Hal
	Kapatmak	Without pronouncing -mak	Kapat
	Ekim	Without pronouncing -e	Kim
Student 3	Gösteri	Without pronouncing -i	Götse
	Gözlüksüz	Without pronouncing -lük	Gözlük
	Halsiz	Without pronouncing -siz	Hal
	Kapatmak	Without pronouncing -mak	Kapat
	Ekim	Without pronouncing -e	Kim

When Table 3 is examined, it is seen that the students did not have difficulty while repeating the words; however, they had some difficulties while performing the tasks relating to the words. This may be because they could not visualize the words in their minds. During the application, as a result of the word recognition activities, it was observed that the students were unsuccessful in word discrimination activities. The current state of the students in terms of reading aloud before and after the application of the program is presented in Table 4.

Table 4. *Reading aloud levels*

	Student 1	Student 2	Student 3
	Reading level	Reading level	Reading level
Before the program	Anxiety level	Anxiety level	Anxiety level
After the program	Teaching level	Free level	Free level

When Table 4 is examined, it is seen that after the application of the program Students 2 and 3 reached the free level of fifth graders while Student 1 reached teaching level. It can be argued that significant progress was observed in the reading skills of Students 2 and 3. In Table 5, the students' reading speeds and the number of mistakes before and after the program are presented.

Table 5. *Findings relating to text reading speed and the number of mistakes*

	Student 1		**Student 2**		**Student 3**	
	Reading speed (min)	**Number of mistakes**	**Reading speed (min)**	**Number of mistakes**	**Reading speed (min)**	**Number of mistakes**
Before the program	10.35	56	5.35	38	7.20	64
After the program	10.32	22	3.40	12	4.32	17

When Table 5 is examined, it is possible to say that there is significant improvement in the reading speeds of Students 2 and 3. Though there is no change in the reading speed of Student 1, there is a decrease in the number of the wrongly-read words and this indicates an improvement in the reading level.

Table 6. *Distribution of the mistakes committed in the texts read across the weeks of the program*

Student	***Weeks***	***Reading text***	***Mistakes committed***	***Number of mistakes (pre 100 words)***	***Reading speed (min)***
Student 1	3rd week	Pigeon and ant	Following with finger, self-correction, words given by the teacher, wrong reading	36	4.58
	4th week	If the dreams of grandfathers were true	Following with finger, self-correction, words given by the teacher, wrong reading	23	4.55
	5th week	Love for Atatürk and country	Following with finger, self-correction, words given by the teacher, wrong reading	20	5.30
	6th week	Traffic	Following with finger, self-correction, words given by the teacher, wrong reading	24	4.46
	7th week	Shopping	Following with finger, self-correction, words given by the teacher, wrong reading	22	4.32
	8th week	Advertisements	Following with finger, self-correction, words given by the teacher, wrong reading	18	4.38
	9th week	Respected man	Following with finger, self-correction, words given by the teacher, wrong reading	19	4.21
	10th week	Stars and the picture on the sky	Self-correction, words given by the teacher, wrong reading	20	4.20
Student 2	3rd week	Pigeon and ant	Adding, lack of attention on punctuation, self-correction, wrong reading	25	2.42
	4th week	If the dreams of grandfathers were true	Self-correction, wrong reading	32	2.05
	5th week	Love for Atatürk and country	Self-correction, wrong reading	17	3.50
	6th week	Traffic	Self-correction, wrong reading	24	2.55

Table 6 (Cont). *Distribution of the mistakes committed in the texts read across the weeks of the program*

Student 2	7th week	Shopping	Self-correction, wrong reading, adding	14	2.18
	8th week	Advertisements	Self-correction, wrong reading, adding	12	2.10
	9th week	Respected man	Self-correction	11	2.11
	10th week	Starts and the picture of the sky	Self-correction	9	1.55
Student 3	3rd week	Pigeon and ant	Adding, self-correction and wrong reading	21	2.12
	4th week	If the dreams of grandfathers were true	Adding, self-correction and wrong reading	12	2.10
	5th week	Love for Atatürk and country	Adding, self-correction and wrong reading	22	1.55
	6th week	Traffic	Adding, self-correction and wrong reading	22	1.54
	7th week	Shopping	Adding, self-correction and wrong reading	17	1.48
	8th week	Shopping	Adding, self-correction and wrong reading	16	1.52
	9th week	Respected man	Adding, self-correction and wrong reading	15	2.00
	10th week	Starts and the picture of the sky	Adding, self-correction and wrong reading	18	2.08

In Table 6, the types of mistakes committed by the students in reading aloud activities throughout the application of the program can be seen. Student 2 made frequent additions and corrected himself while reading the text. Frequent self-correction makes comprehension and monitoring more difficult. However, Student 2 can be claimed to have made good progress during the program. This progress is clearly demonstrated by the decrease in the number of mistakes and increase in the reading speed. Given that the difficulty level of the texts increased, it can be argued that Student 2 benefited from the application. Though no significant change was observed in the reading speed of Student 1 throughout the reading program, a decrease was observed in the number of the words read wrongly. This student read by following with a finger and was directed to follow with a pencil. As of the sixth week, the student gave up following with a finger. This can explained by the improvement in word recognition skill. Moreover, Student 1 was observed to read with fewer mistakes, not to make any additions and not to skip lines towards the end of the program. Before starting the program, Student 3 was observed to read faster than the other two students. Yet, while

reading fast, he made additions, skipped lines and overlooked correct pronunciation of some words for the sake of reading fast. As a result of the program, it can be argued that mistakes in reading decreased, more attention was paid to pronunciation and to punctuation while reading.

When the findings of the present study are examined, it can be argued that the activities performed within the enrichment reading program are effective in improving word recognition and reading aloud skills of the students having reading difficulties. In the enrichment reading program activities performed with the study group, students were provided with an environment where they could recognize their reading mistakes, learn compensation strategies and share their comprehension experiences. This environment was created in compliance with the idea proposed by Paris and Winograd (2003) that reading programs enrichment with strategies can improve reading skills. It is thought that students discussing what they read, performing group work and sharing their text-related work with their group members contributed to the development of their reading skills.

In addition, it can be argued that the enrichment reading program enabled students to make use of metacognitive strategies such as monitoring and evaluating their reading performance.

The study group students demonstrated some improvements in terms of their reading skills. These students were hesitant about participating in classroom reading activities due to the difficulties they experienced. When appropriate environment and guidance are provided, students having reading difficulties may demonstrate similar performance to their peers (Christo, Davis & Brock, 2009; Lyon, Shaywitz & Shaywitz, 2003; Vellutino, Fletcher, Snowling & Scanlon, 2004). Therefore, it is of great importance to provide the correct aids for students to overcome their reading difficulties.

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References

Akyol, H. (2010). *Türkçe İlk Okuma Yazma Öğretimi* (10. Baskı). Ankara: Pegem A.

Akyol, H. ve Yıldız, M. (2010) Okuma bozukluğu olan bir öğrencinin okuma ve yazma becerisinin geliştirilmesine yönelik bir durum çalışması., 9. Ulusal Sınıf Öğretmenliği Eğitimi Sempozyumu Elazığ: Fırat Üniversitesi.

Alexander, J. M., Carr, M., Schwanenflugel, P. J. (1995). Development of metacognition in gifted children: Directions for future research. *Developmental Review*, *15*, 137.

Baydık, B. (2011). Okuma Güçlüğü Olan Öğrencilerin Üstbilişsel Okuma Stratejilerini Kullanımı ve Öğretmenlerin Okuduğunu Anlama Öğretim Uygulamalarının İncelenmesi. *Eğitim ve Bilim*, *36*, (162). Retrived March 14, 2013 from http://egitimvebilim.ted.org.tr/index.php/EB/article/viewFile/1354/330.

Bender, W., N. (2012). *Öğrenme Güçlüğü Olan Bireyler ve Eğitimleri.* (Çev. Edt: Hakan Sarı). Ankara: Nobel.

Blanton, W. E., Wood, K. D., & Taylor, D. B. (2007). Rethinking middle school reading instruction: A basic literacy activity. *Reading Psychology, 28*, 75–95.

Bonds, C.W. & Bonds, L.G. (1992). Metacognition: developing independence in learning, *Clearing House, 66*(1), 56-59.

Chiristo, C., Davis, J. ve Brock, E. S. (2009). *Identifiyng, Assessing, and Treating Dyslexia at School.* Springer.

Exley, B. (2007). Australian children catch the bug: Motivating young children to engage in reading. *Young Children, 62*(6), 36-40.

Goodman, N., E. (2007). Word-reading strategies: English-speaking first graders learning Hebrew as a second language. Doctoral dissertation, Fordham University, New York.

Grove, M.C., & Hauptfleisch, H.M.A.M. (1982). *Remedial Education in the Primary School.* Pretoria: HAUM Educational.

Garrod, S., & Pickering, M. (1999). *Language Processing*. Hove: Psychology.

Jitendra, A. K., Hoppes, M. K. & Xin, Y. P. (2000), Enhancing Main Idea Comprehension for Students with Learning Problems: The Role of a Summarization Strategy and Self-Monitoring Instruction, *The Journal of Special Education, 30*(3), 127-139.

Kamhi, A. & Catts, H. (2008). *The language basis of reading: Implications of classification and treatment of children with reading disabilities.* In Bulter, K.& Silliman, E. (Eds.) Speaking, Reading, and Writing in Children with Language and Learning Disabilities: New Paradigms in Research and Practice.

Lanford, K. (2009). *Reading Strategies and Perceptions*. Unpublished Doctoral Dissertation. Walden University.

Lyon, G. R., Shaywitz, S. E. & Shaywitz, B. A. (2003). A Definition of Dyslexia. *Ann Dyslexia, 53,* 1-14.

Moddy, M., Kennedy, S. M., & Brady, S. (1997) Speech perception deficits in poor readers: Auditory processing or phonological coding. *Journal of Experimental Child Psychology*, *64*, 199–231

Moreillan, J. (2007*). Collaborative Strategies for Teaching Reading Comprehension. Maximizing Your Impact.* Chicago: American Library Association.

National Council on Teacher Quality. (2006). *What education schools aren't teaching about reading and what elementary teachers aren't learning*. Washington, DC: NCTQ.

OECD (Organisation for Economic Cooperation and Development). (2008).Teaching, learning and assessment for adults: Improving foundation skills. Paris: OECD. Retrived March 18, 2013 from *http://www.oecd.org/newsroom/40556222.pdf.*

Paris, S. G. & Winograd, P. (2003). The role of self-regulated learning in contextual teaching: principles and practices for teacher preparation. A Commissioned Paper for the U.S. Department of Education. *In Center for the Improvement of Early Reading Achievement.* Retrieved from http://www.ciera.org/library/archive/2001-04/0104parwin.htm.

Pikulski, J. J. (1997). *A balanced approach to literacy.* Retrieved February 21, 2008 from: http://www.eduplace.com/rdg/res/teach/index.html

Pilten, G. (2009). Okuma. İlk Okuma ve Yazma Öğretimi (Ed: Pilten, G., Temur. T., Şahin, A., Demir, E.) Pegem Akademi Yayıncılık.

Renzulli, J. S. (1976). The enrichment triad model: A guide for developing defensible programs for the gifted and talented. *Gifted Child Quarterly, 20,* 303-326.

Tekin-Iftar, E., ve Kırcaali-Iftar, G. (2006). *Özel Eğitimde Yanlışsız Öğretim Yöntemleri.* (3. baskı). Ankara: Nobel.

Temur, T. (2006). *İlk Öğretim 4 ve 5. Sınıf Öğrencilerinin Yazı Dilindeki Kelime Hazinelerinin Bazı Değişkenler Açısından İncelenmesi*. Yayımlanmamış Doktora Tezi. Gazi Üniversitesi, Eğitim Bilimler Enstitüsü, Ankara.

Torgesen, J. K. (2000). Individual differences in response to early intervention in reading: The lingering problem of treatment resisters. *Learning Disabilities Research and Practice, 15*(1), 55-64. Retrived March, 18, 2012 from http://www.fcrr.org/publications/publicationspdffiles/individual_differences.pdf

Screiber, J. F. (2003). *Exploring Metacognition and Self Regulation in an Enrichment Reading Program.* Disertation of Doctora. The University of Connecticut.

Slavin, R. E. (1995). *Cooperative integrated reading and composition (CIRC).* A brief overview: Johns Hopkins Univ., Baltimore, MD. Center for Social Organization of Schools.

Vellutino , F. R. , Fletcher , J. M. , Snowling , M. J. , & Scanlon , D. M. (2004) . Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychology and Psychiatry, 45,* 2-40 .

Westwood, P. (2008). *What Teachers Need to Know About Reading and Writing Difficulties* Australia*:* ACER.

Yangın, S. & Sidekli, S. (2006) 'Okuma güçlüğü yaşayan öğrencilerin kelime tanıma becerilerinin geliştirilmesine yönelik bir uygulama, *Muğla Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 16.* Retrived March, 18, 2012 from http://akademik.mu.edu.tr/data/06020000/resim/file/16-10%20selami%20yang%C3%84%C2%B1n%20-%20sabri%20sidekli.pdf

Yıldırım, K. (2010). *İş Birlikli Öğrenme Yönteminin Okumaya İlişkin Bazı Değişkenler Üzerindeki Etkisi ve Yönteme İlişkin Öğrenci-Veli Görüşleri*. Yayımlanmamış Doktora Tezi. Gazi Üniversitesi, Gazi Eğitim Bilimleri Enstitüsü, Ankara.

International Electronic Journal of Elementary Education, 2014, 6(2), 213-228.

A Longitudinal Study of Children's Theory of Mind, Self-Concept, and Gender-Role Orientation[1]

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Received: 14 August 2013 / Revised: 21 January 2014 / Accepted: 4 February 2014

Abstract

This study investigated the longitudinal relations between theory of mind (ToM) understanding, self-perceptions, and perceptions of gender-role orientation in 28 school-aged children, (16 girls, 12 boys, aged 8-12 years). Theory of mind and perceptions of self were assessed at Time 1 (T1, *M* = 8 y 5 m) and two years later at Time 2 (T2, *M* = 10 y 4 m). Negative correlation was found between T1 ToM and T2 Perceptions of Moral Self (*r* = -.55, *p* = .004). Positive correlations were found between T1 Perceived Masculinity and T1 ToM (*r* = .682, *p* = .015). No relations were found between ToM T1 and T2 (*r* = .281, *ns*), as well as between T1 and T2 Self-Understanding scores (*r* = .244, *ns*). Positive relations were found between self--understanding and ToM at T1 only (*r* = .394, *p* = .038). Implications for children's socioemotional development are discussed.

Keywords: Middle Childhood, Theory of Mind, Self-Concept, Gender-Role Orientation

Introduction

Evidence over the past decade suggests understanding of mind may grow from a foundation of understanding of emotions and self (Bartsch & Wellman, 1995), and develops in part through social relationships and attachment relations (Dunn, 2008; Hughes, 2011; Meins et al., 2002). Few studies, however, have examined such a link past middle childhood (Meins et al., 2006; Watson et al., 1999), and thus, there is a need to understand how the child's mind and emotion connect (Dunn, 2008). Given the important role that interactions play in children's later success in understanding other's mind and behaviour (Amsterlaw et al., 2009; de Rosnay & Hughes, 2006), there

[1] Portions of this paper were presented at the biennial meeting of the Society for Research in Child Development, April, 2013, Seattle, WA.

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remains a lack of research on how social experiences foster the growth of children's understanding mind and self including gendered aspects of one's identity.

Although Theory of Mind (ToM) development or the ability to understand thoughts and emotions in self and other is an active area of research (Dunn, 2008), empirical evidence gleaned from the later childhood and early adolescent years remains sparse (Hughes, 2011). In addition, there remains a dearth of longitudinal studies that explore whether or not reasoning about self (intrapersonal) and other (interpersonal) are reciprocal and interdependent, or remain isolated and independent from one another (Lucariello, 2005). To address this gap in the research, the purpose of the present study is to explore connections over time between children's theory of mind (ToM), or the ability to understand thoughts and emotions in self and other and their perceptions of self-worth and gender-role orientation. Our main research question is: Do links exist over time (2 years), between children's ToM understanding and their perceptions of self and gender-role orientation?

Children's Understanding of Mind and Emotion

The development of the ability to represent and reason from second-order beliefs (two or more mental states) has received relatively little attention in the literature particularly during the transition from middle to late childhood (e.g., 8 – 12 years) (Carpendale & Chandler, 1996; Carpendale & Lewis, 2004). This is surprising, given that social communication depends mainly on what people believe about other people's beliefs and emotions (Astington, 1993). Past research shows that second-order or interpretive reasoning may influence children's ability to understand speech acts such as lies, jokes, sarcasm, and irony (Filoppova & Astington, 2008, 2010; Leekam, 1993), and in their ability to understand self-representational display rules (Banerjee & Yuill, 1999; Banerjee & Watling, 2007). Given that advanced or higher order social reasoning may also help adolescents understand the ambiguous nature of personal and social silences (Bosacki, 2008), some researchers suggest such advanced reasoning is also fundamental to adolescents' understanding of social moral emotions (e.g, embarrassed, proud, etc.), their sense of self and other persons, and social interactions (Hughes, 2011).

Recent evidence suggests that ToM understanding continues to develop during middle childhood to late childhood (approximately during the ages 8-12 years), particularly regarding the understanding of complex and ambiguous emotions (Pons, et al. 2003, 2004; Yuill & Coutlas, 2007). In contrast to the simple or basic emotions (e.g., happy, sad), to understand complex or socio-moral emotions (e.g., pride, embarrassment), children must hold in mind two separate pieces of information: other people's and societal norms (Saarni, 1999). That is, children must imagine what others think of their behaviour and self-evaluate their behaviour against internalized behavioural standards. Although complex emotion understanding hinges on cognitive abilities such as second-order ToM reasoning and perceptions of self including gender-role orientation, to date, no studies have investigated the links among these concepts during middle to late childhood. Given this gap in the literature, this study will investigate individual differences in social cognition within the school context during middle childhood.

ToM and Self-Perceptions in School Context

Although ToM and self-perceptions are foundational to child's educational experiences (Bruner, 2006), few researchers have studied the relations between ToM understanding, self-perceptions, and school experiences beyond the age of 8 or 9 either within their family or school context (Bosacki, 2003; Hughes, 2011). Similar to the rich family context, the school classroom provides children with a valuable

opportunity to learn social and emotional messages regarding interactions and others' mental states. Regarding academic competence and school success, associations have been found between ToM, emotion understanding and the production of stories and general language ability (Astington & Jenkins, 1995; Denham et al., 2013). Theory of mind understanding has also been claimed to facilitate children's ability to self-monitor and regulate their cognitive process and engage in reflexive thinking (Fiasee, & Nader-Grosbois, 2012; Lagattuta & Wellman, 2002).

Although research shows that knowledge about self and others' thoughts and emotions continues to develop during middle to late childhood (Hughes, 2011), we know little about older children's ToM understanding and self-perceptions. Research studies suggest that psychological understanding is linked to higher-order, metacognitive thought or more advanced reasoning (Pine & Siegler, 2003). That is, children who possess high levels of ToM understanding or provide psychological explanations are more likely to "think about their own and others thinking" and engage in critical philosophical enquiry and shared dialogue during the school day (Haynes, 2002). Thus, given that teaching and learning is crucial to self- and ToM understanding (Bruner, 1996), this study explores how children's ToM understanding plays a role in their perceptions of self within the middle school years (Ladd, Buhs, & Troop, 2002). Also, as Hughes (2011) states, a relatively small number of studies have examined individual differences in social understanding in relation to children's own views of themselves within the context of their middle school experiences.

Children's Perceptions of Self and Gender-Roles

Another aspect of social cognitive development is also the ability to understand oneself as a concept that continues to develop during childhood and into adulthood (Harter, 1999). Past research shows that during childhood, the focus on one's gender identity during development affects children's perceptions of their physical appearance and body-image (Golombok & Hines, 2002). Previous findings show that children's perceptions of physical appearance and how they conform to societal stereotypes of gender-role orientations (e.g., societal stereotypical feminine and masculine behaviour) often serves as a source of self-worth (Aina & Cameron, 2011; Compion et al., 2004; Harter, 1999). Such societal messages may in part be transmitted and reinforced by various social agents including family, peers, and the mass media (e.g., Costarelli et al., 2011; Smolak, Levine, & Schermer, 1999). Past studies suggest that parental comments and modeling regarding gender-role stereotypes may influence children's self-perceptions and attitudes concerning physical appearance (Maccoby, 1998). However, given the possible influence of peers and teachers on children's self-perceptions and gender-role identity (McHale et al., 1999; Sandberg et al. 2006), it is surprising that few studies investigate children's understanding of self, gender-roles, and ToM in childhood within the school context.

In addition, given the notion that young females and males may use a different "metric" when forming self-judgments (Fine, 2011; Maccoby, 1998), and that perceptions of others' social and emotional worlds may be viewed differently for females and males (Bussey & Bandura, 1999; Fine, 2011), this study explored links among children's ToM understanding and understanding of self and gender-role orientation. Given that social-cultural experiences and self-conceptions are inseparable (Bronfenbrenner, 2005), the present study explored how might children's perceptions of self and gender-role relate to one's ToM ability during middle childhood. More specifically, the present study addressed the following questions: 1) Do longitudinal relations exist among children's ToM understanding, self-perceptions, and gender-role orientation at Time 1 and 2 years later at Time 2; and 2) Do individual differences exist

in children's scores and correlational patterns among variables at both time points (8 years and 10 years of age)?

Method

Participants

As part of a larger longitudinal study of children's ToM understanding and its relation to social cognitive and emotional competencies (Bosacki, 2008), this small-scale, longitudinal, correlational study focused on two time points (T1, 2006 and T2, 2008) involving 28 mainly Euro-Canadian children from middle SES, semi-rural neighbourhoods (12 boys, 16 girls, *M* = 10y, 4m).

Procedures

Upon obtaining ethical clearance from the universities, school board, principals, teachers, parents, and students, each year children completed standardized pencil and paper measures and participated in individual interviews that involved social stories to assess children's ToM understanding (e.g., how did they interpret mental states in others), and their perceptions of self (physical appearance, behavioural or moral conduct, and global self-worth) and gender-role orientation (perceived femininity and masculinity). Only those children who received written parental permission and agreed verbally participated in the study.

Data collection each year (T1 and T2) consisted of two stages; the first stage consisted of a group, in-class session where three trained female researchers group administered a pencil-and-paper self-report questionnaire regarding self-perceptions and gender-role orientation to the children. To facilitate task completion, researchers provided explicit written (on the blackboard) and verbal task instructions to the children. Following this group instruction session, one researcher read aloud the questionnaire items to the participants and the children completed the task together item by item. The two remaining researchers monitored the class session and addressed any questions that children had as they completed the task. This task was completed within a 30 minute class period.

The second stage involved an individual session in which children were administered two story-interviews to explore TOM (order of stories was counterbalanced), followed by a series of questions to assess their self- understanding. Interviews were conducted in a small room outside of the classroom and all interviews were audiotaped and transcribed. The interview session was approximately 20-30 minutes in length. Demographic information pertaining to family structure was obtained through parent questionnaire. Children also participated in a semi-structured interview regarding self-understanding that focused continuity, distinctiveness, and agency (Damon & Hart, 1988). All tasks were administered by three trained female researchers, and children were reminded that their responses would remain confidential, and that they had the opportunity to ask questions or stop at any time during the research.

This study focuses on tasks conducted during each of two time points (T1 = 2006/7, T2 = 2008/9), the ToM story and self-understanding interviews (February-April T1, T2) and the self-report questionnaire to assess self-perceptions and gender-role orientation (November – April, T1, T2). As noted above, the self-concept questionnaire (SPSSC, Harter, 1985) was group administered within class, whereas the ToM story and self-understanding interviews were conducted within a quiet room outside of the classroom during school time. Interviews were audiotaped for subsequent transcription and analysis.

Measures

Theory of Mind Understanding (Social Ambiguous Stories) (Bosacki, 2000; Bosacki & Astington, 1999). Gleaned from past research, to assess ToM understanding or understanding other's mental states and emotions), adapted versions of two brief vignettes consisting of an ambiguous social situation) that describe an ambiguous social event with three children (one story involves three females, one story involves three male) were read to the child (Bosacki, 2008). Borrowing from theoretical work that views ToM as a vehicle or instrument that is used to co-construct or narrate ones' social reality (Astington, 1993; Bruner, 2006), and studies that investigate an advanced ToM through the use of narratives (Artar, 2007; Charman & Shumeli-Goetx, 2008; Fiasse & Nader-Grosbois, 2012; Happe, 1994), this task aimed to asses the ToM involved in interpreting social meaning from ambiguous stories.

The stories were socially ambiguous because past research has found children's interpretations of ambiguous social situations to be an effective method of eliciting children's representational understanding of mind and emotion (Dodge & Frame, 1982; Levinson, 1995). Thus, this task was developed to strike a balance between projective, open-ended narrative tasks (e.g., Fox, 1991; Selman, 1980), and more forced-choice, experimental tasks (e.g., see Baron-Cohen, 2011). The two stories involved one scenario for girls (an unfamiliar girl approaches two friends already engaged; two boys on a sports team need to choose another boy for their team). However, no reason was given in this story to explain why the actors did not speak to the recipient. Thus, participants had to infer the reason that the actors disregarded the recipient. The following stories are excerpts from the Nancy Margie and Kenny/Mark Social Ambiguous Story Interviews used to assess participants' understanding of emotions and mental states (Bosacki, 2000).

Nancy/Margie

Nancy and Margie are watching the children in the playground. Without saying a word, Nancy nudges Margie and looks across the playground at the new girl swinging on the swing set. Then Nancy looks back at Margie and smiles. Margie nods, and the two of them start off toward the girl at the swingset. The new girl sees the strange girl walk towards her. She'd seen them nudging and smiling at each other. Although they are in her class, she has never spoken to them before. The new girl wonders what they could want.

Kenny/Mark

Kenny and Mark are co-captains of the soccer team. They have one person left to choose for the team. Without saying a word, Mark winks at Kenny and looks at Tom who is one of the last children left to be chosen. Mark looks back at Kenny and smiles. Kenny nods and chooses Tom to be on their team. Tom sees Mark and Kenny winking and smiling at each other. Tom, who is usually one of the last to be picked for team sports, wonders why Kenny wants him to be on his team.

The stories were followed by questions that assessed emotion understanding including emotion word labelling and understanding of situational causes of emotions. In addition, following each narrative, the children were asked to imagine and predict what the characters would do next, what they be thinking and feeling, and whether or not the actions would be considered the 'right' or 'wrong' thing or moral judgements. They were also asked to imagine what would happen next in the story. Based on past research (Bosacki, 2000), responses to each emotion were coded according to their accurateness (mental state and emotional labelling), and their level of conceptual sophistication (understanding of the socially ambiguous situation, or what causes

emotions for both self and peer). For example, a code of 0 was provided for intangential or "I don't know responses,"1 = behavioral/physical responses such as "Tom would walk away and play elselwhere.", 2 = Psychological that would include references to at least 1-2 psychological or emotional state such as "Tom thought that Kenny and Mark were unfair." 3 = Integrated psychological response which would be a sophisticated response involving a complex (3 or more), and/or contradictory combination of psychological emotional terms (e.g., "Tom felt that Kenny and Mark were angry with him and wanted to trick him into thinking they were his friends."). Responses were also coded for emotional valence including positive, negative, and neutral scenarios.

Cronbach's alpha for the 21-item aggregate score for the Nancy/Margie/new girl and Kenny/Mark/Tom story was .67 and 69 respectively. To obtain as sensitive a ToM measure as possible, children's scores on the Nancy?Margie/new girl and Kenny/Mark/Tom (0-21) were summed into a reliable composite (0–42). For the present sample, Cronbach's alpha for the sum of these two scores was α = .69. Consistent with past research (Bosacki), this was deemed to indicate modest, but adequate, internal consistency to use the combined total score as our main index of Time 1 ToM understanding (M = 23.34; SD = 4.56, range 0-42). Randomly selected 25% of the transcripts were coded by a second independent coder, resulting in an average kappa of (.92) across the two stories. Discrepancies were discussed until consensus was achieved.

Self-concept. To assess children's perceptions of their competencies, three subscales from Harter's (1985) Self-Perception Profile for Children (SPPC) were used. Based on past literature (Cassidy, 1999; Harter, 1999), the present study focused on three aspects that some researchers consider particularly relevant to children including: perceived behavioral conduct (6 items, e.g., "how well-behaved do you think you are," Cronbach's alpha = .81), physical appearance (6 items, e.g., "how good-looking do you think you are," Cronbach's alpha = .79), and global self-worth (6 items, e,g., "how happy are you being who you are?" Cronbach's alpha = .89). Randomly selected 25% of the transcripts were coded by a second independent coder, resulting in an average kappa of (.90) across the two coders. Discrepancies were discussed until consensus was achieved.

Self-understanding. To assess the complexity of the self-system, in addition to assessing the evaluative or objective component of self as measured by the SPPC, children were also asked questions to assess the subjective self. Adapted from questions from past research, these questions addressed topics of continuity, agency, and distinctiveness. (Damon & Hart, 1988). Randomly selected 25% of the transcripts were coded by a second independent coder, resulting in an average kappa of (.88) across the two coders. Discrepancies were discussed until consensus was achieved.

Gender-Role Perceptions. To assess children's self-perceived gender roles, children were administered a self-report questionnaire that contained items gleaned from two standard measures used in research on children's gender role perception. Stereotypical masculine, feminine and neutral items concerning characteristics and activities were gleaned from the Children's Sex Role Inventory (CSRI, Boldizar, 1991), and a recent study on gender roles in middle childhood (McHale et al., 1999). The present study focused on the masculinity items (6 items, e.g., "I am good at sports." Cronbach's alpha = .70) and the femininity items (6 items, e.g., "I like babies and small children a lot." Cronbach's alpha = .72). This scale was presented orally to the children and after each item they were asked to respond to a Likert-type scale of pictures indicating how true it was for them.

Results

Descriptive Statistics and Preliminary Analysis

Data analysis based on a coding scheme developed from previous research was derived from the ToM interview questions to create a composite ToM understanding score (Bosacki, 2000). Thus, higher ToM scores represented a more sophisticated understanding of emotion and mental state concepts. Likewise, a coding scheme was derived from the self-understanding questions to create a total composite subjective self-understanding score as mentioned above. Accordingly, higher scores represented higher perception of self-understanding. High ToM, Self-Perceptions, Self-Understanding, and Gender-Role Orientation scores represented a more sophisticated understanding of both mental states in others and one's own self-theory including perceived femininity and masculinity.

Task Performances and Individual Differences

Table 1. Means and Standard Deviations of Main Variables for Time 1 and Time 2

	Time 1 (n = 28)[1]	Time 2 (n = 28)[2]	T	p
Variable	M (SD)	M (SD)		
ToM Total[3]	27.29 (19.17)	39.00 (3.42)	3.35	.00
Femininity	15.00 (4.21)	16.81 (3.72)	1.59	.13
Masculinity[4]	12.30 (3.70)	17.35 (5.21)	4.11	.00
Self-Understanding[5]	4.18 (4.44)	13.09 (8.36)	4.95	.00
Self-Perceptions[6]				
Behavioural Conduct	15.29 (3.3)	15.08 (3.08)	-.38	.71
Physical Appearance	16.61 (3.02)	15.12 (2.35)	-1.48	.15
Global Self-Worth	18.04 (7.27)	15.95 (1.62)	-1.50	.15

Note. 1. Mean Age = 8 y; 5 mos. 2. Mean Age: 10 y; 4 mos 3. Total Theory of Mind Score (Bosacki, 2000); range 0 – 42; higher scores reflect higher ToM understanding. 4. Higher scores reflect higher gender-role orientation perception, T1 N = 28, T2 N = 23. 5. Total Self-Understanding Score (Bosacki, 2005); range 0 – 10; higher scores reflect higher Self-Understanding. 6. SPSS (Harter, 1985); range 0-24; higher scores reflect higher self-perceptions.

Table 2. Longitudinal Correlations Between Time 1[1] and Time 2[2] for Main Variables

Variable	1.	2.	3.	4.	5.	6.	7.
1. ToM Total[3]	--	-.26	.68*	.39*	-.00	.15	-.34
2. Femininity[4]	-.34	----	-.38	.16	-.10	-.24	-.14
3. Masculinity[4]	-.05	.01	----	-.01	-.03	.14	-.18
4. Self-Understanding[5]	-.13	.00	.26	---	-.06	-.39*	.04

Table 2 (Cont). Longitudinal Correlations Between Time 1[1] and Time 2[2] for Main Variables

Variable	1.	2.	3.	4.	5.	6.	7.
Self-Perceptions[6]							
5. Behavioral Conduct	.18	-.12	-.02	-.06	----	.44*	-.04
6. Physical Appearance	.42	-.10	.09	.25	.17	---	.15
7. Global Self-Worth	.37	-.03	.34	.19	.48*	.47*	------

Note. Time 1 (n = 28)[1] above the diagonal, Time 2 (n = 28)[2] below the diagonal. 1. Mean Age = 8 y; 5 mos. 2. Mean Age: 10 y; 4 mos 3. Total Theory of Mind Score (Bosacki, 2000); range 0 – 42; higher scores reflect higher ToM understanding. 4. Higher scores reflect higher gender-role orientation perception 5. Total Self-Understanding Score (Bosacki, 2008); range 0 – 10; higher scores reflect higher Self-Understanding. 6. SPSS (Harter, 1985); range 0-24; higher scores reflect higher self-perceptions.

* $M = p < .10$; $p = < .05$.

Longitudinal Individual Differences

Examination of the means of the main variables (T1, T2: ToM, SPCC, Gender-Role Orientations) showed significant effects for time for ToM, Self-Understanding and Perceived Masculinity (see Table 1). Paired T-tests showed significant increases between Time 1 and Time 2 ToM Total scores, Self-Understanding Scores and Perceived Masculinity. In contrast, Self-Perception scores did not increase significantly from T1 and T2.

Cross-sectional and Longitudinal Correlational analysis

Correlational analysis was conducted between aggregate ToM scores, self-perceptions and understanding and gender-role orientation variables cross-sectionally at T1 and T2, as well as longitudinally between T1 and T2 scores.

Table 2 shows cross-sectional correlations, for ToM, self-perceptions and understanding, and gender-role orientation correlations at T1 and T2. Results showed significant positive correlations between T1 ToM scores and T1 perceived Masculinity (r(27) = .68, p = .015), but not at Time 2. Self-Understanding and ToM were related at T1 only (r(27) = .39, p = .038). A negative correlation was found between self-understanding and perceived physical self-concept at T1 only (r(27) = -.39, p = .039).

Regarding longitudinal relations between T1 and T2, children's T1 Total ToM scores and their perceptions of self at T2 showed significant negative correlations between T1 Total ToM scores and T2 children's perceptions of behavioral conduct or a moral sense of self: r(24) = -.55, p = .004; and perceptions of global self-worth: r(22) = -43, p < .05). These results support previous research that found negative relations between ToM and self-perceptions (Bosacki, 2000). Regarding connections between Time 1 and Time 2 ToM and self-concept scores, no correlations were found between Time 1 and Time 2 ToM scores (r(26) = .28, p = *ns*). Similarly, no relations were found between children's T1 and T2 self-perceptions were found, nor T1 and T2 self-understanding total scores.

Regarding longitudinal relations between T1 and T2 among perceptions of gender-role self, ToM, a marginally significant negative correlation was found between perceptions of global self worth at Time 1 and self-understanding at Time 2 (r(27) -

.413 *p* =.056). This result suggests that children who were happy with who they were and had a positive view of self-worth reported less self-understanding at 10 years of age. Alternatively, children at 8 years who reported a negative feeling of self-worth were more likely to report a great sense of self-understanding at 10 years of age.

Regarding longitudinal relations between self-understanding and gender-role perceptions, a significant relation was found between perceived masculinity at T1 and self-understanding at T2 (*r*(22) = .502, *p* =.017, whereas a marginally significant positive correlation was found between perceived T1 femininity T2 self-understanding *(r*(22) = .384, *p* =.08. The positive relation between perceived masculinity and self-understanding two years later suggests that children who were more likely to perceive themselves as stereotypically masculine or relating to stereotypic masculine characteristics (e.g., I am good at sports) were more likely to report a greater sense of self-understanding two years later at 10 years of age. No correlations were found between self-understanding at Time 1 or 2 and Gender-Role at T2.

In sum, associations between children's ToM understanding and their perception of self and gender-role orientation across time holds many educational and clinical implications that will be discussed in the next section.

Discussion

This small-scale longitudinal study examined the links between children's ToM understanding, perceptions of self and gender-role orientation at 8 years of age, and then 2 years later at 10 years of age. One of the main strengths of this study is that it follows a research design of a relatively small-scale, longitudinal study that combines both qualitative and quantitative analyses (Creswell, 2012). Given that the present findings expand children's perspectives regarding ToM, self-perceptions and gender-role orientation, this study offers a unique contribution to the existing literature regarding ToM in later childhood. Accordingly, the main findings are discussed in terms of the following research questions 1) Do longitudinal relations exist among children's ToM understanding and their perceptions of self and gender-role orientation at 8 years of age and two years later at 10 years of age, and 2) Do individual differences in children's scores and correlational patterns among variables exist? Findings will be then be discussed in terms of the extant literature on ToM, self-concept, and gender-role orientation.

Regarding the first research question, examination of the means showed significant age effects for ToM understanding, self-understanding, and perceived masculinity. That is the older the children, the higher the ToM understanding, self-understanding, and perceived masculinity scores. From a psychocultural and social cognitive perspective, (e.g., Bussey & Bandura, 2004; Bronfenbrenner, 2005; Maccoby, 1998), such findings can be explained in terms of the interplay among self-understanding, stereotypic societal gender-role expectations and their link to Theory of Mind. Given past research that suggests children develop their ToM and self-concept through an interaction of cognitive development and social interactions (de Rosnay et al., 2006), perhaps the increase in scores over the two years is partly due to an interaction of individual and environmental factors. That is, the increase in ToM and self-perceptions may be due in part to the combination of increased cognitive ability to think about the self-concept in a more coherent sense including a more comprehensive gender identity. In addition, increased social exposure to others, particularly one's peer group and conversations regarding others' mental states may help to develop one self's concept.

Guided by the second research question that asked: "Do individual differences in children's scores and correlational patterns among variables exist?," for both Time 1 and 2, self-understanding was unrelated to perceived self-competence regarding

behavioral conduct, physical appearance, and global self-worth. The one exception was a significant negative relation between T1 self-understanding and T1 physical self-concept, suggesting that for 8-year-olds only, the higher children scored on self-understanding or understood themselves in terms of continuity, agency and distinctiveness, they more likely they were to report negative comments about their physical sense of self. Alternatively, the lower children scored on self-understanding, the more positive they rated their physical appearance. That is, participants who experienced difficulty in understanding themselves as psychological beings, in a more conceptual, cognitively complex way were also more likely to evaluate their physical appearance in a positive way.

Such findings support claims that the self-concept is a multidimensional and dynamic process that continues to develop with age, and may contain either inter-related or independent dimensions (e.g., Bruner, 1996; Gergen, 2001). Furthermore, such findings support past developmental research that suggests that younger children tend to focus more on the physical aspect of the self and as they age, they begin to include further psychological aspects of their self-concept (Harter, 1999). As many researchers claim (Bussey & Bandura, 2004; Harter 1999; Harre, 1986), we need to learn what kind of role self-mechanisms such as self-regulatory functions play in ToM understanding and how this may differ according to gender, ethnicity, socioeconomic status, etc. Future research needs to explore the possible influences on, and connections between children's developing ability to judge or evaluate themselves as well as understand themselves as conceptual beings.

Regarding findings concerning ToM and perceptions of self and gender-role, how do we explain the finding that at 8 years of age only, children who scored higher in ToM also viewed themselves as more stereotypically masculine? Relatedly, perceived masculinity at 8 years old was also correlated positively with self-understanding at 10 years. Given that only the younger children showed a positive link between ToM and perceived masculinity, perhaps at 8 years of age children who are more likely to understand mental states in self and others may also be more likely to understand the complexity of gender-stereotypic characteristics of masculinity such as "I like to play sports." that this kind of statement can be applied to both males and females. Given the development of the conceptual self, the positive relation between perceived masculinity at 8 years of age and self-understand at 10 years of age supports research that shows that children's concept of self may expand and become more complex and multidimensional in that one's perception of gender-roles may also become integrated into one's larger conceptual sense of self (Harter, 1999). Thus, perhaps at 8 years of age, children who thought of themselves in more stereotypical masculine ways were also more likely to have a more coherent sense of conceptual self at 10 years.

Regarding the connections between ToM and self-concept, we found two significant relations, one positive relation between ToM and self-understanding at 8 years and not at 10 years. The second ToM and self correlation was the negative relation between ToM at T1 and a perceptions of behavioural conduct or a moral sense of self – that is, how well children perceived themselves to be well behaved according to social conventions. Both findings will be discussed in turn.

We first need to explain why children who scored high on ToM also scored high on self-understanding at 8 years old but not 10 years of age. Given that a sense of self and other's mental states may develop through initial child-caregiver interactions (attachment theory perspective, see Meins et al., 2002), perhaps children's sense of self and other are more connected in younger childhood and becomes more differentiated. That is, from an attachment-theory perspective, the internal working model (IWM) of the self and other becomes more multidimensional and complex as it

may grow and expand with new relationships beyond the initial caregiver-child relationship.

We also need to explain the negative correlation between ToM at T1 and perceptions of behavioural conduct or a moral sense of self at T2. Perhaps this finding could be explained that if children were more likely to understand mental states of self and other at 8 years old they were also less likely to see themselves as 'following the rules' or social conventions at school when they are 10 years old. Perhaps having the ability to see other peoples' perspectives at 8 years helps to develop the ability to see various ways that 'rules' are created by society and as children grow older, they are more likely to question the rules, or find other ways to follow the rules – or learn about how rules are created based on others' perspectives within society. Alternatively, children who scored low on ToM at 8 years may have been less likely to understand the perspectives of others which in turn may have led them to perceive themselves as more well-behaved and likely to follow social conventions at 10 years old. As both explanations are complex and researchers need to continue to explore the longitudinal connections between ToM and moral development and behaviour (Lagattuta, Nucci, & Bosacki, 2010; Nucci, 2009).

The present findings regarding the links between ToM and self-perceptions could also be explained within the context of gendered parent-child and/or teacher-child emotion talk (Meins et al., 2002). That is, perhaps the parents of the participants in the present study engaged in gender-differentiated behaviours and mental state talk with their daughters and sons. In addition to parents, Denham and colleagues (2013) assert teachers also play a crucial role in shaping their children's social and emotional competence. Thus, teachers may play a crucial role in children's developing ToM and perceptions of self as thus may act serve as emotion or psychosocial "coaches" in that they could promote the development of social cognitive competencies.

The present findings support past research that suggests that children's higher ToM abilities may lead them to imagine what their friends think about them either in a positive or negative way. That is, the present findings support past studies that found some children with a sophisticated ToM ability may be more sensitive to teacher criticism and more likely to interpret hidden social messages among peers including negative experiences with peers (Caravita, Di Biasio, & Salmivalli, 2010; Dunn, 2008; Hughes, 2011). Perhaps a more developed ToM ability may serve as a double-edged sword and may help some children to decipher ambiguous social messages which may include both positive and negative messages. Researchers need to continue to explore how children's ToM and perceptions of self and gender-role may have an influence on their school adjustment and well being in school (Zambo & Brem, 2004).

Implications

The results of this study may help to remind educators and researchers of the importance of children' developing ability to think about oneself and others as psychological beings. Those who work with children also need to be cognizant that middle to late-childhood is a time when females and males develop an increasing awareness of increased social consciousness and social pressures to conform to gender-stereotypic norms (Fine, 2011; Maccoby, 1999). This study may help to increase researchers' and educators' awareness of how gender-stereotypic beliefs may affect children' socioemotional development. Accordingly, the current findings may encourage youth workers to minimize the extent to which they use gender-stereotypic language and behaviour around gradeschool-aged children. Moreover, adults should be encouraged to emphasize emotion vocabulary and to articulate often how they are feeling and thinking. As noted by Kitayama et al. (1995), to provide a "thicker"

description of children's emotional understanding, researchers need to examine the "emotional culture" of the home by exploring the possible influences of all family members - mothers, fathers, siblings and extended family.

Given the limitations of the present study (e.g., small-scale, longitudinal correlational study, lack of general intelligence measure, ethnically homogeneous sample), interpretations of the present findings are to be made with caution. Given the complex process of the co-construction of ToM and perceptions of self and gender-roles, semi-structured interviews with story narratives and self-report questionnaires may not have been able to capture a complete reflection of such a dynamic process. Moreover, given the complex process of self-socialization (Maccoby, 1998), future research needs to investigate additional socialization agents who may influence the development of ToM and perceptions of self and gender-role, including peers, teachers, family members, as well as the influence of media experiences with text (paper, electronic), Internet, television, film, etc. (Bosacki, 2008).

In sum, findings from this study suggest that longitudinal associations exist between children's ToM understanding, and how they think and feel about themselves and their gender-roles in the middle school grades Such findings support previous research (e.g, Cutting & Dunn, 1999' Jenkins & Astington, 1996), and theorists' claims that self-perceptions and gender-role perception may play significant roles in children' ToM understanding (Hughes, 2011). Thus, this research makes two significant contributions to the current discourse on the nature of social cognition in middle childhood. Theoretically, it highlights the complex connection between children's ToM and perceptions of self and gender-role orientation. Practically, beyond contributing to theories of social cognition, these results have practical significance in that changes in ToM and perceptions of self and gender-role orientation play an integral part in children's everyday experience in the middle school setting.

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References

Aina, O. E. & Cameron, P. A. (2011). Why does gender matter? Counteracting stereotypes with young children. *Dimensions of Early Childhood, 39* (3), 11-19.

Amsterlaw, J., Lagatutta, K., & Meltzoff, A. (2009). Young children's reasoning about the effects of emotional and physiological states on academic performance. *Child Development, 80*, 15-133.

Artar, M. (2007). Adolescent egocentrism and theory of mind in the context of family relations. *Social Behavior and Personality, 35*, 1211-1220.

Astington, J., & Pelletier, J. (1997, April). *Young children's theory of mind and its relation to their success in school.* Paper presented at the Biennial Meeting of the Society for Research in Child Development, Washington, DC.

Banerjee, M., & Yuill, N. (1999). Children's understanding of self-presentational display rules: Associations with mental-state understanding. *British Journal of Developmental Psychology, 17,* 111-124.

Banerjee, R., & Watling, D. (2007, June). *Children's understanding of faux pas: Longitudinal associations between socio-emotional understanding and peer relations*. Paper presented at the annual meeting of the Jean Piaget Society, Amsterdam, ND.

Baron-Cohen, S. (2011). *The science of evil: On empathy and the origins of cruelty*. New York: Basic Books.

Boldizar, J. (1991). Assessing sex typing and androgyny in children. *Developmental Psychology, 27,* 505-515.

Bosacki, S. (2000). Theory of mind and self-concept in preadolescents: Links with gender and language. *Journal of Educational Psychology, 92,* 709-717.

Bosacki, S. (2003). Psychological pragmatics in preadolescents: Sociomoral understanding, self-worth, and school behavior. *Journal of Youth and Adolescence, 32,* 141-155.

Bosacki, S. (2008). *Children's emotional lives: Sensitive shadows in the classroom*. New York: Peter Lang.

Bosacki, S., & Astington, J. (1999). Theory of mind in preadolescence: Relations between social understanding and social competence. *Social Development, 8, 237-255*.

Bronfenbrenner, U. (2005). (Ed). *Making human beings human: Bioecological perspectives on human development*. Thousand Oaks, CA: Sage Publications.

Bruner, J. (1996). *The culture of education.* Cambridge, MA: Harvard University Press.

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review, 106,* 676-713.

Caravita, S., Di Biasio, P., & Salmivalli, C. (2010). Early adolescents' participation in bullying: Is ToM involved*? The Journal of Early Adolescence, 30,* 138-170.

Carpendale, J., & Chandler, M. J. (1996). On the distinction between false belief understanding and subscribing to an interpretive theory of mind. *Child Development, 67*, 1686-1706.

Carpendale, J., & Lewis, C. (2004). Constructing an understanding of mind: The development of children's social interaction within social interaction. *Behavioral and Brain Sciences, 27*, 79–151.

Cassidy, J., Ross, D., Butkovsky, L., & Braungart, J. (1992). Family-peer connections: The roles of emotional expressiveness within the family and children's understanding of emotions. *Child Development, 63,* 603-618.

Compian, L., Gowen, L. K., & Hayward, C. (2004). Peripubertal girls' romantic and platonic involvement with boys: Associations with body image and depression symptoms. *Journal of Research on Adolescence, 14,* 23-47.

Costarelli, V., Antonopoulou, K., & Mavrovounioti, C. (2011). Psychosocial characteristics in relation to disordered eating attitudes in Greek adolescents. *European Eating Disorders Review, 19*, 322-330.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* (4th Ed.). Upper Saddle River, NJ: Merrill Prentice Hall.

Cutting, A., & Dunn, J. (2002). The costs of understanding other people: social cognition predicts young children's sensitivity to criticism. *Journal of Child Psychology and Psychiatry, 43*, 849-860.

Damon, W., & Hart, D. (1988*). Self-understanding in childhood and adolescence.* New York: Cambridge University Press.

Denham, S., Way, E., Kalb, S., Warren-Khot, H., & Bassett, H. (2013). Preschoolers' social information processing and early school success: The challenging situations task. *British Journal of Developmental Psychology, 31*, 180-197.

de Rosnay, M., & Hughes, C. (2006). Conversation and theory of mind: Do children talk their way to socio-cognitive understanding*? British Journal of Developmental Psychology 24*, 7-37.

Dunn, J. (1995). Children as psychologists: The later correlates of individual differences in understanding of emotions and other minds. *Emotion and Cognition, 9,* 187-201.

Dunn, J. (2008). Relationships and children's discovery of the mind. In U. Muller, N. Budwig, & B. Sokol., (Eds.), *Social life and social knowledge: Toward a process account of development* (pp. 171-182). New York: Lawrence Erlbaum Associates.

Fiasee, C. & Nader-Grosbois, N. (2012). Perceived social acceptance, theory of mind, and children with intellectual disabilities. *Research in Developmental Disabilities, 33,*1871-1880.

Filoppova, E., & Astington, J. (2008). Further developments in social reasoning revealed in discourse irony understanding*. Child Development, 79*, 126-138.

Filoppova, E., & Astington, J. (2010). Children's understanding of social-cognitive and social-communicative aspects of discourse irony*. Child Development, 81*, 913-928.

Gergen, M. (2001).*Feminist reconstructions in psychology*. Sage, Thousand Oaks, CA.

Golombok, S., & Hines, M. (2002). Sex differences in social behavior. In P. K. Smith (Ed.) & C.

H. Hart (Ed.), *Blackwell handbook of childhood social development. Blackwell handbooks of developmental psychology*., (pp. 117-136). Malden: Blackwell Publishing,

Harter, S. (1985). *Manual for the self-perception profile for children (SPPC).* University of Denver.

Harter, S. (1999). *The construction of the self: A developmental perspective.* New York: Guilford Press.

Hughes, C. (2011). Social understanding and social lives: From toddlerhood through to the transition to school. New York: Psychology Press.

Hughes, C., & Dunn, J. (1998). Theory of mind and emotion understanding: Longitudinal associations with mental-state talk between young friends. *Developmental Psychology, 34,* 1026-1037.

Lagutatta, K., Nucci, L., & Bosacki, S. (2010). Bridging theory of mind and the personal domain: Children's reasoning about resistance to parental control. *Child Development, 81, 616-635.*

Leekam, S. (1993). Children's understanding of mind. In M. Bennett (Ed.), *The child as psychologist: An introduction to the development of social cognition* (pp. 191-198). New York: Harvester Wheatsheaf.

Meins, E., Fernyhough, C., Johnson, F., & Lidstone, J. (2006). Mind-mindedness in children: Individual differences in internal-state talk in middle childhood. *British Journal of Developmental Psychology, 24,* 181–196. doi:10.1348/026151005X80174

Meins, E., Fernyhough, Ch., Wainwright, R., Clark-Carter, D., Das Gupta, M., Fradley, E.. (2003). Pathways to understanding mind: Construct validity and predictive validity of maternal mind-mindedness*. Child Development, 74(4)*, 1194–1211.

Maccoby, E. (1998). *The two sexes: Growing up apart, coming together.* Cambridge, MA: Harvard University Press.

McHale, S., Crouter, A., & Tucker, C. (1999). Family context and gender role socialization in middle childhood: Comparing girls to boys and sisters to brothers. *Child Development, 70,* 990-1004.

Nucci, L. (2009). *Nice is not enough: Facilitating moral development*. Upper Saddle River, NJ: Pearson.

Lagatutta, K., & Wellman, H. M. (2002). Differences in early parent-child conversations about negative versus positive emotions. *Developmental Psychology*, *38*, 564–580.

Pons, F., Lawson, J., Harris, Pl., & de Rosnay, M. (2003). Individual differences in children's emotion understanding: Effects of age and language. *Scandinavian Journal of Psychology, 44*, 347-411.

Pons, F., Harris, P. L., & de Rosnay, M. (2004). Emotion comprehension between 3 and 11 years: Developmental periods and hierarchical organization. *European Journal of Developmental Psychology, 2(*1), 127–152.

Sandberg, A., & Pramling-Samuelsson, I. (2005). An interview study of gender difference in preschool teachers' attitudes toward children's play. *Early Childhood Education Journal*, *32*(5), 297-305.

Watson, A., Nixon, C., Wilson, A., & Capage, L. (1999). Social interaction skills and theory of mind in young children. *Developmental Psychology, 35,* 386-391.

Yuill, N., & Coultas, J. (2007, June). *The relation between emotion recognition and social experience in early adolescence.* Poster presented at the annual meeting of the Jean Piaget Society, Amsterdam, ND.

Zambo, D., & Brem, S. (2004). Emotion and cognition in students who struggle to read: New insights and ideas. *Reading Psychology, 25*, 189-204.

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International Electronic Journal of Elementary Education, 2014, 6(2), 229-256.

Unlocking Elementary Students' Perspectives of Leadership

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Received: 4 May 2013 / Revised: 25 September 2013 / Accepted: 3 November 2013

Abstract

This study examines whether and how principals take their lead from students, and use student voice, to create more responsive schools, and more responsible models of leadership. I consider issues of student agency and voice within four very different elementary school settings. Further, I consider the challenges students face, and the ways principals are preparing to address these challenges. In this study I address roadblocks to responsive leadership in urban, suburban, and rural schools using a cogenerative qualitative approach that principals and students can use to create new dialogue and shared theories that are focused on improving both administrative function and the instructional programs of their schools.This approach has revealed a new shared theory which includes students in models of school leadership. Central to this theory is a call for principals to use more student-driven approaches, so that young students can be empowered as learners and leaders in their own right.

Keywords: Student Voice, Educational Leadership, Elementary Education, Student Agency, Cogenerative Dialogue

Introduction

The need for principals to have the time and tools to focus on instruction and student learning has continued to intensify with the introduction of federal accountability mandates such as No Child Left Behind (NCLB) and Race to The Top (RTT). At the same time, the incongruence between what principals want to do instructionally and have time to do, create dire consequences for school leaders and their work in making a difference in schools regarding staff and student improvement.

Principals today are spending more time focusing on teaching and learning than ever before. This shift away from the office implies that more direct relationships between principals and the instructional program are necessary if new models of

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leadership are going to replace earlier models that limited contact with students to matters of discipline, and classroom visits to teacher feedback, supervision, and modeling (Waters et al., 2003). Research into issues of administration has emphasized reflective and inquiry-oriented approaches to working with teachers (Blase & Blase, 1999). As a result, principals now collaborate more with others before making decisions and many employ models of distributive leadership in which adults share in responsibilities that were typically overseen by the administrator (Spillane et al., 2001). Despite these efforts towards reorganization, schools have neglected to include students in more responsive models of leadership, and research has largely ignored the inherent possibilities.

The purpose of this study is to discover how principals have performed in their role as instructional leaders, and to determine by what means their thinking or behaviors associated with this role have been shaped in part by elementary school students. In order to build on what is already known about how students perceive school, learning, and leadership, this study will attempt to answer the following questions:

- What, from the perspective of elementary school students, are the most significant challenges faced in schools?
- How do principals help these children cope with the challenges they face?

Overview

My study analyzes whether and how principals take their lead from students, and use student voice, to create more responsive schools, and a more responsible principalship. In order to describe and explain how principals have used students' perspectives to meaningfully structure their experiences of schools and learning, further investigation into how students can naturally inform the work being done by principals may help to bring students' attitudes and feelings about principals into the dominant discourse on effective leadership practice.

Rather than focus on one aspect of educational leadership (e.g., visibility of the principal), I am focusing on the instructional behaviors of principals as seen through the eyes of the students, the administrators themselves, and my own observations of the interactions between these two often disparate members of the school community. By capturing the work that's being done in schools where students, principals, and parents are interested in developing a meaningful dialogue about learning and leadership, I have begun to better understand how the relationships between students and principals may lead to more efficient instructional programs, increased communication, and student empowerment.

Background: Educational Leadership

The principal's role has historically been that of manager. Typical administrative responsibilities in schools have been defined by Portin et al., (1998) as: (a) maintaining safe schools, (b) overseeing the budget, (c) completing and submitting reports, (d) complying with regulations and mandates, (e) coping with teacher and student behavior issues, and (f) dealing with parents. In the 1980s, research into effective schools gave birth to the connection between school leader and school success (Teddlie & Reynolds, 2000). For the first time principals began to pay more attention to student learning in an effort to make schools more effective. More recently the expanding job, and its increasing focus on accountability, standardization, and resource allocation, has necessitated the emergence of an instructional leader (Cooley & Shen, 2003; Walker, 2010), capable of impacting student achievement (Leithwood et al., 2004; Waters et al., 2003).

The changes brought on by No Child Left Behind and Race to The Top have forced principals into the spotlight at a time when many schools are coping with significant changes in the socioeconomic composition of their student body, adjusting to a steady influx of English Language Learners (ELL), and pushing towards inclusion of students with special needs in regular education classrooms. More current descriptions of the leadership role include: initiators of change, educational visionaries, curriculum and assessment experts, budget analysts, special program administrators, school managers, personnel administrators, and community builders (Darling-Hammond, 2007). School leadership is now widely regarded as second only to classroom instruction as an influence on student learning (Leithwood et al., 2006).

Just as the relationships between principals and schools have changed, so too have the relationships principals are having with teachers and students. Principals are spending more time observing teaching and learning than ever before. The old model of formal, one-person leadership is no longer realistic (Lambert, 1998), and with the increase in job demands principals now collaborate more with others before making decisions (Wulff, 1996) and employ models of distributive leadership (Spillane et al., 2001) in which adults share in responsibilities that were typically overseen by the administrator. These models of leadership have, until now, included teacher-leaders, principal-teachers, assistant or associate principals, co-principals, and management service coordinators (DiPaola & Tschannen-Moran, 2003), and provide principals with opportunities to focus more on their capacity as instructional leader (Walker, 2010). Despite these efforts towards reorganization, schools have neglected to include students in more responsive models of leadership, and research has largely ignored the inherent possibilities.

Collins (2009) argues that organizational decline is largely self-inflicted and is often generated by neglecting the core business (in our case students). While some principals are having success navigating the bumpy instructional terrain outside of the classrooms using non-traditional and at times innovative methods, many principals, including those working in districts that have more resources, fail to acknowledge what students identify as high-influence instructional behaviors. Although research has recognized the impact of effective principal leadership on individual student learning and achievement, much of the research regarding the effects of leadership on student learning needs clarification (Walker, 2010). While research tells us that principals have indirect effects on students and student learning (Marzano et al., 2005), it has ignored the possibility of principals having a direct and profound effect on students' experiences of school. By exploring the topic of leadership through the eyes of the student, we can begin to see whether and how principals are directly impacting students in more concrete ways.

A few arguments have traditionally been advanced in support of school leaders considering student participation and involvement when making decisions.

1) *Teachers and school based support teams have been involved in helping principals make decisions for years*. These same arguments apply, at least in theory, to students as well. While most principals would argue that it is their job to make the decisions that affect their school, many actively involve teachers in conversations about the school's instructional program on a regular basis. This has improved the overall quality of teaching, and made principals into more responsive leaders (Portin et al., 2003). If principals were to involve students in similar conversations about their experiences of teaching, learning, and even leadership, students might also become more empowered as learners, and principals would become even more effective leaders.

2) *Students have a moral right to be involved*. When principals do not involve students, and ignore students' basic needs, such as the need for social/emotional support, autonomy, and respect, students are left to wonder if their principal actually cares (Gentilucci & Muto, 2007). Students have a right to a voice in decisions that affect their experiences of school and learning, and will become more responsible learners if they have a higher morale.
3) *Student involvement enhances cooperation and reduces conflict between all members of the school*. There is evidence that when students' personal needs of accomplishment and meaningfulness are met by adults in schools, students' agendas, goals, and perspectives, will align with those of adults (Allen, 1983). When these goals and perspectives align, students and adults are more likely to work together toward improving student learning outcomes. Active involvement in the school's instructional program will also provide students with opportunities for their voice (as it relates to problems and dissatisfaction) to be heard by those that matter, and who can address their needs before they manifest themselves in a negative way.

The rationale for giving students a voice, and involving them in decisions about the work of learning and leadership is clear. Just as teachers have valuable information about the instructional program, students also have information that leaders need to make good decisions. Students also have a need and a basic undeniable right to feel committed and connected to their experiences of learning. When principals do not actively consider students as being valuable to the overall success of the school, and involve students in decisions that effect the work of learning, students in turn get the message that their participation and involvement is not valued by all members of the organization.

Students' Perspectives of Leadership

Almost all of the data correlating school leadership with student learning has been collected from administrators, school board members, parents, and classroom teachers (Cook-Sather, 2009). Few studies have examined what students perceive schools do to impact their learning, and of these few studies, the emphasis has largely been on issues such as student satisfaction with school, perceptions of school climate and culture, issues of motivation, classroom management, and expectations of teachers (Cusick, 1973; Ogbu, 1974; Wilson, 1993; Wilson, 1994; Wilson, 2011; Allen, 1983; Stubbs & Delamont, 1976). As useful as these lines of inquiry were, none reveal much about what students think and feel about principal leadership and its effect on academic achievement, arguably the most central aspect of student life (Gentilucci & Muto, 2007).

While the departure from a more traditional, managerial role has been critical for principals that want to appear more accessible to both the students and teachers in their schools (Fullan, 2008), there is evidence to suggest that these new roles only in part fulfill what the students were looking for in a strong instructional leader (Gentillucci & Muto, 2007). Teacher and student engagement data related to these instructional behaviors has been recorded (Quinn, 2002), and secondary students have been able to talk about how they perceive these behaviors (Cook-Sather, 2010; Shultz & Cook-Sather, 2001), but no study to date has considered elementary school student perspectives on this topic.

Promoting student voice and agency has been heralded as one of the keys to successful schools (Warner, 2010), yet rarely are student perspectives considered in educational research or applied work. Many schools are struggling to create

instructional programs that are suited to the members of the organization that will inevitably determine whether or not the school is successful. In order to understand what students are looking for in their educational experience, we must first ask the students what it is they think their principals do. Do elementary school students even perceive principals to be instructional leaders? If not, what do students think and feel about their relationship, or lack thereof, with their principal? If students do believe that principals directly influence their learning we must then ask which instructional leadership behaviors do they perceive to influence their academic achievement in school.

We know from data provided by adults that principal behaviors, such as maintaining a visible presence on campus, are correlated with higher student achievement (Waters et al., 2004). However, we lack data explicating such findings from the perspective of students (Gentilucci & Muto, 2007). How can instructional leaders say they have done all they can when many have not even considered the undervalued perspectives students have about instructional leadership? If schools are not asking the students what works for them, then whose needs are they trying to address? Whose experiences of school are they really trying to structure? Who is being empowered? Schools are not measured by how well teachers, superintendents, or even principals perform; they are measured by the strengths and weaknesses of their students.

If leadership wants to address issues of instruction more thoroughly they have to begin to find ways to understand what the students think and feel about their experiences of school. Some critics of student perspective research argue that learning, not understanding students' thoughts and feelings, is the primary goal of schooling. While this may be true, it begs the following question; Who is better qualified than the students to tell us what most effectively influences or hinders their learning and academic achievement (Gentilucci & Muto, 2007)?

Youth Studies

Teachers today have become more adept at using student voice and collaborative approaches to learning in classrooms (Mitra, 2004), and administrators have involved teachers in inquiry-based approaches to leadership (Lambert, 2002). These collaborative models have long been shown to lead to improved teaching, and as a result increased student performance (Talbert, 1995). Yet administrators still rarely use student voice to structure their reform efforts or students' experiences of school.

More modern definitions of student voice such as Mitra's (2008):

> The ways in which young people can work with teachers and administrators to co-create the path of reform. This process can enable youth to meet their own developmental needs and can strengthen student ownership of the educational reform process (p. 7)—,

highlight the power student voice holds for impacting schools on a much deeper level. They also draw our focus to new relationships between students and adults. This concept of adults learning from, or working alongside students to shape the climate of schools may sound to many practitioners and researchers like a radical departure from more traditional methods (Jones & Perkins, 2004). These relationships between students and adults have resulted in more collaborative learning environments, where students accept more responsibility and share authority (Panitz, 1996). These new and more meaningful models of shared leadership have begun to receive attention from researchers focused on understanding how schools can best use student voice initiatives to drive reform efforts. Research tells us that cooperative efforts between

students and adults can develop schools in a way that students and adults acting alone cannot (Kirchner, 2005).

While schools and principals have for decades used student voice in relation to maintaining the status quo, or to manage and organize student activities and student behavior, student voice has been largely subjected to limiting school-established parameters. These parameters have rarely been designed to include students' perspectives of teaching and leadership, arguably the two most important aspects of student life. Many adults, who don't share the same backgrounds as their urban students, struggle to view students as collaborators that can potentially inform their practice. Despite this, there is evidence from research that when adults listen to what students have to say about their learning, and meaningfully use student voice to shape their experiences of school, they can empower students as learners (Warner, 2010).

It's important to note that it's not only principals that have failed to meet and make decisions with students. Researchers too have largely ignored asking students about the work being done in schools. While students have been given some opportunities to talk about their experiences of school, we see fewer students included in research as we go down in age, and virtually nothing on the topic of leadership. While young students are less mature, and have had less experience relating to principals, their perspectives are also less affected by what others (parents, teachers, principals and even popular culture) have taught them about what leadership means, and how it impacts them directly.

Findings also show that when ethnographers have gone to kids and asked about how they learn, they often invoke their own agendas, identities and memories in relation to their informants (Biklen, 2004). Research indicates that educational researchers and leaders, in their effort to make sense of how students perceive schools, have imposed meaning in the development of their theses (Denzin, 1978). This has been problematic for researchers and practitioners who have used adult perspectives to structure their approaches to effecting change in schools.

Research Methods

This multi-site ethnography involves two groups of participants across four elementary schools. The first class of participants is four principals that I interviewed twice and observed a minimum of four times. The second class is made up of focus groups of elementary school students, which I interviewed twice and observed a minimum of four times. I have developed a mixed-qualitative approach based on Elden & Levin's (1991) model of cogenerative learning (see Figure 1 below), in order to create a dialogue between principals and students, and develop a shared theory that is action-relevant and can be used to inform and improve their situations in the future.

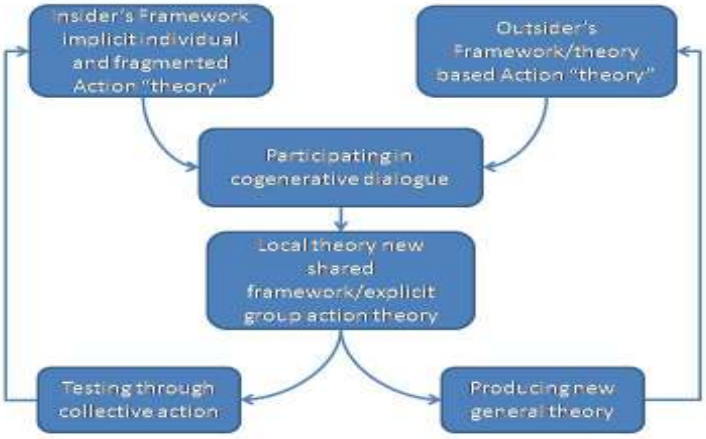

Figure 1. Elden & Levin's (1991) cogenerative model of participative action research

Elden & Levin's (1991) insider-outsider model of participative action research includes six dimensions: insider's framework, outsider's framework, participating in cogenerative dialogue, new shared framework, testing through collective action, and producing new general theory. This model was created by Elden & Levin to emphasize that the participants of the study (students), or insiders, are not subjects or data sources, but instead co-learners. This model does not promote prescriptive behaviors for researchers to impose on the students. Instead, its emphasis lies in the cogenerative dialogue that takes place between researcher and participant in developing a shared theory where meaning emerges as data is produced.

Elden & Levin (1991) define cogenerative dialogue as:

> The empowering participation that occurs between insiders and outsiders—
>
> insiders and outsiders operate out of their initial frames of reference but communicate at a level where frames are changed and new frames generated (p. 134).

This framework allowed me to explore: (a) the value of including students (insider's framework) in research, (b) approaches that researchers (outsider's framework) have taken in previous youth studies, (c) approaches that have been taken between students and researchers (cogenerative dialogue), a dialogue that I helped facilitate, and (d) discuss the value and significance of this collaboration. The bottom two dimensions of the framework will be the resulting theory I have developed through my literature review and field research[1], and the impact this study has had on the work of principals in the field[2]. While this model has been adapted to serve my own exploration of qualitative research methods, it is important to note that this framework could also be used to support the applied work of principals interested in using their students' perspectives to develop new approaches to leadership.

[1] See below Conclusions: *Toward a Theory of Engaging Students in School Leadership*
[2] See below Concluding: *Reflections*

Data Collection

The research goals of this study are to understand how adults use student perspectives to structure their approaches to leadership. I have used Elden & Levin's (1991) cogenerative learning model as the theoretical framework for investigating the youth studies, student perspective, and educational leadership literatures. Research has shown that using different kinds of data to understanding a single topic can produce results that are both confirming and powerful (Denzin, 1978). My research produced a mixed-qualitative approach that principals and researchers can use to structure their approaches to leadership, empower students, and create more meaningful dialogue between children and adults.

In-depth interview

My first formal interview with the principals lasted approximately 60 minutes and was conducted before I spoke with the students near the beginning of the spring semester. Questions in the first interview included: descriptions of a "typical" day, success stories, challenges and hurdles, ways student-based initiatives were presented at the schools, and interactions with the students. Data collected from this interview was used to inform my questioning during my subsequent focus group which was conducted with the students. A second interview, which lasted between 60-90 minutes, was then conducted with the principals after my first focus group with the students. The questioning from this interview was created in response to the analysis of my first focus group with students, was informed by my observations at the site, and gave the principals an opportunity to respond to any questions and/or concerns posed by the students.

Focus groups

Implications for conducting focus groups with vulnerable or marginalized populations, including young children, have been considered and weaknesses of this methodology have been meaningfully reviewed. There are a number of strategies that researchers have used when conducting focus groups with children. I have employed several of these strategies in an effort to conduct fun, age-appropriate activities focused on the research topic. One such strategy was the use of a warm-up activity with students from all grades. This involved breaking the ice with the group, and practicing some of the basic skills necessary for participating in a focus group, such as listening, taking turns speaking, and being comfortable sharing their experiences. I introduced the subject at the beginning of the first interview by using a free association activity where students were asked to identify images of various adults and take turns describing the same images. The photographs I showed the students were of a firefighter, a policeman, the president, and finally their principal. A second activity I used to start my second student interview was to introduce the topic in a read-aloud of an age-appropriate children's book about principals (Creech & Bliss, 2001). After the story I asked the students to talk about the story as it related to our first discussion, and as a prompt for our more focused second discussion.

Immediately after introducing the topic using the free association activity I also asked students to provide me with drawings or words they created in response to an initial brainstorm about principals. Words are only one form of communication, and visual representations of experiences can enable others to see as the participant sees and feels (Riessman, 2008). In my attempt to provide the students with an opportunity to tell their story as transparently as possible, visual data was used to capture the perspectives of all students including those that a) struggle to express their thoughts verbally, b) are English Language Learners, and/or are c) more comfortable using imagery to depict their understanding of the research topic. Students were provided

with colored pencils, a standard size (8.5" X 11") piece of paper, and were asked to draw what they thought their principal does before my line of questioning began.

Focus groups were conducted twice with each group of students, once at the beginning of the semester after my initial interview with the principal, and once at the end of the semester after my second interview with the principal. The first focus group was focused on giving students opportunities to describe their experiences, relationships with adults, challenges they face in school, support they receive from principals, and the voice they are given in shaping school culture. The second focus group was focused on deeper probing and asked students to talk about data collected from the principals' second interview. Each focus group interview lasted between 30-45 minutes, was conducted by myself, included a school counselor from the site, and was audio-recorded and transcribed for analysis.

Observation

I also used observation as a tool for understanding and interpreting the data I collected in my interviews with students and principals. At the schools I observed principals in their natural interactions with students. Because principals often schedule specific times for these interactions, (e.g. during lunch, classroom walk-throughs, after school, etc.), principals invited me to join them in these interactions at various points throughout the semester. I arranged for a minimum of four days of observation at each research site that coincided with my four interviews. After each observation, which lasted between one and two hours, I wrote a detailed set of field notes that were analyzed during the data collection process to inform my interviewing approaches with the principals and students, and after the data collection process was complete.

Data Analysis

Data analysis began during the process of data collection and was conducted by the students, principals, and myself. The initial interview with the school principal was used to inform my questioning during the subsequent focus group interview with students. Likewise, data collected from this focus group of students was used to inform my probing of the principal during our second in-depth interview. This approach is based on Elden & Levin's (1991) model of cogenerative dialogue. This theoretical framework suggests that more participatory approaches taken by the researcher and subjects during the data collection process can help the participants, in our case students and principals, develop a shared framework that can be tested through collective action, or used to produce a new general theory that can be used to inform and improve their situation in the future.

My theoretical framework suggested that I first develop two sets of codes based on data collected from interviews (one for principals and one for students). These two sets of codes were then merged and assigned to field notes from my observations at the site, and any artifacts I collected from the students during the focus groups. More general categories for coding the interview data were based on what students' and principals' said, what they did, how they interacted, and whether and how each informed the work of the other. More specific codes included student responsibility, challenges faced by the students, assumptions, personal inclination, high/low influence leadership behaviors, direct/indirect leadership behaviors, dialogue, communication, structuring student experiences, student voice, shared decision making, student achievement, and non-traditional role of the principal.[3] After these codes were organized into the four general categories listed above, I then developed a definition for

[3] Illustrations in this appendix, in the form of quotes, observations and students' drawings, served as the basis for developing these more specific categories.

each code, identified some key characteristics, highlighted the specific conditions under which the code operates, formed a proposition, and connected several illustrations based on students' and principals' comments, behaviors, observations and students' drawings (see Appendix A).

Some of these codes were more easily identified based on the research questions. For example, codes such as students' perspectives of leadership (SPL), and challenges (Chall), were addressed repeatedly during interviews with both classes of participants and spoke directly to the research questions. As a result there was more than enough evidence that these codes served a purpose in developing a baseline understanding of the research topic. Other codes emerged only after careful and extensive review of the data. One such category was focused on assumptions made by principals (see Appendix A).

Using the analysis procedure described above I began to first define the code based on both my principal and student interview data. After analyzing all of the data it became clear to me that principals were saying things about their work that did not correspond with what the students had to say. For example, at Lodi the principal said the students were often unaware of his presence during his walk throughs. After speaking with the students, however, it became clear that they were not only aware of his presence, but that he made some of the students feel tense or uncomfortable during his classroom visits (see student illustration in Appendix B). The students also said they would like their principal to help teach them and not just observe. As a result I first developed the following definition for the code: "Principals often draw conclusions or make assumptions about their approaches to school leadership that don't correspond with what students are looking for in an instructional leader." Second, I attempted to characterize principals' remarks by identifying words or phrases that I thought best spoke to these assumptions. I found the principals' assumptions to be naïve, instinctual, spontaneous, impulsive, and hypothetical. Next, I identified a specific condition under which this code operated in the schools. After reviewing dozens of illustrations from the data, most of which came from the principals' in-depth interviews, I determined that these conditions existed when principals develop and demonstrate leadership behaviors that underestimate what students understand about, and/or are capable of contributing to school.

I then revisited my literature review to identify elements of the literature that might correspond with what I had so far established about this category. I found ample evidence from the student perspective literature that spoke to this category and so developed the following proposition: Some principals assume that (a) only older kids are worth talking to about the work that's being done in school, (b) kids aren't able to answer specific questions about teaching and learning, (c) student voice should be limited to school established parameters, and (d) certain leadership behaviors are valuable for kids (Johnson, 2010; Richardson, 2001). Confident that there was also research out there to support my claim, I moved forward and developed a proposition of my own: These assumptions often don't match what the students are looking for in a principal and highlight the value of using student perspectives to inform principals' approaches to school leadership. Finally I went on to list several quotes from principals that exemplified when they were making assumptions that contradicted findings from the field and/or the literature. I did this by cross-checking the data with other codes I had already established. Some of these pre-established codes that spoke to this category were: principals' perspectives of leadership, principals' perspectives of students, principals' perspectives of school, principals' perspectives of instruction, students' perspectives of leadership, students' perspectives of school, and students' perspectives of instruction.

One strength of this analysis procedure is that it gave me multiple opportunities and means by which to triangulate the data and check for accuracy in determining which codes were critical to developing my discussion and spoke directly to the research questions. A second strength of this procedure is that it allowed me to develop a strong foundation from which to proceed with my cross-case analysis. In my cross-case analysis I further triangulated the data from each of the research sites using these codes. This process was made less difficult because I already had a great deal of data organized and ready to support my claims about where certain beliefs and behaviors were taking place.

The goal of this study was to include students' perspectives in the dominant discourse on educational leadership by giving students an opportunity to shape the direction of this study. Both researchers and practitioners have substituted adults' perceptions of problems at school as solutions to issues that would be best understood by going directly to the students (Denzin, 1978). Reform minded practitioners may find that developing this counter-narrative will help empower kids, structure their experiences of school, and impact their academic achievement. Students' thoughts and feelings matter and can provide schools and the research community with new evidence that can be used to inform the existing research on instructional leadership and administrative function in the field.

Results

In this section I will be presenting findings from my student and principal interviews, and observations, at four different elementary schools. I will start with Forrest Hills Elementary (FH)[4]. FH is the most affluent of our four schools and is located in a mid-sized suburban district. Next I will introduce our rural site, Lodi Elementary, which is located in a small town 30 miles from the closest urbanized center. In the final two sections of this chapter I will present our two urban schools. First I will present Everton Elementary, a school that was shut down at the end of the school year due to a daunting budget deficit being faced in the city district. Finally, I will introduce Carter Elementary, which is located in the center of the city, and has a principal that took over just months before this research was conducted.

Forest Hills Elementary

Forest Hills Elementary (FH) is our lone suburban site and has the smallest number and percentage of students on the free and reduced lunch list. The students, staff, and principal here make up what may appear to represent for many readers, the traditional American elementary school. Joseph, an experienced teacher and principal in this district, is also a prominent figure in the community. Joseph took over the FH principalship just eighteen months before this study began, and brought with him 170 new students and nearly a third of the current staff.

One of Joseph's key strengths at FH has been his ability to coordinate the curriculum and help the teachers navigate the school's instructional program. Joseph has also developed a positive school culture where teachers are able to focus primarily on instruction and students enjoy learning. Joseph appears to do an effective job managing his resources, support staff, and a talented group of teachers to meet students' academic and social/emotional needs; as a result, he spends the majority of his time in between the buses and bells managing the ebb and flow of managerial responsibilities that come his way during the course of an average day. These responsibilities include coordinating with other administrators in the district, handling parents' concerns, training teachers around the common core learning standards, and

[4] All names of people and places have been changed.

touching base with his support staff around the school to make sure everyone is on the same page and moving forward together.

The students at FH are happy to be in school, are rarely insubordinate, and are doing well academically. Students' challenges at FH were with specific subjects, or with teachers. When asked how students dealt with the challenges they faced in class, they report that they are likely go to a parent, peer, or sibling before speaking with an adult in school. It was only after mid-way through our final interview that they began to consider their principal as someone they might be able to approach about problems they were having during or outside of school.

Despite (or perhaps, because of) the high level of student achievement at FH, students have had few meaningful opportunities to interact with their principal. Joseph is a strong leader of adults, and spends his time helping them with the challenges they face at his new site, and as a result, students perceive him as someone that is there to spread a clear and consistent message, help the school run smoothly, and occasionally act as a disciplinarian. While Joseph acknowledges the role students play in making the school function, he is not inclined to take their lead or use their voice to support their experiences of school or learning.

Lodi Elementary

Lodi elementary is the smallest site in the study. It is located the furthest from a city center, and has a free and reduced lunch rate of 55%. There is significant poverty in this rural community that plays a significant role in the lives of many of these students. Mark, an experienced teacher and administrator at other rural districts in the region, has worked to combat that culture of poverty here at Lodi, and is passionate about boosting the aspiration rate for students in this area. Mark sees his primary role as making sure he has the best teachers working in each of his classrooms, and that they have the resources they need to help the students achieve. When asked to describe his day Mark talked a lot about state and district initiatives, meetings, observation, and providing teachers with feedback. When I asked Mark to describe the interactions he was having with kids he chose to talk about how he worked to manage behavioral problems at the site. Due to the small size of this rural district, Mark has responsibilities that take him outside of the school more than he would like. Despite the challenges of poverty and competing responsibilities, Mark has created a school culture at Lodi that makes going to school a source of joy for the students and staff.

Because Mark's walk-throughs are largely focused on observing the adults in the building and providing them with feedback on their practice, many of the students perceived Mark to be more of an office principal, who works behind the scenes to make sure they are supported academically and to make sure they are safe and cared for in school. When I asked students about their challenges at Lodi, they spoke about tests, and classes where they had trouble with content, and when I asked how Mark helped them with their challenges they naturally responded that Lodi's teachers were the ones they would go to for help with these problems. Students here were very responsive to questions Mark posed during our first interview, and a meaningful dialogue developed between the two that was focused on direct leadership behaviors such as Mark's approaches to speechmaking, and his passive role as observer during walk-throughs, as well as indirect leadership behaviors such as the program schedule, open house, and the classroom makeup.

Mark, who admitted he had not thought about using student voice before this study, began to see real value in how students' perspectives could be used to inform his work, and empower students as learners. While Mark has given students opportunities to make decisions that reflect those traditionally made by student governments in the

past, he remarked that he could now see the value student voice had for impacting his approaches to leadership, and mentioned that he considered the students' comments as useful to his work.

Everton Elementary

All of the students at Everton Elementary receive free and reduced lunch, and of the four schools in this study it has the highest percentage of students diagnosed with special needs. Students and staff at Everton are dealing with a range of challenges unique to urban education, in a community where crime rates are high, and parental involvement in their children's education is low.

Leah, who has 25 years of experience working as a teacher, a staff developer, and an administrator in this urban district, was brought to Everton two years ago to manage the school through a situation of crisis. At Everton the challenges students' face outside the school often manifest themselves inside the classrooms. As a result she is as responsible for keeping the building functioning, as she is for providing the instructional support her students so desperately need. Leah's key responsibilities included her role as a resource allocator for students, someone who listens to students and looks at what they need, an instructional leader of teachers, and someone who is actively involved in shaping the school culture. During my visits to the site it became clear that Leah has little choice as to how her days are spent. While systems have been set up to deal with academic and behavioral supports for kids (which Leah refers to as triage), Leah spends most of her time at Everton putting out fires. Despite the frenetic pace of her work, she has managed to maintain her poise and serves as an excellent role-model to students who value her patience passion for working with kids.

Students at Everton listed distractions in the classroom, physical challenges of the building, and misbehavior as their biggest challenges in school. Leah helps these students cope with these challenges by being actively involved in working with students in classrooms, and students seem to thrive on the extra support she provides. Leah's focus is on making sure the students first feel safe and supported in communities where high-levels of academic and emotional support do not come naturally to many parents, and where student efficacy often begins to diminish as early as the second grade. While some of the students were distracted and even aggressive during focus groups, others saw their principal as a teacher, a counselor, and even a caregiver. The students also remarked that she tries to keep their expectations high, and focused on going to college.

While Leah has spent most of her time at Everton reacting to problems associated with urban schools, she manages to keep a positive outlook on the work that she is doing. Near the end of the study Margeret mentioned that she would like to develop a student cabinet whereby she could ask students about problems they were facing academically, in an effort to get students more excited about learning, and adults prepared to develop more responsive approaches to working with kids.

Carter Elementary

Carter is another urban site where nearly every student qualifies for free and reduced lunch, and where there is a low-rate of students succeeding academically. The largest school in this study, Carter also serves as a beacon for this community and provides a range of services to help students and their families experience some degree of stability and success in their lives. Despite the challenges faced by students outside of the school, the new principal here appears to have everything under control.

David arrived at Carter midway through the school year and has already had a significant impact on the school culture. David is the youngest of our four principals,

and the only African-American principal in this study. David delegates most of his managerial responsibilities to his support staff, which frees him up for more instructional contact with students. The majority of David's time is spent in Carter's classrooms where he is able to monitor student progress, have direct instructional contact with students, and observe teachers. David has created a school climate where teachers are valued as professionals, and has taken responsibility for developing the work of his teachers and students. This principal's work with students, has allowed him to develop specific student-driven approaches to reform, in an effort to streamline the instuctional program, and provide opportunities for meaningful student involvement.

Students' perspectives at Carter, reflected the seriousness and sense of urgency David brings to his work every day. Students identified their key challenges as being confrontataion in the classroom, bullying, and factors outside the school that get them off track. All of the students interviewed at Carter cited their principal as someone they could go to for help them in dealing with a range of obstacles to learning. All of the students at Carter also saw their principal as someone who helps them learn, and who is out-of-the-office and available to students when they need him. Still, these students wanted more of their principal and that instructional and social/emotional support that he provides them. They were also able to respond to very grown up questions posed by their principal that even adults rarely feel confident enough to address when talking about schools.

David has not been afraid to defy tradition and go against the grain in an effort to provide his students with academic and behavioral supports they were not receiving before his arrival at Carter. The appearance and feel of the school, the nature of the instruction taking place in the classrooms, and students' comments, all reflect what this new principal is about. David also chose to talk about his approaches to leadership and the role kids play in making schools work, from the vantage point of a servant or guide.

Summary

After looking at the constructed themes across all four of the cases some key findings have emerged. First, each principal's perspectives on leadership, school, instruction and students varied from school to school. These perspectives or beliefs are sometimes based on assumptions principals have about what works for their schools and students. These beliefs led to certain behaviors that broadcast to the students what the principals valued about school.

While the principals' districts or even the state prescribed some of these behaviors, it is clear that each principal was able to choose how they spent some of their time in school. These choices represent what each of these principals value about their role as school leader. After speaking with the students it became clear that these choices, and even the principals' beliefs in some cases, do not always match what the students are looking for in their principal. Students were able to clearly identify ways the principals could help them address challenges they were facing with school. Students were also able to identify which specific leadership behaviors had a high or low influence on their experiences of school.

Principals that had meaningful interactions with students, and who were effective communicators, were better at structuring students' experiences. They were also more willing to engage in dialogue with the students about what they value about school. While some principals claimed that they value student voice, student responsibility, and shared decision-making, it became clear that not all principals understood what that looked like, or if they did, were able to put their claims into practice. In addition, principals struggled to provide me with specific examples of student-centered approaches to leadership. While each of these principals demonstrated a range of

approaches to the administrative function, it is clear that each principal has adapted their approach to suit the unique needs of each of their schools, their leadership backgrounds, and even their own expectations.

Conclusions: Toward a Theory of Engaging Students in School Leadership

In the following passage I will present my new theory on how principals can create more responsive approaches to school leadership by including students' perspectives on school and school leadership in their own agendas, strategies, and goals. I will be using the adapted version of Allen's (1983) theoretical framework to capture and explain how students can be more actively considered as partners in co-developing approaches to instructional leadership, and student achievement outcomes.

This framework[5], and my theory, provides an alternative to more unidirectional approaches to understanding the connection that exists between principals' strategies for improving the instructional program, and students' strategies for succeeding academically in schools. The relationships between these two groups have been discussed at length from the perspective of the adult. This model serves to demonstrate the importance of developing a line of inquiry that not only includes the students' perspectives, but also places it beside that of the principal. This model also highlights the important role student voice plays in empowering students as learners, and serves as a guide for how students' perspectives can be used to shape and guide new forms of leadership in elementary (and secondary) schol settings.

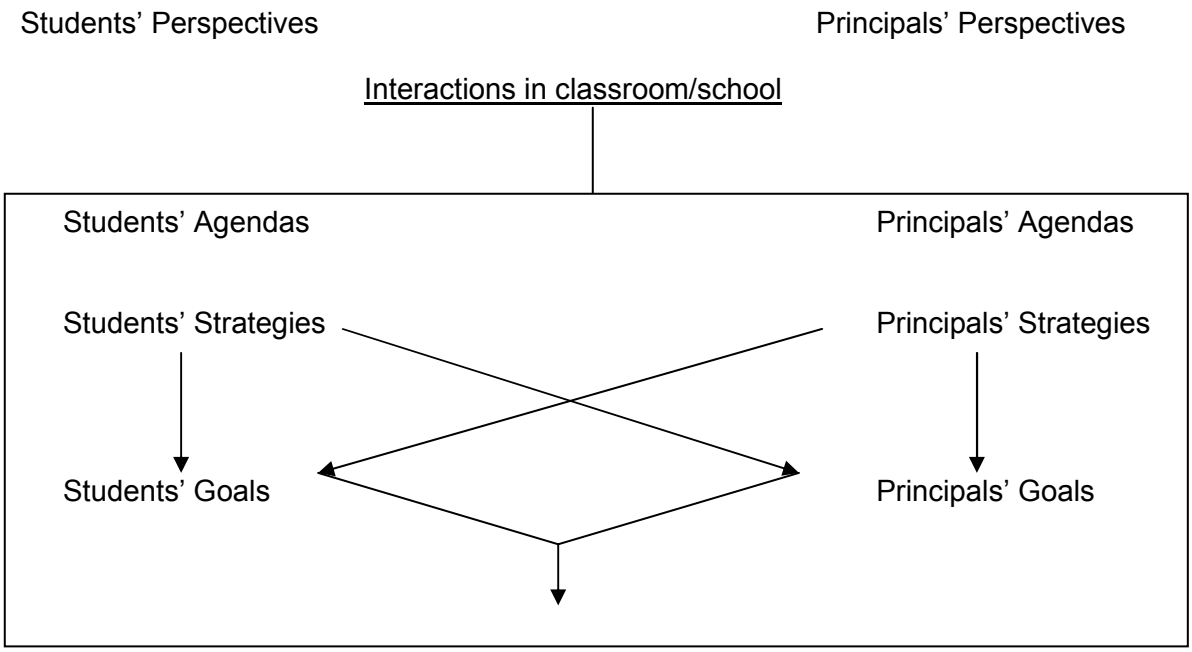

Figure 2. Bidirectional Instructional Leadership Model, adapted from Allen (1983).

[5] Adapted from a study on students' perspectives of teachers as classroom managers (Allen, 1983).

In this qualitative study, I explore what elementary school students perceive to be the biggest challenges they face in school, and how principals help students with the challenges they face. I did this by going directly to principals to ask them a wide range of questions focused on their approaches to leadership and their work with kids. I then spoke with their students and asked about their impressions of their principal, and about their thoughts and feelings about school. After in-depth interviewing and observation at four very different schools, with four different principals and groups of students, I have developed a new theory that I will present here in an effort to inform educators and researchers who seek to strengthen the opportunities of students, and the leadership practices of school principals. Central to this is a call for principals to use more student-driven approaches to guiding their principalship, so that students can be empowered as learners and school leaders in their own right.

By better understanding principals' perspectives of leadership (and their agendas, strategies, and goals) researchers and practitioners can see how they are connected or developed in response to those of the students. Principals that only use adult perspectives to shape their leadership practices leave students to circumvent or adapt to goals that in many cases will not square with their own, and may impede their ability to develop socially and academically. Findings indicate that when principals look inside of their school for help with solving problems faced by their students, instead of looking outside of school, more authentic and transformational approaches can be developed to create schools that are more responsive to students' needs.

Business and industry leadership has long-recognized the value of involving line-workers in decisions about how their work is organized and conducted (Wilkinson, 1998). While effective leadership, strong teachers, and socioeconomic status have been cited as a few of the many determinants that make up a successful school, students are the ones that are actually doing the work of learning. Students are education's line-workers, and it is the quality of their work that inevitably determines the success of the entire organization. Despite this fact, students have not been treated as vital to the success of schools by most practitioners and scholars. While university students have been actively involved in evaluating their instructors and postsecondary programs for over a half century (Becker, 1961), and secondary students have been given opportunities to reflect on their experiences of school (Shultz & Cook-Sather, 2001), younger students perspectives are rarely if ever used to inform the work of researchers of practitioners.

Schools teach kids about how to deal with problems based on how adults like these principals deal with their own challenges. Research demonstrates that when teachers develop strategies designed to meet students' academic and psychological needs, they can promote their students sense of responsibility and voice in the classroom (Schneider, 1996). When teachers set up systems to actively engage students in their own learning (such as cooperative learning, self-assessment, student-teacher contracts, class meetings to address problems, and lessons designed for student-constructed processing), students become more responsible and are able to self-direct more of their behavior over time (Gossen, 1992). Many teachers however are reluctant to give students opportunities like these and can get caught up in (and even contribute to) the same self-defeating mindset of their students (Schneider, 1996). Teachers and even principals have for years attributed causes for failure to any number of causes out of their direct control (e.g., lack of resources, poor parenting, etc.).

While principals have long been regarded as the school managers, they are also in a unique position to show a larger population of students that they can or cannot have a voice based on the work that they do. This has far-reaching effects on the students and their future role in society. It also has a direct impact on how teachers choose to

run their classrooms and structure their interactions with kids. While most principals in this study agreed that a big part of their job was making sure they had the best teachers possible, and that teachers were the ones capable of impacting change, principals invariably shape the work of the teachers, and enact policies and practice that affects the way teachers teach, and students learn.

Even though principals today are supposed to spend more time focusing on teaching and learning than ever before, there is evidence that students and student learning often take a back seat to the work of adults in school. Conversations and observation at these schools also indicated that there is a discrepancy between what some principals say, and what they actually do. While some principals acknowledge the value student driven approaches to school leadership have for empowering kids, and are able to talk about some ways they promote quality instruction for kids based on the instructional leadership vernacular, I found limited evidence that principals actively use student voice or interact with students directly in an effort to address problems in their schools.

Findings from the field indicate that this is not because principals can not or do not have the time to use more student-driven approaches to guide their instructional program. Instead, this research has found that principals choose to use these approaches based on whether or not they value receiving direct input from kids. Principals choose to let students' perspectives affect their agenda, strategies, and goals based on whether or not they believe this is important. While some principals may be unaware that such a choice even exists, and instead take more traditional and managerial approaches to their work, there is evidence that some principals are aware that there is a choice, and still make an active decision to not give students opportunities to share how they think and feel about school.

These observations reinforce the conclusions I drew from my discussion; Principals who are not using student-driven approaches to guide their principalship are left with personal inclination or externally derived models in their quest to provide structure to the school's instructional program. Many of these choices were based on assumptions principals have about what students are capable of contributing to a discussion on what does or does not work in schools. These assumptions were largely based on (1) whether or not it had occurred to principals that using student voice was a possibility, (2) perceived competence as it relates to a student's age, and (3) preconceived notions about whether or not students should have a say in their experiences of school. These assumptions existed when principals develop and demonstrate leadership behaviors that underestimate what students are capable of contributing to the school. While every principal in the study was willing to engage in an indirect conversation with students about the challenges they face, few principals actively look to see what students think about school, and even fewer use student voice to shape their approaches to leadership.

At FH, students shared stories about teachers that made them feel uncomfortable, and by the end of the study, began to realize that the principal was someone that could help them with their problems. At Lodi, students wanted their principal to develop some new approaches to his interactions with students, and also provided some ideas for restructuring school events like open house and assembly. At Everton, students' behavior during focus groups alone demonstrated that they were having trouble engaging with the instructional program. They also cited a range of physical factors around the school (such as the condition of the classrooms and hallways), and factors inside the classroom (such as disruptive students and overwhelmed teachers) as hindrances to their learning. At Carter students spoke openly about how they wanted

more of the direct instructional and social/emotional support the principal was already providing.

At the root of many of the assumptions made by principals was a reluctance to concede or modify their current position of authority and adopt a more shared approach to making decisions in schools. This autonomy, which gives principals their sense of professionalism and a feeling of control over their school can also get in the way of collaboration with staff and students, and communication structures which might allow for alternative forms of interaction. Opportunities to make adjustments to the instructional program and to impact student learning outcomes are lost when leaders take more autocratic approaches to making important decisions in schools.

All of the principals spoke to the quality of leadership and strength of the teachers that were in the building before their arrival as a key factor for determining how, where, when, and why they spent their time the way they did. As a result, early analysis led me to believe that principals' leadership styles were in part influenced by the work of their predecessors and that school leaders inherit their approaches to leadership, and play more of a maintenance role in schools that are not in a situation of crisis. After more in-depth analysis, observation, and interview I have concluded that age, training, and personal background have also played a significant role in shaping the choices these principals make regarding school leadership.

It is plausible that older principals idealized their 'better days' when they had more time to be in the classrooms, or more energy, or when there were more resources and fewer students. Our youngest principal, however, made no excuses and said that the principal is the one who is responsible for the success of the students. He also pointed to his more recent training and experiences working with strong (and not so strong) principals in the recent past, as instrumental to his development as an urban school leader.

While there was some evidence that students felt like they could identify more with principals and teachers who shared a similar background, I do not believe that race or gender played a role in determining whether or not these principals choose to work closely with their students, or how students' perceived their principal's role as school leader. At our suburban and rural school, predominantly white students were able to identify with their white middle-class male principals despite the lack of meaningful interactions they held with them on a regular basis. At Carter, a predominantly black high-poverty community, students did say they were better able to identify with adults (including their black male principal) that were of the same race. Despite these findings, there was ample evidence that students at Everton, a predominantly black school with a white female principal, had no problems going to their principal for support of any kind.

In schools where students did not perceive their principal to be someone that they could go to for help with their challenges, student voice occasionally manifested itself as an oppositional behavior. While these schools had less problems with insubordination based on a variety of factors including socioeconomic status, school resources, teaching experience, and school climate, findings indicate that students would react to conditions in ways that did not fit their principal's preferences in order to get the principal's attention. As a result, principals would then have to deal with student voice in the form of resistance or by way of parents, instead of using that voice to structure their approaches to leadership early on.

Both my review of the literature and research data from the field indicate that principals who increase student responsibility and use student voice to drive their instructional leadership have empowered students as learners. This empowerment has

resulted in better behavior, increased engagement in the instructional program, and the development of a more shared set of goals between students and staff. Principals have done this by playing a more visible and accessible role school-wide and in classrooms, and by having more direct instructional contact with the students. Outside of the classrooms these principals have also been able to speak with students about problems that affect their learning inside and outside of school. The data suggest that instructional leaders can develop more specific goals using a vision which is shared by the students, reflects student concerns, and in which students had a voice in creating, if they want to create, a school climate that is more inclusive, conducive to learning, and better equipped to respond to change.

Research that seeks to understand principals' perceptions of how schools best operate, and then places adult perspectives alongside those students have about school, can develop a better understanding of how students and principals can work together to create more equitable and excellent schools. Principals' direct and indirect approaches to promoting the instruction that takes place in their schools has a significant impact on students' experiences of education. By better understanding how principals think about the approaches they take, students' learning outcomes and teacher efficacy can be enhanced. Principals and students play key roles in shaping school culture, and enter school with similar goals. These shared goals include an intention to succeed as participants in the academic program, as well as a strong desire to be supported socially and emotionally. Principals willing to explore their perceptions of students and student learning in depth are better able to understand their relationships with students, and the role they play in determining the success of both the school and the principalship.

Students' thoughts and feelings matter and can provide schools and the research community with new evidence that be used to inform the existing research on instructional leadership and administrative function in the field. This study has shown that principals are interested in what younger students have to say about their work. It has also helped principals realize the value these perspectives have for shaping their work as school leader.

Students have also been affected by this study. Students felt empowered when adults took the time to ask them about their challenges. When asked about what they would like to see done differently, some students were quick to ask for more instructional support from their principals. Others remarked that they would like to see their principals develop new ways of approaching their administrative function. Still others spoke openly about their teachers and peers, or about how their principal could help support them socially and emotionally.

In each school students had different sets of challenges and adults helping them with these challenges. In all of the schools however, students were clear about what they could use to help them learn better, and in each of these cases, principals were in a position to adapt their agendas, goals, and strategies to those of their students. Principals that underestimate student agency, have trouble addressing diversity, and fail to make themselves accessible to their students limit their own opportunities for reform.

Implications

The findings of my study hold several important implications for leadership practice and preparation. In the following section I present the value this research holds for principals interested in adapting their approaches to working with students. Next, I will present a new framework that can be adopted by university leadership programs interested in becoming more student-centered.

Practice

Principals can use students' thoughts and feelings about a whole range of school wide factors to inform their practice. They ought to do this because their assumptions about what works have largely been based on more traditional approaches to school leadership, which have in turn been informed by a body of adultcentric research and experience. There has also been evidence to suggest that leaders need their students' perspectives and cooperation to develop their administrative function. Neither tradition nor the extant research on school leadership can, in every case, match what students are actually looking for in their school leader.

After sitting down and speaking with students, I found that they are asking for more of that direct academic and social/emotional support. Students value opportunities to receive the principal's assistance in schools where students have had more frequent interactions with principals, as well as in schools where they have had less frequent interactions. Students like when principals ask them questions and provide them with support because it shows them someone important cares about what they are learning. These observations align with and build on existing student perspective research that says students are confused when principals enter the room and only interact with the teacher, do not interact at all, or limit their feedback to teacher performance (Gentilucci & Muto, 2007). When principals do not interact with students, or talk to them about what they are learning, students are left to wonder what the principal actually does, and whether the principal actually cares about their learning.

There is also evidence that principals are not setting up systems to help them focus their time on improving students' experiences of learning. For example, of the four principals included in this study, only one principal has a capable group of secretaries handling his more managerial responsibilities. As a result, he can routinely spend his time monitoring teaching and learning in his school's classrooms. This clear and consistent contact with students and teachers provides him with opportunities to provide students and teachers with more focused feedback and instructional support than colleagues who only observe for short periods of time during informal walk-throughs, or who limit their interactions with students to matters of discipline. Principals that are in the classrooms, hallways, and lunchroom throughout the day are better able to solve little problems before they become big problems, and develop proactive strategies that anticipate or respond to challenges students face in school.

While time constraints, accountability demands, and new initiatives from above are limiting the amount of free time principals have to devote to instruction, it was clear that principals who are not managing crises are able to choose how they spend significant parts of their day. Furthermore, our principal at Carter illustrated that the management of what some people think of as crises can be delegated to others. However, these choices rarely included interacting with students or supporting classroom instruction directly, or even indirectly in some cases. Principals need to set up systems that allow them to have more routine, structured, and meaningful interactions with the students and the instructional program during the day. Students' voices can be heard (quite literally) by principals who put themselves in the position of interacting with students, without having to develop any formal procedures for involving students in decision-making. Data indicates that principals who are in the classrooms should be providing feedback to teachers *and* students, and coaching them both if they want to develop a more cohesive and coherent approach to instructional leadership.

There is also evidence to suggest that after being given opportunities to develop a dialogue with students, school leaders became more interested in using student voice to inform their decision-making and empower students as learners. Principals in this

study were eager to see and hear about what the students thought of them. Students' comments and feedback challenged principals to think more deeply about their important role as learner, and prompted them to develop sets of questions for the students that held real value for how they approached a range of leadership decisions. Principals also thought that if students saw the changes they were discussing in their focus groups happen in their site, that it could be an empowering experience for kids, and a valuable new leadership tool.

Preparation

While leadership development programs are aiming to provide young and veteran principals with the tools they need to succeed in today's schools, many principals still find preparation programs to be out of touch with today's realities (Butler, 2008). One possible reason why principals have been reporting frustration after entering the high-stakes world of school leadership may be that they have not been taught how they can help students deal with the unique challenges many of them are facing in school. Principal preparation programs have largely failed to convey the significance of using student voice, instead focusing on professional development, models of shared leadership that include only adults, and on the administrator's function as a data driven decision maker or instructional coordinator (Hess, 2007).

While each of these functions is essential to the principal's success, particularly in schools that have been struggling academically, students are largely excluded from their principal's formula for success, and more responsive approaches that involve working with kids, or taking the students' lead, are all but ignored here in the United States. Programs that address this issue of principal's choice, and that recognize the value of using students' perspectives of leadership to develop both the administrative function and students' experiences of school, could provide principal candidates, many of which enter these programs as experienced or talented instructors, with a more seamless transition into leadership. They could also help focus the principal's work around a key variable (students and student learning) that actually hold real value for the overall success of the school.

Preparation programs are responsible for helping preservice administrators develop strategies that include students in models of shared decision-making. These programs can help show principals how to make the time for regular instructional contact with students and student learning in the classrooms. Programs that can help principals develop ways of eliciting student voice as it relates to students' experiences of learning, and help principals find ways of applying what they have learned, will empower students as learners and leaders in their own right. Preparation programs should also instill in their principal candidates an awareness that students are the ones actually doing the work of learning, and help principals model this understanding for other adults in the school so that all students may become more responsible learners.

Concluding Reflections

I felt the need to check in with my four school principals one month into the following semester to see if any changes had taken place over the summer. The local newspaper reported that Leah's site, Everton Elementary, was closed at the end of last school year so I was curious to see where she would end up. Mark's site was being consolidated with another school so I also felt compelled to see whether or not he would engage with his new batch of students in ways he said he might during our final interview. Based on this knowledge, I decided to ask just a few brief questions to see how things were going: (1) Do you find yourself in the same position you were last year? (2) How has the start of this new school year unfolded for you? And (3) have you made any changes to how you structure your interactions with kids?

As was typically the case during the previous school year, Joseph at FH replied within minutes of receiving my e-mail. Joseph's answers were succinct and to the point. He remarked that he was still the principal, that the school was off to an excellent beginning, and that his interactions with kids are similar to what he has done in the past. A few days later I heard from Mark who now finds himself using a co-principal model at a new PK-6 site that has nearly 500 more students than were at Lodi. This consolidation took place over the summer when two separate K-4 buildings merged with grades five and six from what was a middle school. Mark says that while the consolidation has gone wonderfully, he has not changed how he structures his interactions with kids and that it is now more difficult to get around to all the classrooms. He also said that one of the reasons why they adopted the co-principal model was so that administrators would be able to spend more time with kids in classrooms, but that "old habits die hard."

Leah now finds herself as the Director of Professional Development for the urban school district in which she has been employed. No longer the principal at Everton, she is now working on the Race To the Top reform agenda of common core instruction, supporting the district with their Annual Professional Performance Review, and working with teachers to develop their approaches to data driven instruction. Sadly, Leah, who was one of the principals most connected to students in this study, placed "N/A" as the response to the third question as she now has very few opportunities to interact with children in her current position.

Of the four principals David was the only principal who requested we have an actual conversation around these three questions. After setting an appointment with his secretary, we spoke at length over the phone about many of the changes he decided to make at Carter over the summer, and about his experiences as principal so far this year. While much of David's abbreviated first year was spent focusing on issues that needed to and could be resolved quickly, he has continued to tighten up his instructional program throughout the school in a few different ways.

Carter now has a school dress code, and students from all backgrounds are now attired in more formal khakis and shirts. One of the concerns expressed by students at Carter in the spring was that clothes were a source of contention, particularly among the older boys and girls who would often criticize their peers for wearing outdated apparel. The high number of refugee students were also being ostracized and ridiculed for dressing differently and this new regulation, coordinated with the cooperation of parents from the community, has reportedly alleviated a great deal of the conflict that took place, while giving students an increased sense of community and responsibility.

The school's academic and behavioral incentive plan has also taken shape this fall as parents and special education students are being involved in distributing a range of new and exciting awards to deserving students. The school has also partnered with community stakeholders to cultivate a green space just a block away from Carter where fruits and vegetables have been planted and are being attended to by students on a regular basis.

Finally, and perhaps most significantly, David has revamped the after school program to include enrichment activities that will be very unlike the ones done at Carter in the past once the program kicks off in October.[6] David said he intends to develop a student council made up of class representatives involved in the after school program. This student council will meet with David on a weekly basis to raise concerns they have

[6] For example, instead of playing basketball students at Carter are now designing a green room, learning to golf, and becoming involved in a student government.

about how they are treated and how the school is run. He refers to this as a "leadership development opportunity," that is designed to infuse the conversations class representatives are having with David, with the day-to-day operations of the school. I am excited to say that I have been invited to participate in these weekly meetings between class representatives and the principal starting in just a few weeks.

Before entering the field I really did not know how students and principals would react to questions that many of them had never been asked. It is never easy, especially as a professional, to answer questions for which you have very little prior knowledge or experience. All four of the principals did their best to respond in ways that helped me understand how they thought about the research topic. During this brief study, some of the principals even began to develop an understanding and appreciation for the possibilities of this work themselves. Some highlights of this study include being able to witness Mark's paradigm shift first-hand. Another was finding out after the study that David would soon be meeting with students on a regular basis to talk about issues they are having in school. It was also hard to see Leah, who was so great at connecting with kids, be relocated to a position where she will have so little contact with the students, which clearly drove her practice. Even harder was the knowledge that all of her students lost their school, their beloved principal, and are now having to re-adjust to new sites and all the challenges that come with being uprooted.

The most rewarding part of this work was being able to sit down with students and have conversations uninterrupted by adults. As a long time elementary school teacher I always cherished the few moments when I was able to speak with kids about problems they face in school, or even just listen to them talk about their lives.[7] Still, before entering the schools I was not sure how students would react to an outsider asking them about their principal. As a result, I was hesitant to let the conversation flow during our first focus group. During our second interview however, conversations about leadership and challenges students were facing in school naturally opened up and students felt comfortable sharing their opinions about their principals, teachers, and school. It was in these spirited moments of focus group conversation that I saw the students, and the students saw themselves, as being capable of providing an honest and sometimes critical account of the work being done by their school leaders.

It was in these moments that I also saw students reflect on challenges that got in the way of their learning. Bullying, exclusion and unhealthy competition were just a few of the problems students cited—Problems that continue to plague each of our schools to varying degrees. Students also commented that they are still being confronted with problems outside of school, and that these problems "get them off-track," and in the way of their opportunities for growth.

After spending a significant amount of time reflecting on these challenges myself, and on how they relate to decisions principals make (or do not make), and about how talking about these challenges made the students feel empowered, I have realized the real significance of this work. While my work as an outside researcher gave students and principals opportunities to reflect and develop their thinking, the best way to conduct student perspective research may be as an insider of the school. K-12 practitioners that can actively elicit student voice and use it to shape the way they structure their students' unique experiences of learning, are in an excellent position to impact change within their classrooms, schools, and districts. If principals can structure regular interactions with their students, and focus conversation on the students'

[7] These fleeting moments only took place before or after instruction-at recess, lunch, or on trips. As a teacher I used these moments to help me develop an understanding of each student's experiences, and this input helped me become a more responsible teacher.

experiences of school and learning, they will be better able to respond to student issues before they manifest as an oppositional behavior, another student failure, or reach the main office via an outsider like myself.

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References

Allen, W. (1983). Classroom management: students' perspectives, goals, and strategies. *American educational research journal*, 23(3), p. 437-459.

Becker, H. S. (1961). *Boys in white: student culture in medical school.* New Brunswick: Transaction.

Biklen, S. K. (2004). Trouble on memory lane: adults and self-retrospection in researching youth. *Qualitative inquiry*, 10 (5), p. 715-730.

Blase, J. & Blase, J. (1999). Principals' instructional leadership and teacher development: teachers' perspectives. *Educational administration quarterly*, *35*(3), p. 349-78.

Butler, K. (2008). Principal preparation programs. *District administration,* 44 (10), p. 66-68.

Denzin, N. K. (1978). The research act: a theoretical introduction to sociological methods (2d ed.). New York: McGraw-Hill.

Elden, M. & Levin, M. (1991). "Cogenerative learning: bringing participation into action research," In W. F. Whyte (ed.), *Participatory action research.* Newbury Park, CA: Sage.

Gentilucci, J., & Muto, C. (2007). Principals' influence on academic achievement: the student perspective. *NASSP bulletin*, *91*(3), 219-236.

Gossen, D. (1992). *Restitution: Restructuring school discipline.* Chapel Hill, NC: New view publications.

Hess, F. (2007). What innovators can, and cannot do: Squeezing into local markets and cutting deals. *Education next,* 7 (2).

Jones, K. R. & Perkins, D. F. (2004). Youth and adult perceptions of their relationships within community-based youth programs. *Youth society,* 38 (1), p. 90-109.

Kirchner, G. (2005). *Towards cooperative learning in elementary school physical education.* Springfield, IL: C.C. Thomas.

Lambert, L. (2002). A framework for shared leadership. *Beyond instructional leadership,* 59 (8), p. 37-40.

Mitra, D. L. (2004). The significance of students: can increasing 'student voice' lead to gains in youth development. *Teachers college record,* 106 (4), p. 651-688.

Mitra, D. L. (2008). *Student voice in school reform: building youth-adult partnerships that strengthen schools and empower youth*. Albany: State University of New York Press.

Panitz, T. (1996). Collaborative vs. cooperative learning: comparing the two definitions helps understand the nature of interactive learning. *Cooperative learning and college teaching,* 8 (2).

Schneider, E. (1996). Giving students a voice in the classroom. *Creating a climate for learning* 54 (1), p. 22-26.

Shultz, J. J. & Cook-Sather, A. (2001). *In our own words: students' perspectives on school.* Lanham, MD: Rowman & Littlefield.

Spillane et al. (2001). Investigating school leadership practice: a distributed perspective. *Educational researcher,* 30 (3), p. 23-28.

Talbert, J. E. (1995). "Boundaries of teachers' professional communities in U. S. high schools: power and precariousness of the subject department," In L. S. Siskin & J. W. Little (Eds.), *The subjects in question.* New York: Teachers College Press.

Warner, D. (2010). *Using student voice for school transformation.* Eltham, AU: Eltham College of Education Press.

Waters et al. (2003). *Balanced leadership: what 30 years of research tells us about the effect of leadership on student achievement.* Aurora, CO: mid-continent research for education and learning.

Wilkinson, A. (1998). Empowerment: Theory and practice. *Personnel review,* 27(1), p. 40-56.

APPENDIX A

Codebook: Elaboration of Code
(Assum) Assumptions made by principals

Definition: Principals often draw conclusions or make assumptions about their approaches to school leadership that don't correspond with what students are looking for in an instructional leader.

Characteristics: Naive, instinctual, spontaneous, impulsive, hypothetical, taking something for granted, theoretical.

Specific Conditions under which Code/Category operates: These conditions exist when principals develop and demonstrate leadership behaviors that underestimate what students understand about school and/or are capable of contributing to the school.

Proposition: Some principals assume that (a) only older kids are worth talking to about the work that's being done in school, (b) kids aren't able to answer specific questions about teaching and learning, (c) student voice should be limited to school established parameters, and (d) certain leadership behaviors are valuable for kids. These assumptions often don't match what the students are looking for in a principal and highlight the value of using student perspectives to inform principals' approaches to school leadership.

Illustration: "I guess initially I thought I could see that (using student voice) at the secondary level but what does that look like at the elementary level? How do kids know what's good for them? Isn't that our job?

"You want to listen to the children but you need to lead the children. You can't let them control what we do."

"I can walk in and in many cases they don't even know I'm there."

"I'll still approach that (talking about college) with young kids at the elementary level because for them to think too far beyond that is really difficult."

"From the structure of the day to the buses coming to school and going home, to the lunchroom, and recess. And to recognize that sometimes kids are going to say they need a lot more recess and to keep that in an 8-year-old context (referring to how the principal would like to use student voice)."

"So if I were in an elementary school it (student council) would probably be 3-5th graders working in an advisory capacity."

"I'm asking questions like 'I see you're doing that, what are you doing?' because I'm checking to see if they understand, checking on the quality of what they're being assigned in classrooms. It gets to the point with the older kids, in grades 3-5 and even 2nd graders 2 but a little bit less with the K-1 because they may not really understand what I'm asking—"

APPENDIX B
Student Illustration L4-5

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International Electronic Journal of Elementary Education, 2014, 6(2), 257-274.

Fifth Graders' Enjoyment, Interest, and Comprehension of Graphic Novels Compared to Heavily-Illustrated and Traditional Novels

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Received: 23 July 2013 / Revised: 17 november 2013 / Accepted: 11 February 2014

Abstract

The comparative effectiveness of graphic novels, heavily illustrated novels, and traditional novels as reading teaching tools has been sparsely researched. During the 2011-2012 school year, 24 mixed-ability fifth grade students chose to read six novels: two traditional novels, two highly illustrated novels and two graphic novels. Students participated in discussion groups structured with thinking skills, and completed assignments during and after reading the books. Student comprehension and enjoyment were measured by rubric-graded assignments and rating scales. The numbers of student responses during discussions per type of novel were tabulated. The graphic novel received the highest scores in all categories. The researchers conclude that graphic novels be considered an engaging and effective method of teaching reading to fifth graders.

Keywords: Graphic Novels, Comprehension

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Introduction

As students read the world today, they are inundated with messages from various semiotic resources. Interactions with texts are multimodal and complex, integrating images with experience. Literacy is no longer confined to the printed page (New London Group, 1996). Classroom literacy instruction and materials need to reflect lived experiences so that students can build upon their current literacy practices in school as well as acquire additional tools to make sense of today's world. Providing a range of reading formats in classrooms, including graphic novels, is one way to increase student opportunity to engage deeply with texts and use image as a significant source of semiotic information. The use of different forms of literature in which students have interest adds to their motivation to read, ultimately improving their comprehension (Allington, 2011; Guthrie, 2001). As Guthrie (2001) notes,

> [C]lassroom contexts can promote engaged reading. Teachers create contexts for engagement when they provide prominent knowledge goals, real-world connections to reading, meaningful choices about what, when, and how to read, and interesting texts that are familiar, vivid, important, and relevant (para 3).

This study examined the efficacy of graphic novels, compared to heavily illustrated novels and more traditional novels, to increase students' comprehension and engagement with texts through literacy instructional units that provided choice of quality texts, integrating thinking skills and multimodal summative projects for fifth grade students.

Graphic Novels in the Classroom

The popularity of computer based technology for today's student population has allowed visual media to replace written media as a source of entertainment. Text has shifted from print media to screens, reasserting the role of image in text consumption (Kress, 2003). For example, Xbox Live, Facebook, and Twitter are very popular among many age levels. Jewett (2008) in her analysis of multimodality and literacy in classrooms writes:

> [T]he ways in which something is represented shape both *what* is to be learned, that is, the curriculum content, and *how* it is to be learned. It follows, then, that to better understand learning and teaching in the multimodal environment of the contemporary classroom, it is essential to explore the ways in which representations in all modes feature in the classroom (p. 241).

Teachers need to offer texts in the curriculum that address student interests and include visual media. The use of graphic novels is one way to bring multimodal texts into classrooms.

While graphic novels have recently increased in popularity, they are still a relatively new format in today's libraries and classrooms. Graphic novels may increase students' motivation and comprehension of reading, particularly because of the engaging illustrations with talking balloons that add modality to the text. Illustration has long been included as a source of meaning for emerging readers (Clay, 2000; Sipe, 2008). Unfortunately, as students gain proficiency with text, teachers tend to offer print-heavy materials, potentially removing visual supports for comprehension and motivation. Studies investigating the use of graphic novels with adolescent readers (Edwards, 2009; Snowball, 2005) and with content integration (Matthews, 2011) suggest their use improves comprehension and motivation. New technology necessitates using visual stimuli to capture the attention of students and facilitate their understanding of new topics. The following article compares three different forms of literature –graphic novels, heavily-illustrated novels and traditional novels – and provides understanding of

how each is perceived by students as well as how each affects comprehension and enjoyment of reading.

Integration of Thinking Skills

Integration of a formal system of thinking skills can support deeper literacy discussions. Edward de Bono organized the ten Breadth Thinking Skills to allow critical examination of all aspects of a situation before drawing conclusions. These skills entail: (1) rating ideas as plus, minus, or interesting (PMI); (2) considering all factors of a situation or issue; (3) creating rules for behavior regarding the situation (RULES); (4) determining the consequences or sequels of actions in different time frames (C&S); (5) defining aims, goals, or objectives (AGO); (6) making a plan (PLANNING); (7) setting priorities (FIP); (8) Generating alternatives, possibilities, and choices (APC) ; (9) reaching a decision based on reasons (DECISION) ; and (10) considering other people's views (OPV). Explicitly teaching these thinking skills provided a way to structure and enhance engagement with the texts.

Research Questions

This study explored two main questions: (1) How does student performance compare between the three formats (graphic novels, heavily-illustrated novels, and traditional, sparsely-illustrated texts) on written assessments made at the book's midpoint, on assessments of creative products, and on number of responses offered for thinking skill activities during book discussion? (2) How does student perceived comprehension of text, interest in the topic and enjoyment of reading, vary between the three forms?

In this study, a graphic novel is defined as a full-length story with a beginning, middle, and end, in which both image and text are of equal importance (Trabachnick, 2009). For example, *Smile* (Telgemeier, 2010) was one of our graphic novels. A *heavily illustrated novel* has at least one illustration for each two pages of text such as *The Invention of Hugo Cabret* (Selznick, 2007), which has 316 pages of illustrations to 214 pages of text or *Diary of a Wimpy Kid: A novel in cartoons* (Kinney, 2007), that has small pictures on every page of text. *A traditional novel* has one or fewer illustrations per chapter. For example, the book, *Tuck Everlasting (Babbitt, 1975)* has 144 pages of text and only one illustration.

Literature Review

In this section, the literature on student reading motivation and comprehension is reviewed, followed by previous work on literature circles and the de Bono thinking skills. Finally, other studies examining the use of graphic novels are considered.

Motivation and Comprehension

A student's ability to interpret the written word can alter his or her present and future education. Students' motivations for reading must continue to grow throughout their early education to support further academic success (Brozo, Shiel and Topping, 2008): "Reading engagement is also important to the maintenance and further development of reading skills beyond the age of 15" (p. 304). Teachers must find ways to foster this love for reading to help students stay connected. Middle school students have shown tendencies to choose graphic novels over other novels for free reading (Edwards, 2009). Graphic novels keep the interest of young adolescents inside and outside of the classroom. Lavin (1998) noted that students who read graphic novels use more cognitive thinking skills during reading than when they read more traditional novels. Additionally, the multimodal nature of this format may be useful in helping students navigate complex ideas in content areas and improve comprehension. Martin (2009)

states, “Graphic novels can be used by teachers of all subjects to research instructional techniques, current events, and social dilemmas” (p. 30).

All students may benefit from the use of graphic novels in the classroom. Graphic novels include the fast paced visual media to which students are growing accustomed. Students who struggle with reading can readily connect to graphic novels because they can use the pictures to help them visualize the text. Lyga and Lyga state, “Even students whose reading abilities deter them from enjoying reading for the inherent satisfaction are drawn to graphic novels” (2004, p. 56). Many teachers hope to foster motivation and engagement for young readers; using graphic novels in the classroom is a way to fill the void that some students seem to have when it comes to reading.

Literature Circles

In this study, effective use of literature circles coupled with graphic novels allowed for rich conversations fueled by student interest and engagement in the text in a social setting. Students learned how to start conversations, listen to conversations, and share ideas about the text in a group setting (Certo, Moxley, Reffitt, & Miller, 2010). Literature circles were designed to simulate a book club atmosphere during reading discussion in the classroom. Typically, in a literature circle, a group of peers reads the same novel, and the members of the group lead discussion rather than the teacher. A literature circle may involve rotating discussion roles, such as questioner, to ensure that every student has a chance to look at the book from every angle. As in most effective reading activities, the students must be interested in the text. According to Briggs (2010), “In order for literature circles to be successful, students need to connect the text to their own experience, to events in the world or other readings” (p. 9). Literature circles, contrasted with whole-class discussions, often help create a safe learning environment in which students feel comfortable to talk about the book and give their opinions. In an effective literature circle, students understand “… that in order to facilitate good discussion, they… [need]… to respect other group members, cooperate, and be good listeners” (Certo, Moxley, Reffitt, & Miller, 2010, p. 1). Teachers can use graphic novels in literature circles to increase student interest in the reading and to broaden their learning through discussion with peers.

Traditional literature circle roles were provided in Harvey Daniels’ book, *Literature Circles: Voice and Choice in the Student-Centered Classroom* (1994), which included discussion director, literary luminary, illustrator, connector, summarizer, and vocabulary enricher. The roles were intended to support student use of vital reading comprehension strategies as they read and discussed the novels. These roles have been criticized as possibly limiting student focus and creating an inauthentic discussion format (Peterson & Belizare, 2006; Mills & Jennings, 2011). In the current study, students initiated the discussion by choosing a de Bono skill. Students focused on one or two different thinking skills during each of their discussions. Students took turns choosing a skill and facilitating a discussion related to that skill to which each group member contributed instead of taking on more traditional literature circle roles.

Edward de Bono’s CoRT Breadth Thinking Skills

Edward de Bono (1970), inventor of the term “lateral thinking” (p.9), is an acclaimed author directly examining how people think both critically and creatively in varied situations. He has authored a CoRT (Cognitive Research Trust) thinking skills series, which contains six different sets of 10 skills each (breadth, organization, interaction, creativity, information/feeling, and action) that have been embraced by business (Michalski, 2005) and schools worldwide. The most basic set, CoRT Breadth, was used in this study. The 10 different thinking strategies provided a framework for students to examine situations from multiple perspectives, assisting them in better understanding

the conflicts and issues presented by novels. Edward de Bono (2000) explained, “The purpose of these strategies is to broaden perception so that thinkers can see beyond the obvious, immediate, and egocentric” (p.3). Thinking skill instruction benefits all students, both higher and lower achieving (Zohar & Dori, 2003). These skills are not text-specific, but are applicable to any literature or daily life situation.

Although numerous schools across the world have adopted these skills in their curriculum, the pool of published research data confirming their efficacy remains small. Other references in the literature that have validated their use with students include integration into technology project work (Barak & Doppelt, 1999), a summary of school use of these skills (Melchior, Kaufold, & Edwards, 1988), a third grade instructional unit on birds (Rule & Barrera, 2006, 2008), use as an organizing structure for discussions at a special education conference (Rule & Stefanich, 2012) and a guide for activities in a middle school literacy-science unit on prairies (Salisbury, Rule, & Vander Zanden, in review). The current study will compare student performance (measured by correct number of ideas generated) across the three types of novels in discussions using these thinking skills.

Graphic Novels

Graphic novels have all of the necessities of text-only novels such as character development, plot, and setting. Because graphic novels have been looked at as a particular text format rather than their own genre (O’English, Matthews, & Lindsay, 2006), for this paper we refer to graphic novels as a format. Graphic novels are texts in which students can get lost with the characters, dialogue, and the pictorial representations of the story. Students may be drawn to this format because of their constant exposure to visual media on computers, television, and video games. Martin (2009) stated, “Today many authors and artists adapt works of classic literature into a medium more user friendly to our increasingly visual student population” (p. 30). That medium is often the graphic novel.

Graphic novels have been available for over fifty years and are related to comic books and manga. “Graphic novels grew out of the comic book movement in the 1960’s and came into existence at the hands of writers who were looking to use the comic book format to address more mainstream or adult topics” (O’English, Matthews & Lindsay, 2006, p. 173). Since this beginning, more authors have recognized the potential of graphic novels for increasing engagement in reading, resulting in their popularity. Martin observed (2009), “Because of its rich history, this literary [format] is quickly gaining acceptance as [a] viable and popular tool to get students enthused about reading and into school libraries” (p. 30).

Graphic novels not only motivate students to read but use of graphic novels has been shown to improve students’ reading comprehension by motivating them through complex materials and providing other modalities for learning. Edwards states (2009), “Reading a graphic novel requires the reader to infer and construct meaning from the visual representations while using the text to develop not only meaning, but to foster comprehension” (p. 56). Because graphic novels consist of words and pictures, they do not require students to depend solely on text-based reading strategies to access the full extent of the story’s content as a text-only novel would require; students may gain comprehension meaning from the lively illustrations or interplay among panels. As students read graphic novels, they are able to analyze the images of characters, their facial expressions, and their stances. Also, the perspectives of setting and other pictorial representations are revealed with graphic novels. As Edwards (2009) pointed out, “The students liked the graphic novels because the additional details provided by the pictures helped them understand the material” (p. 57). Using graphic novels allows

teachers to incorporate different types of text to address current topics and helps readers make connections to text through visual representation. Graphic novels' visual appeal helps engage and motivate students while simultaneously assisting those who struggle by providing pictorial representations (Martin, 2009).

A counterbalanced-design in a previous study conducted with fifth graders (Bosma, Rule, Krueger, 2013) comparing graphic novels to traditional well-illustrated novels about the American Revolution showed that the students recalled more complex facts from graphic novels than from illustrated texts. Overall, groups of students under both conditions (graphic novel and illustrated texts) showed comprehension of the texts read, but the students using graphic novels found graphic novels significantly more enjoyable to read. Students increased the number of responses that they provided on the posttest when the thinking skills were used in a problem-based learning setting. Additionally, students showed excitement about learning and discussions when the thinking skills were incorporated into the unit.

Method

Participants and Research Setting

Twenty-four fifth grade students (13 male, 11 female; 22 Caucasian, 1 Hispanic, 1 African-American) of mixed abilities in a self-contained classroom at an elementary school in the Midwest of the United States participated in the study. Permission to conduct the study was obtained from the overseeing university's human subjects review committee and the school district. All students and their parents consented in writing to participate.

Research Design

The research design was counterbalanced with all students experiencing the three different types of novels – graphic novels, heavily-illustrated novels, and more traditional, sparsely -illustrated novels as shown in Table 1. Students worked in six variable groups of mixed ability students (four or five students each group) during the lessons. At any one time, two groups were reading graphic novels, two groups were reading heavily-illustrated novels, and two groups read more traditional novels. Each student read exactly two graphic novels, exactly two heavily-illustrated novels and exactly two traditional novels. All books chosen for the study received favorable reviews or awards indicating their quality (see Table 1).

The routine of lesson activities for each book followed this sequence: (a) students met in literature circles three times, applying two de Bono thinking skills to what they had read each time; (b) students read further in the novel and wrote in their journals in response to prompts; (c) at the midpoint of reading and discussing the book, students completed a written assessment; (d) students met two more times in literature circles, applying the remaining four thinking skills to the reading; (e) students wrote two more journal entries in response to prompts; (f) students chose and completed the final creative project; and (g) students completed a survey of ratings of interest, enjoyment, and perceived understanding of the book.

Table 1. *Books used in the Study*

Book	Type of Novel	Evidence of Quality	Number of Students Reading this Novel during the Study
Bone: Escape from Boneville (Smith, 2005)	Graphic Novel	1, 2	9
Amulet (Kibuishi, 2008)	Graphic Novel	8	12
Smile (Telgemeier, 2010)	Graphic Novel	5	19
Into the Volcano: A Graphic Novel (Wood, 2008)	Graphic Novel	4, 9	8
Adventures of Captain Underpants (Pilkey, 1997)	Heavily-Illustrated Novel	2, 3	5
The Invention of Hugo Cabret (Selznick, 2007)	Heavily-Illustrated Novel	6	19
The Diary of a Wimpy Kid (Kinney, 2007)	Heavily-Illustrated Novel	8, 10	7
The Doll People (Martin & Godwin, 2000)	Heavily-Illustrated Novel	11, 12	17
Brian's Winter (Paulsen, 1996)	Traditional Novel	3	11
BFG (Dahl, 1982)	Traditional Novel	7	6
Tuck Everlasting (Babbitt, 1975)	Traditional Novel	13	9
Secrets of Droon, The Magic Staircase (Abbott, 1999)	Traditional Novel	3	4
The Phantom Tollbooth (Juster, 1961)	Traditional Novel	3	5
Night of the Twisters (Ruckman, 1984)	Traditional Novel	3	13

[1]Reviewed and recommended by Children's Literature Reviews in Children's Literature Comprehensive Database

[2]Bank Street College's Best Children's Books of the Year

[3]Reviewed and recommended by Children's Literature Reviews in Children's Literature Comprehensive Database

[4]American Library Association's *Booklist of Best Books for Young Adults*

[5]Boston Globe-Horn Book Award honor book

[6]Winner Caldecott Medal

[7]National Educator's Association Survey *Educators' Top 100 Children's Books*

[8]Reviewed and recommended in *Bulletin of the Center for Children's Books*

[9]Reviewed and recommended in *Children's Literature*

[10]Reviewed and recommended in *Publishers Weekly*

[11]*Child Magazine'*s Best of the Year

[12]ABC Children's Booksellers Choices Award

[13]California Department of Education recommended literature

Two short picture-book lessons were delivered before the start of the study so that the Edward de Bono CoRT Thinking Skills could be introduced and practiced by all students. The two picture books that were used in these lessons were: *The Three Questions* by Muth (2002) and *Click, Clack, Moo Cows that Type* by Cronin (2000).

The teacher delivered a book talk to introduce each title of possible novels that were chosen for the study, after which the novels were passed around the classroom. Students ranked their choices to indicate the novels they would prefer to read in a literature circle. The teacher then worked out a schedule so that each student would read two graphic novels, two heavily-illustrated novels, and two traditional novels, giving students their preferred book choices as much as possible.

Students met in their literature circles five times over each two-week period to discuss the novels with the teacher present. The teacher's role in the literature circle discussion sessions was to record the ideas presented and facilitate if the discussion lagged. The students led the discussions by choosing one of the ten de Bono skills (on display on a poster in the classroom) and applying it to the story. The student who chose the skill provided an initial idea, which was then recorded with the title of the skill on the electronic white board. Then other students contributed ideas about how this thinking skill could be applied to the story. When ideas for applying this thinking skill to the novel had been exhausted, the teacher asked another student to volunteer to suggest a new de Bono skill and use it to discuss the story. The teacher made sure that in the five discussion periods that the book was explored, each of the ten thinking skills was addressed at least once. When students were not meeting in their literature circles, they individually read their assigned book and responded to journal prompts and other reflection activities in their reading notebooks. Example reading notebook responses included: make five predictions on what will happen in the story and supporting them with evidence; draw the setting for the current chapter so that someone looking at your drawing would know exactly where this novel takes place; and free write your thoughts and emotional reactions to the events or people in the book.

Assessments

As a midpoint assessment on each novel, students were asked to respond in writing to a question connected to the story using the de Bono thinking skills (see Table 2). The scoring rubric had five two-point criteria for a possible score of ten points; half-credit was sometimes given. The criteria were: (a) the requested number of ideas were provided by the student; (b) the ideas made sense in connection with the novel; (c) creativity of ideas (added drawing, unusual ideas, elaboration and detail); (d) particularly insightful ideas (skill, cleverness, deep thinking, extra considerations); and (e) complete, correct steps or presentation of everything necessary.

Table 2. *Book Midpoint Reflective Writing Prompts Based on de Bono's Thinking Skills*

Week	Thinking Skill	Reflective Writing Prompt
Weeks 1-2	C & S Determining Consequences and Sequels for different time frames	Choose a main action or conflict in the story and describe it. Then list and explain three different possible consequences or sequels (1 immediate, 1 short term, and 1 longer-term) that might follow this action or conflict. These three things should be events that did not happen in the story- they are new ideas you made up.
	DECISIONS Making Decisions based on reasons	Considering the consequences and sequels you listed, make a decision on what the character should do and explain your reasons.
Weeks 3-4	CAF Consider All Factors that are related to the issue	Identify a problem in the story for a character. Identify all the factors that influence the solution of the problem. List at least 5.
	PLANNING Create a logical plan that takes into account various factors	Make a plan for a character in the story to solve a problem, telling the title of the plan, the materials and equipment needed, the steps of the plan, the possible problems, and underline changes made to the plan to solve or avoid these problems.
Weeks 5-6	AGO Determine Aims, Goals, Objectives of actions	Select a situation from the story that is problematic. List at least 3 possible aims, goals or objectives the character might have concerning the solution to this problem. Choose a possible solution to the problem.
	PMI Rate ideas as Plus, Minus, or Interesting	Rate this action with two pluses, two minuses, and an interesting consequence of this action.
Weeks 7-8	APC Determine Alternatives, Possibilities, Choices	Select a situation from the story and generate at least five alternatives, possibilities and choices for reacting to or solving the situation.
	RULES Create Rules	Write three rules that you think the character should follow regarding the situation.
Weeks 9-10	OPV Consider Other People's Views or other points of view	Choose a character's actions in the story. Make up three different character's opinions or views of these actions. The characters can be people you make up that were not mentioned in the story, but they need to make sense with the story.
Weeks 11-12	FIP Determine the First Important Priority and prioritize actions	Give three possible suggested actions or reactions to a character who is doing something. Think about which would be most important and put these three ideas in order according to priority, giving a reason for the order of each.

As a summative assessment for each novel, students completed a project that showed the main elements of the story. Students chose from the list in Table 3. The rubric used to score the final project had five criteria, each worth two points with partial credit given. The criteria were: (a) five significant events were depicted; (b) the ideas made sense and were ordered in connection to the story; (c) creativity of the product (unusual ideas, elaboration and detail); insightfulness of ideas (skill, cleverness, deep thinking, extra considerations); and (e) overall appearance and quality of the product.

Table 3. *Choices for Summative Project*

Product	Description
Movie Poster	Create a movie poster for the book showing five important scenes that tell the main events of the complete story.
Timeline	Create an illustrated timeline showing at least five significant events
Bag or Objects	Draw a suitcase or bag containing five objects that could be used to recreate the entire story. Each object represents a significant story event. Describe the objects and their symbolism in order according to story events.
Puzzle	Create a five-piece puzzle that tells the main events of the story in order. On the front of each piece, draw an important scene from the story and, on the back, explain the significance of the scene.
Collage	Create a collage of pictures from magazines that represent five main events of the story. Put them in order clockwise around a circle and write an explanation on the front or back.
Diary Entries	Create five illustrated diary entries for the main character of the story showing the most important story events in order.
Crown	Create a story crown or hat that is decorated with five illustrated main story events and number them in order or use arrows to show their progression.
Mobile	Create a string and paper mobile that shows the five main events of the story. Illustrate them, and write a sentence on the back of each piece explaining their significance.

Ratings of Interest, Enjoyment, and Perceived Understanding

At the end of work on a novel, students rated the novel by circling a number from 1 to 10 on a brief survey instrument to indicate how interested they were in the topic after reading the novel 1 = not interested at all; 10 = very interested). They also circled a number from 1 to 10 on how much they enjoyed reading the novel (1 = did not enjoy at all; 10 = enjoyed very much) and, again, circled a number from 1 to 10 to indicate their perceived understanding (1 = did not understand it at all; 10 = understood it very well).

Results

Student Attitudes toward the Different Types of Novels

Table 4 shows that students reported greatest enjoyment in reading, most interest for the story and greatest understanding of graphic novels followed by heavily-illustrated novels and then traditional novels. Several *t*-tests were conducted to determine if the differences in ratings were statistically significant and the effect sizes of those

determined significant were calculated using Cohen's *d* (Cohen, 1988). These are reported in Table 5.

Table 4. *Mean Students-Reported Attitudes on a Scale of One to Ten with Ten Indicating Most Enjoyment, Greatest Interest, or Greatest Understanding*

Area Of Student Attitude	Mean Rating of Type of Book Being Read		
	Graphic Novel	Heavily-Illustrated Novel	Traditional Novel with Few Illustrations
Enjoyment of reading	9.0 (0.9)	8.2 (1.6)	7.4 (1.9)
Interest in the story	8.9 (0.9)	8.1 (1.8)	7.5 (1.9)
Student perception of understanding the story	9.2 (0.9)	8.9 (1.6)	8.0 (1.9)

Note: Standard deviations are shown in parentheses.

Table 5 reveals that there were significant differences of enjoyment of reading between all three types of novels. The differences between graphic novels and traditional novels regarding enjoyment of reading were greatest with a large effect size. The differences between graphic novels and heavily-illustrated books were also significant with a medium effect size. Regarding interest in the story, there were significant differences between graphic novels and traditional novels with a large effect size, and smaller yet significant differences between graphic novels and heavily-illustrated novels with a medium effect size. There was no significant difference between heavily-illustrated and traditional novels in student interest in the stories. Finally, concerning students' perceived understandings of the story, there was again a large, significant difference between student ratings of self-understanding between graphic novels and traditional novels with a large effect size, but in student perceived understanding, the difference between graphic novels and heavily-illustrated novels was not significantly different. A significant difference occurred between heavily – illustrated and traditional novels with few illustrations that indicated a medium effect size.

Table 5. *Statistical Significance of Differences in Student Ratings of Enjoyment, Interest, and Understanding*

	Graphic Novels Compared to Traditional Sparsely-Illustrated Novels	Graphic Novels Compared to Heavily-Illustrated Novels	Heavily-Illustrated Novels Compared to Sparsely-Illustrated Traditional Novels
Enjoyment of reading			
p value from T-test	$p < 0.001$	$p < 0.01$	$p > 0.05$
Cohen's *d*	1.08	0.62	0.46

Table 5 (Cont). *Statistical Significance of Differences in Student Ratings of Enjoyment, Interest, and Understanding*

	Graphic Novels Compared to Traditional Sparsely-Illustrated Novels	Graphic Novels Compared to Heavily-Illustrated Novels	Heavily-Illustrated Novels Compared to Sparsely-Illustrated Traditional Novels
Effect size interpretation	Large	Medium	Medium
Interest in Story	$p < 0.01$	$p < 0.02$	Not significantly different
Cohen's *d*	0.94	0.56	-
Effect size interpretation	Large	Medium	-
Perception of understanding	$p < 0.01$	Not significantly different	$p < 0.01$
Cohen's *d*	0.81	-	0.51
Effect size interpretation	Large	-	Medium

Academic Performance: Project and Mid-Book Scores

The data in Tables 6 and 7 show that students scored higher on the midpoint assessment when reading graphic novels. The midterm assessment was given in written form when all students were half way through reading each novel. The midterm assessment questions consisted of applications of two Edward de Bono Thinking Skills in which the students had to use their knowledge of the skills and the novel itself to answer each of the questions. A rubric was used to examine creativity in the student responses, connection to the novel, adherence to the de Bono Thinking Skills steps and overall thoughtfulness of the response. An analysis of the midterm assessment data showed that students averaged a higher score on this assessment for graphic novels, followed by heavily-illustrated novels, and then traditional novels. The difference between scores of students when reading graphic novels compared to traditional novels was a large effect size, but the differences between graphic novels and heavily-illustrated novels and between heavily-illustrated novels and traditional novels were small. This indicates that the students' answers connected to graphic novels were more in-depth and creative. Students were able to interpret the pictures and story line of graphic novels when they were writing their responses to the midterm assessment. Heavily-illustrated novels scored second highest of the three types of novels. The pictures throughout the novel likely assisted students in following the storyline and allowed for good responses on the midterm assessment.

Similarly, the final project was evaluated using a rubric based on the creativity of student responses and connection to novel, but this assessment focused on the overall comprehension of the entire novel rather than the half completed at the midpoint. The students chose one of eight possible projects, a noted in Table 3, to complete for each novel. These projects were designed with similar components so that a general rubric could be used to score each of them. The data from the summative projects showed that the students scored, on average, highest for graphic novels, followed by the other two formats. Statistical calculations from Table 7 indicate that the difference between graphic novels and heavily-illustrated or traditional novels had a medium effect size. Students' illustrations were directly connected to the graphic novels and facilitated students' focus on the content of their project. The graphic novel summative projects were more colorful, had more pictures describing the events of each novel, and needed less student explanation of the drawings. Students reading traditional novels and heavily-illustrated novels scored very similarly on this project assessment. Students were able to use the text or illustrations provided to follow the storyline and create the summative project assessment with their personal insights.

The third row in Table 6 shows the average number of volunteered student responses to de Bono skill exercises discussed during class. Students provided more responses when the de Bono skills were being applied to graphic novels. This difference was statistically significant, but had a small effect size.

Table 6. *Mean Summative Project Scores, Mean Midterm Scores, and de Bono Thinking Skill Exercise Scores for Different Types of Novels*

Assignment	Graphic Novels	Heavily-Illustrated Novels	Sparsely-Illustrated Traditional Novels
Mean Midterm Test Score (Out of 10 Possible Points)	8.1 (1.0)	7.7 (1.1)	7.4 (1.0)
Mean Project Score (Out of 10 Possible Points)	7.5 (1.0)	6.9 (1.1)	7.1 (1.0)
Mean number of student volunteered responses to de Bono Skill Exercises during class	3.2 (1.0)	3.0 (1.0)	3.0 (1.0)

Note: Standard deviations are shown in parentheses.

Table 7. *Statistical Significance of Differences in Student Performance*

	Graphic Novels Compared to Traditional Sparsely-Illustrated Novels	Graphic Novels Compared to Heavily-Illustrated Novels	Heavily-Illustrated Novels Compared to Sparsely-Illustrated Traditional Novels
Mean midterm score	$p < 0.001$	$p. < 0.01$	$p = 0.025$
Cohen's *d*	0.70	0.38	0.29
Effect size interpretation	Large	Small	Small
Mean project work score			
p value from T-test	$p < 0.01$	$p < 0.01$	Not Significant
Cohen's *d*	0.41	0.56	-
Effect size interpretation	Medium	Medium	-
Mean number of student volunteered responses to de Bono Skill Exercises during class	$p < 0.001$	$p = 0.01$	Not Significant
Cohen's *d*	0.19	0.19	-
Effect size interpretation	Small	Small	-

The data in Table 8 show that on two skills, Plus Minus Interesting and Other People's Views, the numbers of student responses for the corresponding skill for the different types of novels were significantly different. These two skills ask the student to generate ideas from different perspectives; graphic novels may support students in seeing situations from various views. Certainly, the illustrations in graphic novels often show a scene from various perspectives – for example, in *Amulet* (Kibuishi, 2008) there is a series of panels that show the main character learning about the disappearance of her mother, while her little brother is learning about the house in which they found their grandfather and his role in the mother's disappearance. This may allow the reader to unconsciously adopt this multiple perspective viewpoint.

Table 8. *Number of Ideas Generated by Students for the Individual de Bono Skills*

de Bono Thinking Skill	Graphic Novel	Heavily Illustrated Novel	Traditional Novel	Significant Differences and Effect Size
Plus, Minus, Interesting (PMI)	3.3 (0.6)	3.1 (0.6)	2.9 (0.4)	Large effect size between graphic novels and traditional novels; Medium effect size between heavily-illustrated and traditional novels.
Consider All Factors (CAF)	3.1 (0.9)	3.0 (0.6)	2.8 (0.6)	
RULES	3.4 (0.9)	3.2 (0.7)	3.0 (1.2)	
Consequence and Sequel (C&S)	2.9 (0.8)	3.0 (0.8)	2.8 (0.7)	
Aims, Goals, Objectives (AGO)	3.1 (0.7)	3.3 (1.1)	3.2 (1.0)	The differences were not statistically significant
PLANNING	3.6 (1.5)	3.2 (1.2)	3.6 (1.0)	
First Important Priorities (FIP)	3.6 (1.2)	3.5 (1.3)	3.3 (0.9)	
Alternatives, Possibilities, Choices (APC)	3.2 (1.0)	3.0 (1.0)	3.4 (1.3)	
DECISIONS	2.9 (1.0)	2.6 (0.9)	2.6 (0.6)	
Other People's Views (OPC)	3.0 (1.0)	2.6 (0.9)	2.7 (0.8)	Medium effect size between graphic novels and traditional novels

Conclusion

Summary of Results

In this study, reading of graphic novels stimulated more student discussion using the structure of thinking skills and greater story comprehension. The mean number of student responses to the de Bono thinking skill prompts initiated by students was higher for the graphic novels than for either of the other two novel forms. The heavily-illustrated novels and the traditional novels had the same number of student responses to discussions centered on a thinking skill question. This finding may indicate that graphic novels allow students to process literature information more deeply because of the text-image integration. Graphic novels also increased student comprehension as measured by the midterm assessment writing prompts and final project scores, providing further support for this argument. Student midterm assessment responses for

graphic novels showed higher assessment scores than either of the other two novel forms. On this measure, the heavily-illustrated novel scored higher than the traditional novel. Students' final project scores were higher for graphic novels than either of the other two novel forms with traditional novels receiving higher project scores than heavily-illustrated novels. The survey results showed that the students reading graphic novels reported greater enjoyment of reading and stronger interest in the story than when reading either of the other two novel forms. These differences were associated with large effect sizes when ratings of graphic novels were compared to traditional novels and medium effect sizes when compared to heavily-illustrated novels. These differences in student perceptions show the power of graphic novels to motivate and engage students.

Student ratings of perceived understanding of the story were greater for graphic novels compared to traditional novels with a large effect size, but no significant difference in perceived understanding was found when graphic novels were compared with the heavily-illustrated novels. This finding highlights the important role that illustration use in directly telling the story plays in comprehension.

Recommendation

The potential of the graphic novel as a powerful tool to increase the 21st Century student's interest in reading was demonstrated in this study. The graphic novel proved to be superior to both the heavily-illustrated novel and the traditional novel in all of the categories that were studied. Today's elementary students live in a society where free time access to visual media is increasing daily; naturally, text will also evolve. Perhaps we are witnessing the beginning of a new era in learning, in which graphic novels will replace traditional novels in the manner similar to the way television replaced radio. It would be interesting to extend the study to more classrooms and a larger sample to determine if the trends witnessed here continue. At the very least, this study indicates that graphic novels should be made available to students to increase their interest and enjoyment in reading. However, the use of graphic novels also improved student comprehension and deeper understanding of reading material. While further research in the graphic novel text format should be conducted to confirm what was found in this study, the value of the graphic novel as an educational tool cannot be dismissed.

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References

Abbott, T. (1999). *The Secrets of Droon: The Magic Staircase.* New York: Scholastic.

Allington, R. (2011). *What really matters for struggling readers*, 3rd *Ed*. New York: Allyn & Bacon.

Babbit, N. (1975). *Tuck Everlasting.* New York: Farrar, Straus and Giroux.

Barack, M., & Doppelt, Y. (1999). Integrating the Cognitive Research Trust (CoRT) programme for creative thinking into a project-based technology curriculum. *Research in Science and Technological Education,17*(2), 139–151.

Bosma, K., Rule, A. C., & Krueger, K. S. (2013). Memorable, enjoyable reading about American Revolution with graphic novels. *Social Studies Research and Practice, 8* (1).

Briggs, S. R. (2010). Using Literature Circles to Increase Reading Comprehension in Third Grade Elementary Students. ERIC Document Reproduction Service No. ED 511 091.

Brozo, W. G., Shiel, G. & Topping, K. (2010). Engagement in Reading: Lessons Learned from Three PISA Countries. *Journal of Adolescent and Adult Literacy, 51*, 304-315.

Certo,J., Moxley, K., Reffitt, K., & Miller, J. (2010). *I Learned How to Talk About a Book: Children's Perceptions of Literature Circles Across Grade and Ability Levels. Literacy Research and Instruction, 49*(3),

Clay, M. (2000). *Becoming literate: The construction of inner control*. Portsmouth, NH: Heinemann.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Cronin, D. (2000). *Click, Clack, Moo Cows That Type*. New York, NY. Simon & Schuster Children's Publishing Division.

Dahl, R. (1984). *The BFG.* New York: Puffin Books.

Daniels, H. (1994) Literature Circles: Voice and Choice in the Student-Centered Classroom. York, ME: Stenhouse.

de Bono, E. (1970). *Lateral thinking: Creativity step by step.* New York, NY: Harper and Row Publishers

Edwards, B. (2009). Motivating middle school learners: The graphic novel link. *School Library Media Activities Monthly, 25*(8), 56-58.

Guthrie, J.T. (2001). Contexts for engagement and motivation in reading. Reading Online, 4(8). Available: http://www.readingonline.org/articles/art_index.asp?HREF=/articles/handbook/guthrie/index.html

Jewett, C. (2008) Multimodality and literacy in school classrooms, *Review of Research in Education*. 32(1)241-267.

Juster, N. (1961). *The Phantom Tollbooth.* New York: Random House, Inc.

Kibuishi, K. (2008). *Amulet: Book One: The Storekeeper.* New York: Graphix.

Kinney, J. (2007). *Diary of a Wimpy Kid.* New York, NY: Amulet Books, 2007.

Kress, G. (2003). *Literacy in the new media age*. New York, NY: Routledge

Lavin, M.R. (1998). Comic books and graphic novels for libraries: What to buy. *Serials Review, 24*(2), 31–46.

Lyga, A., & Lyga, B. (2004). *Graphic novels in your media center: A definitive guide*. Westport, CT: Libraries Unlimited

Martin, A. (2009). Graphic novels in the classroom. *Library Media Connection, 28*(2), 30-31.

Martin, A., & Godwin, L. (2002). *The Doll People.* New York: Hyperion Books for Children.

Matthews, S (2011). Framing preservice teachers' interpretations of graphic novels in the social studies classroom. *Theory and Research in Social Education*, 39(3), 416-446.

Melchior, T. M., Kaufold, R. E., & Edwards, E. (1988). How schools teach thinking: Using CoRT thinking in schools. *Educational Leadership, 45* (7), 32–33.

Michalski, R. (2005). Forward thinking, sideways. *C M A Management, 79*(2), 20.

Mills, H. & Jennings, L. (2011) Talking about Talk: Reclaiming he Value and Power of Literature Circles. *Reading Teacher*, 64(8), 590-598. doi:10.1595/RT.64.8.4

Muth, J. (2002). *The Three Questions*. New York, NY: Scholastic Press.

O'English, L. Matthews, J. G., & Lindsay, E. B. (2006). Graphic novels in academic libraries: From *Maus* to manga and beyond. *The Journal of Academic Librarianship, 32*(2), 173-182.

Paulsen, G. (1996). *Brian's Winter.* New York: Random House.

Peterson, S. , & Belizaire, M. (2006). Another look at roles in literature circles. *Middle School Journal, 37*(4), 37-43.

Pilkey, D. (1997). *The Adventures of Captain Underpants.* New York, NY: The Blue Sky Press.

Ruckman, I. (1984). *Night of the Twisters.* New York: Harper Collins Publishers Corp.

Rule, A. C., & Barrera, M. T., III. (2008). Three authentic curriculum-integration approaches to bird adaptations that incorporate technology and thinking skills. ERIC Document Reproduction Service No. ED 501247.

Rule, A. C., & Barrera, M. T., III, (2006). CoRT thinking skills guide PBL science. *Academic Exchange Quarterly, 10*(4), 145-149.

Rule, A. C., & Stefanich, G. P. (2012). Using a Thinking Skills System to Guide Discussions during a Working Conference on Students with Disabilities Pursuing STEM Fields. *Journal of STEM Education: Innovations and Research, 13*(1), 1-12.

Salisbury, K. E., Rule, A. C., & Vander Zanden, S. M. (in review). Performance of high-potential versus identified gifted middleschoolers during a prairie restoration project.

Selznick, B. (2007). *The Invention of Hugo Cabret.* New York: Scholastic.

Sipe, L. R. (2008). Young children's visual meaning making in response to picturebooks. *Handbook on Research on Teaching Literacy through the Communicative and Visual Arts*, *2*, 381-392.

Smith, J. (2005). *Bone: Out from Boneville*. New York: Graphix.

Snowball, C. (2005) Teenage reluctant readers and graphic novels, *Young Adult Library Services*, 3(4) 43-45.

Telgemeier, R. (2010). *Smile.* New York: Graphix.

Trabachnick, S. (Ed.). (2009). *Teaching the Graphic Novel*. New York, NY: The Modern Language Association of America.

Wood, D. (2008). *Into the Volcano: A Graphic Novel.* New York: The Blue Sky Press.

Zohar, A., & Dori, Y. J. (2003). Higher order thinking skills and low-achieving students: Are they mutually exclusive? *The Journal of the Learning Sciences*, *12*(2), 145-181.

International Electronic Journal of Elementary Education, 2014, 6(2), 275-294.

Non-Challenging Education and Teacher Control as Factors for Marginalization of Students in Diverse Settings

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Received: 23 May 2013 / Revised: 5 August 2013 / Accepted: 22 November 2013

Abstract

This article discusses teachers' attitudes towards immigrant students in poor settings and the effect these attitudes have on organization of education on classroom level. It draws on results from two ethnographic studies where some primary school classes in Sweden were followed with participant observation and interviews as main research methods. The article focuses on classroom activities and teachers' attitudes towards immigrant students and students with low socio-economic status. In the article is argued for the importance of presenting students in poor settings with demanding tasks and challenging education. In these cases, intellectually undemanding tasks in combination with little room for students' own initiatives resulted in low enthusiasm among students regarding schoolwork and accordingly low learning, while classroom work that demanded active involvement by students in combination with high level of students' influence on what took place in classrooms resulted in high level of students' engagement and high outcome.

Keywords: Challenging Education, Immigrant Students, Diverse Settings, Teacher Attitudes, Deficiencies

Introduction

In this article teachers' attitudes towards immigrant students in poor settings is investigated, and also the effect these attitudes have on organization of education on classroom level. During my years in teacher education in Sweden, I have been struck by the fact that so many teacher students seem to view children as vulnerable, neglected and in need of intense teacher supervision. It might be that children are perceived as legitimate objects for goodwill and nurturing, but I find it problematic when they are perceived as representing a collection of deficiencies. This seems particularly to be the case in many contexts involving children with immigrant backgrounds;

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Runfors (2003) claims that they are made to represent “a minuskultur,” a culture of deficit. Runfors shows how teachers in Sweden have constructed “immigrants” based on assumptions about defects and marginalization. Teachers in her study emphasized the need to teach Swedish to students with immigrant backgrounds and to compensate for their lack of contact with the Swedish society. They focused on the experiences the students lacked, not on those they possessed. Cases where teachers have tended to treat students with multilingual, immigrant or socio-economically disadvantaged backgrounds as less able have also been shown by Knapp et al. (1995), Lahdenperä (1997), Parszyk (1999), Queensland School Reform Longitudinal Study (2001) and Johnston and Hayes (2008).

Although students with immigrant and/or multilingual backgrounds do not constitute a homogenous group, general academic results within these groups in Sweden are below those achieved among students with monolingual Swedish backgrounds. In 2005/06, 14 % of the students in the nine-year compulsory school in Sweden had immigrant backgrounds, that is, they were either born abroad or both of their parents were born abroad (Skolverket 2009). Of these, 28 % did not pass the final exams in grade nine, while the figure for students with Swedish backgrounds who did not pass was 16 %. Of students with Swedish backgrounds, 2.4 % did not receive a final grade at all, while the figure for students with foreign backgrounds was 8 %. One out of five students with foreign backgrounds did not qualify for a national program at the Swedish gymnasium (upper secondary school, equivalent to form four to six) while the rate for students with Swedish backgrounds was one out of ten. Among students with Swedish backgrounds who took their exam in grade nine, the final year of compulsory school in Sweden, 6.4 % did not pass Mathematics and 4.4 % did not pass English in 2008. The figures for students with foreign backgrounds were 14.9 % for Mathematics and 13.6 % for English (Skolverket 2009). This means that the failing rate is more than double for students with foreign backgrounds. The educational gap between the groups is slowly widening. In Sweden, as in many Western countries, the majority of immigrants are relatively isolated, living in suburbs whose populations are largely made up of immigrants and people of low socio-economic status. This means that schools with a majority of students for whom Swedish is a second language are also schools in which many students are from low income backgrounds. In this article I will refer to this type of setting as “diverse”. The reasons for the widening gaps are many and in this article I will focus on one possible reason: teachers’ attitudes towards students in diverse settings and the effect these attitudes have on the organization of education at the classroom level. The article draws on the results from two case studies in Sweden on language and learning in classrooms in diverse settings.

Diverse classrooms and challenging education

Many teachers seem to support the “deficiency theory” regarding students in diverse settings, and this tends to marginalize these students. In her study, Runfors (2003) found that students who were denoted as immigrant children tended to be kept apart, side-stepped and subordinated in ways that diminished their range of personal initiative. Through her study in three different types of schools, she showed that students in a middle-class school in Sweden, in which students came mainly from monolingual Swedish backgrounds, were offered more opportunities to engage in individual initiatives in which the teacher acted more as a supervisor. In a mixed school, teachers often pointed out problems with immigrant students, and Runfors established that the students in question were segregated. She talks about immigrant fatigue among these teachers. In a third school, in which few students had Swedish as their mother tongue, Runfors found both teachers and students to be more enthusiastic and more engaged. While, in these immigrant-dense schools, students helped each

other and immigrant students frequently asked for help, she found that, in the mixed school, immigrant students tended to hide any lack of knowledge. From this study, one may infer that the risk of teachers focusing on the lack of Swedish-language ability among immigrant students is particularly high in a mixed setting. In a study of "programs for measures to be taken" (Sw. åtgärdsprogram) for students with immigrant backgrounds, Lahdenperä (1997) found that teachers focused on deficiencies and also that they held a compensatory view particularly towards parents with immigrant backgrounds.

Studies by Johnston & Hayes (2008) and Knapp et al. (1995) revealed a pattern of low educational demand resulting in poor academic results in schools in similar settings. According to Knapp et al., in linguistically and culturally diverse classrooms in low-income areas, what teachers perceive as "good" education tends to have students working along a linear study path, progressing from basic to more advance levels. However, while teachers focused on the basics, they seldom reached the more advanced levels. Johnston & Hayes analysed implicit classroom practices in diverse classrooms in Australia, what they called "taken-for-granted classroom practices", and found that conventions and practices in classrooms were restricting students' opportunities to learn. Their findings showed that teachers practised a high level of control in class and assigned intellectually unchallenging tasks, which together resulted in low student engagement. Johnston & Hayes (2008) characterized this mode of teaching as a "survival mode".

Johnston & Hayes (2008) were surprised to find similarities in classroom patterns in all four schools in their study. Similarities included minimal literacy demands, intellectually undemanding tasks, teachers asking questions on procedural levels that required a one- or two-word response and the lack of choice given to learners regarding what they could learn, and when and where they could learn it. They reported that if students were not constantly re-engaged they lost interest in the lesson "game" and instead occupied themselves with activities such as chatting among themselves, moving around, listening to iPods, and daydreaming. Johnston & Hayes also argued that in this way teachers create "zone(s) of relative comfort" while actually restricting the learning environment. Newmann & Associates (1988) argued that students in what they call disadvantaged schools are often disadvantaged by the absence of demanding education. Also, Parszyk (1999) found teachers and students talking about undemanding teachers.

In an American study of high-poverty classrooms, Knapp et al. (1995) found similar practices, although in their study teachers sometimes offered students a greater variety of routines and strategies. They noted that on these occasions students showed more enthusiasm. They reported that teachers who tried to connect what happened in school to students' earlier experiences also used more meaning-oriented approaches in their teaching. They also found that in classrooms where teachers exerted slightly less control and also offered a wider range of routines and varied instructional strategies, students showed greater enthusiasm for school work.

In a longitudinal school study in Australia (the Queensland School Reform Longitudinal Study, QSRLS, 2001) teachers rated basic literacy and numeracy skills as the most important in school, while intellectual engagement and demand were rated least important. It was determined that constructivist views of learning were rarely implemented for students from traditionally marginalized groups and that some teachers avoided high intellectual quality and referred to behaviourist pedagogy instead. The conclusions in the QSRLS were that levels of intellectual demand and social support both have significant statistical correlations with improved productive performance and, hence, improved student outcomes. The study highlighted the need

for a shift in teachers' focus, from basic skills to higher-order thinking, problematic knowledge and sustained conversations, ranging from minimal to higher levels of expectation and demand. The study concluded that schools provided supportive environments and that teachers identified students' social needs. However, appropriate and effective interventions were not developed for students from diverse backgrounds nor were interventions developed to effectively improve these students' performance. Some teachers perceived making greater intellectual demands and providing social support as alternatives while the research emphasized the importance of both.

The importance of providing intellectually challenging education for second-language learners (L2 learners) in combination with high support and the explicit teaching of language has been emphasized by, among others, Cummins (1984, 2000), Cummins and Early (2011), Gibbons (2006, 2008), Hammond (2006, 2008), Schechter and Cummins (2003), and Author (2010a). These researchers oppose the tradition of modifying the curriculum for L2 learners by claiming the importance of offering students intellectually undemanding tasks. Gibbons (1998) warns that a simplified approach towards L2 learners can lead to a reductionist curriculum that works against successful second-language learning and "provides an insufficient basis for the development of a language-for-learning in school" (1998:100). Cummins (1996, 2000) shows the relation between these factors in his well-known coordinate system with two intersecting continua. One of the continua represents the degree of contextual support, where one extreme stands for context-embedded and one for context-reduced. The other shows the degree of cognitive demands in the language use or activity. This axis has at its extremes cognitively demanding and undemanding language. If the students' knowledge and experience of the topic is high, the language use has been automatized and the linguistic challenge is minimal. In the opposite case, if the students' knowledge is low, then the linguistic challenge becomes high. Teaching in a second language should, according to Cummins, start at the less demanding and concrete end but proceed through to the more highly demanding end, although still dealing with concrete tasks. Cummins (2000) uses the terms BICS and CALP for these types of language respectively, with BICS denoting conventional everyday language and CALP denoting language that is age-relevant in academic school settings. He draws attention to the difference in the amount of time required to learn BICS (1 to 2 years) and CALP (5 to 7 years). Thus, he stresses the need to provide L2 learners with age-relevant education at the same time as they receive language teaching and linguistic support to enable them to elaborate on curricular knowledge. Cummins' model has been criticized for being too simplified to describe such a complex and dynamic process as second-language acquisition (see for example Baker, 2006). However, I find that it may serve as a model for educational planning for students whose ability to communicate in Swedish as a second language has not yet reached the level that is required in school.

Gibbons (2008) argues that a high level of challenge and support favours all students, while low demands give rise to self-fulfilling prophecies. Newmann & Associates (1996) argue that all students regardless of background become more engaged when classroom activities grow more demanding. Thus all students reach higher levels in an intellectually challenging environment and justice gaps diminish within this educational format. Also, Hammond (2006, 2008) stresses the importance of providing an intellectually challenging education to L2 learners to promote the development of higher-order thinking. These scholars all stress the importance of a linguistically supportive curriculum of knowledge in combination with high-quality teaching. Gibbons (2008) gives the following examples of challenging education: students are offered opportunities to participate in higher-order thinking, transformation of information, and exploration-based activities, and they construct their own understanding by taking part in real conversations with others. These examples

challenge earlier-mentioned traditions for education in diverse settings, in which the curriculum has been reduced and simplified.

By drawing on two case studies I aim to show how teachers' attitudes and the way that they organize education in their classrooms in diverse settings may affect students' opportunities for learning.

Two Swedish cases

In the two studies I followed a number of primary school classes. The studies took an ethnographic approach and aimed at visualizing relations between students' language development and their knowledge of school subjects, with a focus on students with immigrant and/or multilingual backgrounds. Particular aims were to understand teachers' and students' assumptions and understandings about language and learning.

The classes were observed during ordinary school days and the observations were spread over different times of day and during different types of activities. I particularly tried to find occasions where knowledge of typical school subjects was presented or dealt with, such as knowledge related to mathematics, reading and writing, science and social science. As a participant observer I did not intervene in what happened in class but responded when teachers or students addressed me. Students sometimes asked me to help them or initiated conversations with me, to which I responded. Teachers sometimes approached me and commented on what was going on in the classroom and shared their plans and reflections. Apart from keeping field notes, I also collected written materials and students' written texts.

In the first study, in North School, about 350 hours were spent in two classes over a period of three years, and about half of the time was recorded. A tape recorder was placed visibly, usually near to where I sat and sometimes on particular students' desks or in the teacher's pocket. When students asked if they could listen, I arranged so that they could listen to parts where they themselves had been recorded. Students and teachers were interviewed every year. In the second study, in South School, the study focused on two classrooms in which grades three and five were taught. In these classrooms video recordings were used instead of tape recordings. In both studies teachers were interviewed at the end of each school year.

The case of North School. The school where the first study was carried out is located in a medium-sized town in Sweden. The school is small, with just over 100 students from pre-school to grade six, consisting of students from six to thirteen years of age. Most of the students in this school lived in apartments and came from relatively low-income backgrounds, while some lived in private houses. About half of the students had immigrant backgrounds, which means that one or both parents were born abroad, and most of these students lived in the apartments. Some of the parents could be considered middle class, while some were unemployed and relied on support from the welfare system.

The students with immigrant backgrounds in this school constituted a heterogeneous group. Some were born in Sweden and some abroad. Some had one parent with Swedish as the mother tongue and Swedish as the main language in the home, while some rarely spoke any Swedish with adults except in school. Some (but not all) students who did not know any Swedish were placed in a preparatory class for some months before being placed in the class where only Swedish was used. In some cases students were placed a grade below their own age level. Swedish as a second language was taught through a "pull-out model" (Thomas & Collier 1997), which means that students were taught Swedish separated from their class for some of the lessons.

This only applied to newcomers or low-performing students. Some of the multilingual students also received weekly lessons in their mother-tongue.

Teacher attitudes. All of the teachers who taught these two classes were experienced teachers who qualified in the 1970s or early 1980s. None of the teachers had special education in the role of language in learning, nor in the learning conditions required by students being educated through a language they have not yet mastered. Some of the teachers had education in special needs but none had training in teaching Swedish as a second language.

The teachers who were responsible for the main part of education in the two studied classes were asked about their students and the classes in the interview. The teachers were Maria, responsible for the class that was followed from pre-school to grade three, and John, who taught the class that was followed from grades three to six. Both focused mainly on the needs they perceived some of their students to have. They showed concern about the students they perceived as low performing. They also showed social concerns about the students, particularly as a group. Maria described her class in grade-three as “a great team”, “positive” but also as “socially unstable” and she stressed the necessity to “weld the group together and make them respect each other”. She stressed that mathematics was difficult for some of them and that “the Swedish-two boys”i will have a tough time higher up in school”. When she talked about individual students she said that they “are on their way”, have to “polish some skills” and to “pick up one thing after the other” and she also said about some of them that they “hardly get anything done”.

When John talked about his class in grade six he said that many of them had lost a great deal of time and that they “need a lot”. He said that many of them had difficulty performing at all and that it “takes a lot of push and pull” (to make them do any of the assigned work). When talking about individual students he used expressions such as “does not have time to consolidate new information”, “it takes time to pull an answer put of him, “he hasn’t got his own motor” and “it’s hard to get anything out of him”.

Concerning the high-performing students, John and Maria did not say much other than that they were “linguistically enormously developed”, “made progress” and worked “terribly well”.

Organization at the classroom level. The way that Maria and John perceived their students’ needs affected what happened in their classrooms. The main concerns that they expressed were about the needs of the low-performing students and about social needs. They did not express concerns regarding what was taught, teaching methods or level of education or whether what they were teaching suited the students. They did not express much concern about the high-performing students, which shows that they were more focused on what they perceived as problems.

There were many patterns in these two classrooms that resembled the results shown by Johnston & Hayes (2008). The atmosphere was very friendly and inclusive. Newly arrived students were welcomed and included in peer groups, and students who had recently come to Sweden and had only begun to learn Swedish were supported by teachers and peers. The tasks they were occupied with resembled those described by Johnston & Hayes (2008) in that they were largely procedural tasks and behaviourist types of exercises with little scope for arriving at individual solutions. In the lower grades, tasks were commonly related to reading, writing and mathematics and consisted mainly of drawing lines, colouring and filling in single numbers, letters or words.

The talk in class was dominated by what can be characterized as small talk or chat. Discussions about school subjects were rare, as were occasions when anyone, teacher or student, was engaged in expressing abstract, complex thoughts. Most of the time students worked individually or in small groups while they chatted with each other, and the teacher walked around the classroom assisting those who called for help. As a result, the main part of the classroom interaction consisted of dialogues with fragmented speech, overlapping speech, frequent repairs and interruptions (see Author 2008, 2010a, 2010b, 2011).

One example of work that followed a behaviourist pedagogy, and that did not promote or demand complex language use, was a study kit that was used in all classes in this school, and hence also in the two classes in this study. The study kit, named Pilen (The Arrow), was used from the second term in grade one to the end of grade six, and its importance was emphasized by all teachers. Teachers and the study kit's producers claimed that the kit developed students' linguistic skills, although in reality it was limited to written Swedish. The study kit consisted of cards and worksheets that students were supposed to work through following a fixed order. I never observed a teacher initiating a change in this pre-planned order. There was little or no room for students to use creative language in the tasks, and opportunities to make individual choices were minimal. When students happened to do a task out of its planned order, this was corrected by the teacher. The exercises trained discrete skills out of context, such as changing nouns from singular to plural or joining different given morphemes to form words. Reading and writing consisted of single words or short sentences, and the writing mainly entailed copying from the cards. The work was for the most part done individually, except when students were required to play a game. A game could be a competition where the one who first reached a certain goal, such as getting five dots, won. Students were not explicitly required to talk during these activities, but as they usually sat in pairs during work they chatted and asked each other about different tasks.

The tasks were not cognitively demanding and, as they were of a type that mainly tested students' skills, they did not give students many chances to produce language of their own, apart from the small talk they engaged in. One example from grade three of how the work was carried out involves an immigrant boy working with a sheet with a number of nouns, each preceded by a line on which he was expected to fill in en or att (indefinite article in singular). He came to the noun *barr* (needles), which he seemed not to know. Then he asked his classmate sitting next to him: "Vad ska det vara här?" (What should it be here?) and received the answer: "ett", which he wrote on the line. Thus he did not learn the meaning of the word but solved the task by writing down the word given by his classmate.

Some high-performing students quickly developed fluency in reading and writing and they used some of the time in class reading and writing extended texts. Others were late in developing literacy skills and were observed to mainly read and write single words or sentences right up into the higher grades. Most of the immigrant students were among this group. Some of the immigrant students were barely observed to read anything even in grade six, only writing texts of a few lines and only with great support from a teacher.

In the higher grades students were sometimes arranged in groups to work on various projects. Here students had some opportunity to choose tasks, such as what part of Sweden to focus on or whom to work with. However, within the project groups, those students who had reached high proficiency in reading and writing were the ones who did the reading and writing for their groups, while others mainly occupied themselves with activities such as throwing things at each other, tilting their chairs or

daydreaming (Author 2010a). Consequently, low-performing students were observed to read and write very little during class time. It may be noted that, regarding reading, some of the low-performing students said in interviews that they never read outside school while some of the more proficient readers claimed that they preferred to read at home and not in school as they found the school environment not good for reading. This means that, although the low performers in reading and writing did not engage in much reading and writing in school, it may be the case that they did even less outside school.

The following is one example of a conversation during science lessons. It is from grade four, where a group of six students are looking for information about the Swedish island Öland. One of them, Malin, is doing the writing while Lena reads from a book about the island. This is supposed to be presented to the class afterwards.

1 LENA: Em … (läser) högsta höjd XXX 57	LENA: Um … (reads) the highest point XXX 57 XXX um … ee the greatest breadth of Öland is about 20 … kilometres and the greatest length of Öland is 130 kilometres
2 XXX m …ee största bredden på Öland är cirka	MARIA: Number of inhabitants
3 20… kilometer och Ölands största längd	MALIN: The-the highest point of Öland
4 är 130 km	MARIA: Highest point?
5 MARIA: Antal invånare	MALIN: Yes
6 MALIN: Den den största höjden på Öland	MARIA: The highest um …
7 MARIA: Största höjden?	LOVE: Um … can't one of us write um questions
8 MALIN: Ja	(a howl in the background)
9 MARIA: Den störs em …	MALIN: So
10 LOVE: Em … kan inte nån utav oss skriva em 11 … frågor	LENA: But that's what we do all the time
12 (Tjut i bakgrunden)	MARIA: Um
13 MALIN: Så	(A howl)
14 LENA: Men det gör vi hela tiden	MALIN: Um there it was the highest point
15 MARIA: Mm	LENA: Yes um … the highest point is
16 (Tjut)	MALIN: 57
17 MALIN: Mm där var det störs höjd	LENA: Yes 57.4
18 LENA: Ja em … den största höjden är …	MALIN: (writes) dot four metres above the sea level
18 MALIN: 57	LENA: Yes um … dot a
19 LENA: Ja 57,4	MARIA: Um … dot a dot h dot well
20 MALIN: (skriver) komma 4 meter över havet	LOVE: Um … number of inhabitants XXX yes but that we have XXX
21	AMIR: Kalmar is that is
22 LENA: Ja em … punkt ö	MALIN: Um … their county is Kalm Kalmar
23 MARIA: Em … punkt ö punkt h punkt happ	LENA: Öland the county of Öland … wait
24 LOVE: Em … antal invånare XXX ja	
25 men det där har vi XXX	

26 AMIR: Kalmar e de e

27 MALIN: E … deras län är Kalm Kalmar

28 LENA: Öland Ölands län … vänta …

29 Ölands största län landskap … vänta …

30 Ölands största län

31 AMIR: Ja

32 MALIN: Nej vänta Ölands län

33 LENA: Ölands län heter Kalmar

31 MALIN: Ja det blir bra

… the greatest county landscape of Öland … wait … the greatest county of Öland

AMIR: Yes

MALIN: No wait the county of Öland

LENA: The county of Öland is called Kalmar

MALIN: Yes that'll be fine

In this example we see that the main work is done by Lena and Malin, the two high-performing girls. Maria also contributes to the work, but she is a slow reader and throughout the work she is usually one step behind, such as in the beginning of this excerpt when she reads the question about number of inhabitants from their question paper while Malin and Lena work with the highest point. The three boys in the group, Love, Amir and Valton, are mainly occupied with other things not connected to the group work. Love tries to involve himself in the group's work twice in this example, in line 10 where he suggests that one of them should write questions and Lena answers that this is what they are doing, and in line 24 where he talks about the number of inhabitants. This time Lena and Malin seem to ignore him as they work on writing about the highest point and go on reading about the county. Amir has a short turn where he mentions Kalmar while Valton is not verbally involved in the work at all. This pattern, with a few students being occupied with the assigned task while the majority show little enthusiasm or occupy themselves with other things, was common during class time. It may be noted that the teacher's low expectations of these three boys had been adopted by the girls, who did not demand that they involve themselves in the work.

Similar to the classes studied by Johnson & Hayes (2008), students in these classrooms had little chance to make their own choices, and they showed little enthusiasm towards the school work. Particularly low-performing students needed to be motivated by the teacher repeatedly so that they would do the assignments. This was especially true with regard to boys, and in grades four to six it was true of all immigrant students.

One school day. To give an impression of life in these two classes, a glimpse of two school days will be given, the first one in grade one and the second one in grade five. The days have been chosen to represent what commonly happened in the classrooms.

Grade One, May 11th

8:15 Students drop in to the classroom. They walk around, talking to their classmates and move towards their individual benches, where they sit down. Some bring notebooks, pencils or other things that they put in their individual drawers. The teacher, Maria, comes in and puts her bag close to her table. She unpacks some things and arranges them on her table. A school assistant comes in and sits on a sofa.

8:20 Maria stands in front of the class, at the blackboard. She calls in those students who are still out in the corridor. They come in and sit at their desks. Some small talk is going on. The teacher calls for attention. She tells the children to put their homework in front of them on their desks. One of the children is called up to draw the calendar and to tell the class the day, the date and the food that will be served at lunch.

8:35 Maria starts to talk about a task with geometry boards that they are going to work with later on. She turns to talking about flowers that the children were supposed to have picked on their way to school and bring in to press. Then she starts to talk about an excursion they will be are going on the next week. After that she talks to one of the students about a written story she has found, and then she starts to give instructions to the class for the work with the geometry board.

8:45 Students start to work individually with the geometry boards.

9:10 Maria tells them to put the geometry boards on a table and to sit down at their desks. Then she reads a story to the class.

9:20 Students are sent out for a study break.

9:45 Students come in and are instructed to take out their individual books for reading. They sit down at different places to read. The assistant sits with one student and reads with him.

10:25 Lunch break

11:40 Students come in and sit down at their desks, chatting. Maria calls for attention and starts the lesson by reminding the students to bring clothes for the sports lesson next day. The students take out individual work on the alphabet.

12:10 Maria and the class sing an ABC song that is played on the tape recorder.

12:20 They all go out to the playground. Maria hands out skipping ropes and all of the children start to jump in groups that they arrange themselves.

12:55 In the classroom again. Maria hands out a test with figures in the shapes of circles, loops, summits and eights. Students are supposed to follow the lines with their pencils and then to construct their own figures.

13:20 Maria collects the papers. Students put their chairs on the tables and Maria finishes the day by saying goodbye.

In this classroom there is little room for students to take initiative, and the level of intellectual demand is low. The atmosphere is friendly and calm, but students are not challenged during their school work. Students' enthusiasm is low, but they engage with the work they are given. They show more enthusiasm when singing and skipping rope than when working with the alphabet and the test. There are few examples where students are required to think creatively and independently. However, most of the tasks are context-embedded and thus those students who have quite recently started to learn Swedish are also included in the work and are involved in the tasks, such as working with the geometry boards. The impression is given that they are included and engaged in the tasks, but the question is, what do they learn? During the work with the geometry boards, for example, students worked individually and then showed each other the patterns they made, but no names of geometric shapes were mentioned either by the teacher or the students. Thus what students actually did was form shapes and chat. Similar observations were made during other types of exercises—that children did not focus on what they were supposed to focus on. One example was when children worked with scales, comparing the weight of different things and writing the results down. In this case most students focused on getting the "right" guess on their papers and comparing with their peers rather than actually estimating and guessing in advance.

The following is an example of a day in grade five.

Grade Five, May 7th

8:15. The teacher, John, walks around the classroom and prepares for the day. Students walk around or sit at their tables, chatting with each other, taking things out of their bags or desks.

8:20 John starts to talk about the day. An extra teacher enters the classroom. One student is called to the table to draw the calendar and say what the date is and what food is going to be served for lunch. Students who know somebody with the same name as the current name day raise their hands and in turn mention the person. John starts to call attention to those who are chatting and proceeds to give a short overview of the day. Then he gives the class the instructions for a game on the geography of the Nordic countries. Students are quite unfocused and the instructions are interrupted by questions and small talk. Students start to play the game and the extra teacher sits down at the table of two immigrant students and helps them play. When students have finished playing, John tells them to take out their maths work.

9:45 Break

10:05 English lesson: John instructs the students to play a vocabulary game in pairs. For some students the words are easy and the level of enthusiasm among these students is low, while others do not know the words and need help from their classmates. When students have finished, John tells them to take out their group work on nations and to prepare for presentations.

10:50 Lunch

11:40 Students present the work they have done in groups on different nations. The nations are chosen according to some students' backgrounds: Finland, Somalia, Turkey and Kosovo. Students are attentive but they have difficulty understanding what is said by their classmates. When the groups ask a few questions about their presentations the classmates seldom know the answers.

12:20 Students start to work with *Pilen.*

12:50 Short break

13: 00 Work with *Pilen* continues.

13:35 Students put their work away, put their chairs on their desks and then John dismisses the class for the day.

Although the assignments in grade five were more varied than in grade one students were still not given the freedom to plan their own work regarding what, when and how to study. For some of the students the level of the work was too low while for others it was too high. Note the routine in which one student draws the calendar and says the date, a routine that had begun in pre-school and continued through grades one to six. The only thing added through the years was the reading of the name day, which started in grade four, and students mentioning some people they knew with that name. Note also that the name days include predominantly Swedish names, while half of the students had immigrant backgrounds. This routine may have had a disciplinary function, helping students focus on the start of the school day, but it did not challenge students or increase their enthusiasm.

The main activities consisted of constructed exercises that were not very cognitively demanding, offering few challenges to students who were highly proficient. As in grade one, the social climate was friendly. Yet students showed low levels of enthusiasm and concentration. The boys in the class had to be encouraged repeatedly to engage in any of the required work. As only 14 students were left in the class at this time and there

were usually two teachers present, some of the students were frequently given individual support. This was true particularly of the immigrant students and some of the other students who showed low performance. The work was more context-reduced at this stage and the level of understanding and involvement of some of the students was low. This was the case, for example, during the group work in the earlier example where we could see that reading and writing was done by high-performing students while the others tended to occupy themselves with other things.

The case of South School. South School, the school in focus in the second study, is situated in a large town in Sweden. In South School roughly half of the students had multilingual backgrounds and teachers estimated that half of the students in the school had not yet reached a level in Swedish-language proficiency that was expected of students of their age. Similar to North School, some students came from families of a relatively high socio-economic status while the majority came from more or less poor or low-income backgrounds. Despite the diversity in the school and a high number of students with special needs, the school was known to receive good results, for example, in the national exams. The school was highly regarded for its educational outcomes, and teachers expressed a high level of awareness of the needs of both students with special needs and students with immigrant backgrounds. Several of the teachers had attended various in-service courses, including courses on education for students developing Swedish as a second language. Teachers stressed the need for challenging education, and they demonstrated awareness about language development among students. Some of the teachers organized their teaching according to the Systemic Functional Linguistics theory (Halliday 1993, Gibbons 2006, 2008), which stresses the importance of focusing on language development in the context of all school subjects. Here examples will be taken from grades three and five, the classes of Anna and Nina.

Teacher attitudes. In interviews, both Anna and Nina stressed the potentials and abilities they saw in the students and talked about their progress. Anna's classroom, grade three, may be characterized as highly diverse, with some of the students being "the cream of the crop" while others had been diagnosed with autism and/or with severe language disorders. While some children came from high-status families, others came from homes of low socio-economic status and homes with criminal backgrounds. In the interview Anna talked about the importance of maintaining a sense of humour and compassion, and she stressed the need to create a spirit of community in the class. She talked about her students as melodramatic saying that there were "many artists, sentimentalists" in the class and that they were "an impatient class". She said "they are at all ends but they need to be framed in" and "there is lots of talent here, but there is the matter of keeping order".

Nina talked about individual students as either having high standards or having "developed tremendously well", and she used words such as "exceptionally", "marvellous emphatic ability", and "giant vocabulary" when she described the development and performance of the students. Concerning the development of one student she said, "He had a decline when he was sort of … tired but then he made tremendous progress again."

Organization at the classroom level. The focus that Anna and Nina placed on students' potentials, abilities and progress was visible in the organization of their classrooms. Students in both classrooms were active and enthusiastic. Anna in particular put a great deal of energy into getting students' attention and getting them to focus on what they were supposed to be doing. In the mornings, and in other cases when she wanted to gather the class for joint conversation or discussion, she would gather them in a ring on a mat at the front in the classroom. The following example is

from one morning — the first one after the midwinter holiday. Fourteen students, the teacher and an assistant teacher sat around the blue mat. Anna started by making sure she had the students' attention. She counted "one, two, three: Good morning!" and the whole class answered "Good morning" in chorus. She stated that one of the girls, Marie, had got a tan as she had just returned from a holiday trip to Thailand. She asked Marie about the holiday and Marie had started to tell the others about it when she was interrupted by a parent who entered the classroom and asked about some homework for her child, who was ill. Marie continued to tell her story but Anna asked her to wait and rose to attend to the parent. After a few minutes the parent left and Anna sat down again. She made sure everybody was listening again before she asked Marie to continue:

Marie: Ja och sen fick vi åka en jättejätte stor båt som var jättefin den var så här vit hela den var vit den var så här	Marie: Yes and then we got to go with a huge boat; that was very nice, it was like white all of it was white it was sort of
Anna: Är det som man åker ut till öar då … den båten	Anna: Is it that you take to islands then ... that boat?
Marie: Ja… em och då så vi fick sitta där uppe … det fanns så här som staket så fick man sitta där framme vid båten där uppe alltså vid taket det fanns sånt här staket (visar med händerna) där kan man sitta då och vinden blåste så jag kunde inte andas jag bara A-A-A (drar efter andan och skrattar) det var asroligt och sen … i … ee när vi var på stan	Marie: Yes … um, and then we could sit up there … it was this sort of fence so you could sit there in front of the boat, that is, at the roof there was this fence (shows with her hands) so you can sit then and the wind blow so that I couldn't breathe I like A-A-A (pretends to have lost the breath and laughs) it was awesome and then ... in ... um when we were in town.
	Anna: What town are you in then?
Anna: Vilken stad är det man är i då?	Marie: Um it is wait ... it is Patong ... Patong isn't it or no Puket no…
Marie: Mm det är vänta … det är Patong … Patong är det väl eller nej Puket nej	Anna: To me you can say whatever one and we'll believe it
Anna: Mig kan du säga vilket vi går på vilket som helst	Marie: Yeah and then am
Marie: Ja och sen då am	Anna: Patong or Puket um
Anna: Patong eller Puket am	Marie: And then, well then when we, when we were in town there were lots of these who sell things, that is there were amazingly many and then there they come like this: "Ei tuk tuk" (puts her right arm up in the air) eh that's taxi so they say "Ei tuk tuk" (right arm up) and like this on dad (hits the girl to her left with her arm) just in order that you get this taxi or yes
Marie: Och sen så sen när vi när vi var på stan då så det var massor såna där som säljer saker alltså det var så himla många och så sen så här kommer dom så här: "Ei tuk tuk!" (sträcker upp höger arm i vädret) eh det är taxi så säger dom "Ei tuk tuk!" (höger arm upp) och så här på pappa (slår med armen på kamraten till höger) bara för att man ska få så där taxi eller ja	

She continued by talking about the pools, and beaches, and when she finished, one classmate who did not yet have a high level of Swedish said:

Arin: Men vänta … om man springer och sen bara åker in i den där början på bassängen så bara sjunker man	Arin: But wait … if you run like this and then go into that beginning of the pool then you only sink

Anna assumed that what he meant may not be understood so she tried to clarify: “He means if it becomes deep all at once in the pool.” Arin verified this with “Yes” and Marie answered that this was the case.

In this case Anna used Marie’s experience to give her the opportunity to take the floor. She explained afterwards that the reason she chose to ask Marie and give her so much time during that morning assembly was that Marie was among those who seldom spoke out in class and that she usually did not narrate with cohesion. Anna made sure that Marie got the attention of all the students and she supported her by asking her strategic questions. Afterwards, when Arin had problems expressing his question, she supported him by clarifying the meaning of the question. By ensuring the attention from all students and giving support, she managed to engage students in real conversation and to give one student an opportunity to take the role as knower. In similar ways she often related to students’ experiences and tried to make the most of their initiatives when possible. She explained in the interview that she wanted to build on students’ experiences although she had to make sure that all students got their chance and thus had to hold some of the more talkative ones back sometimes.

In the grade five classroom, the teacher, Nina, also made a point of keeping a level of teaching that challenged all students and related to students’ own interests. She planned the work by using different types of teaching aids and did not follow pre-made plans in particular study kits. When students were doing individual work they were involved with various types of tasks and on different levels. In the centre of the classroom there was a computer, which was usually being used by one of the students. There was another computer in one corner, and there were also some laptops available. Students used the computers to work on different learning programs but also to work on their own home pages or, less frequently, to search for information on the Internet. Three of the boys would bring their own memory sticks from home to work on their own home pages.

During the lesson from which the following example is taken, students worked individually on different types of tasks. Ten students were in the classroom and two of them were practising multiplication together at a table. Two girls worked with geography using programs on the computers. One boy was at a computer writing a text about his favourite interest, motocross training. One boy and a girl were reading fiction and two boys worked on a project about famous artists. One of the boys, Victor, spent extended time at the computer. He had brought some pictures on his memory stick and was editing them in Photo Shop for his home page.

Nina, the teacher, walked around in the classroom helping students who needed help or just sitting down to listen to questions on their individual work. Most of the time she spent with three of the students who she thought needed extra support. She started with the two boys practising multiplication. Then she sat down a while with the girl who was reading and talked with her about the book. After about 20 minutes she came to Victor, sat down on a chair next to him and asked him to explain what he was doing. He explained about his work on the home page, pointing out things on the screen as he talked, and Nina listened attentively and watched the screen. Then she said:

N: Ok ja … ja jag kan inte det där alltså men jag förs … jag vet att eller jag kan inte göra det själv men jag förstår det ja … jag kanske skulle sätta mig och träna … jag tycker att jag skulle vilja ha en hemsida kanske det vore kul … mm vad tänker du göra idag då?	N: Ok yes … yes I don’t know that that is I unders… I know or I can’t do it but I understand it yes … maybe I should sit down and try it out … I think that I’d like to have a home page, maybe that would be fun … um what are you going to do today then?

V: Det här gjorde jag idag … den här själva knappen	V: This I did today … this the very button
N: Jaha ok	N: Yeah ok
V: Det här är exakt samma description som jag har	V: This is exactly the same description that I have

While Victor explained, he flipped between pages, scrolled on a page and pointed at the screen to indicate what he was talking about. Note that he used the English "description" instead of the Swedish *beskrivning*. Nina followed and watched attentively. After a while she nodded her head to show that she understood. She said, "Perfekt!" (Perfect) and continued to another student.

In these two examples we see that students concentrate on their work and that there is room for students' initiatives. If we relate to Gibbons' description of challenging education, we see that in this classroom there is not only room for individual construction of knowledge and authentic conversation, but also that there is room for switching expert-learner relations. In both examples students became experts and the teacher agreed to take the role of the learner, without losing control over the classroom.

Both Anna and Nina made room for students' initiatives and gave them responsibilities while keeping the level of demands high and making sure students focused on their work.

One school day. To create an image of life in the classrooms of Anna and Nina I will give an overview of a day from grade three.

8:25 Morning assembly. Students are gathered on the mat in front of the classroom. After some small talk Anna focuses the students' attention on the date and the schedule for the day. She explains generally what will happen and writes in English on the whiteboard. One of the students complains about some classmates' behaviour in relation to her birthday party and Anna reminds her that birthday parties have to be discussed outside class and that this is because some children may have them while others may not, as their families are unable to afford them.

8:40 Anna starts to talk about a new theme in science, the ear and hearing. She starts by asking the students what they know about the topic. Students raise their hands and the talk continues.

9:10 Anna shows a short film about the ear and hearing.

9:15 She tells the students to go back to their desks. She asks them if they learned anything new. She takes the class's lizard out of his terrarium to show his ears. When some boys start to talk about other things not related to the topic she asks them, "Boys, should this be about you or about hearing?" and the boys answer, "Hearing". She continues: "Are you to be brought up or to learn?" and they answer, "Learn".

9:45 Break

10:05 Mathematics lesson. Anna starts by presenting some multiplication and division questions. She instructs them to work together and the students work in groups to solve mathematic problems based on a zoo.

10:40 Students go to another part of the school where they have their music lesson with another teacher.

11:30 The music teacher sends them to lunch.

12:10 English lesson. Students work on a story about Pippi Longstocking in English. Anna has copied the book and they start by reading a few pages together. Anna reads first and the students read after. She explains some words and phrases. Then students read the text aloud in pairs.

12.50 Silent reading. Students take out their books and read silently. Every student has borrowed a book from a shelf in the classroom or from the school library.

13.30 Anna asks students to put the books away and dismisses the class.

As we can see, Anna put a great deal of effort into making the students focus on the school work. This became apparent when she refused to let talk about birthday parties occupy too much time and when she reminded the boys to focus on the topic of the lesson. In the three topics that were dealt with, English reading, multiplication/division and hearing, we can see that pre-fabricated teaching aids were not used as the basis for planning but were used as supplementary resources, such as the film about hearing. In English, Anna tried to make the lesson authentic and put it into a natural context by using English when she presented the schedule for the day and using a storybook as the basis for a lesson. It should be noted that English is taught as a foreign language starting in grade three, which means that these students had only just started formal English learning. When introducing the topic of hearing, Anna made an effort to start from students' prior knowledge and also provided students with an opportunity to give feedback after the film. The tasks in Mathematics were of a type that demanded engagement from all students in the groups, and the groups were small enough to ensure that all were involved in solving the problems.

Teacher attitudes and organization at the classroom level. Although I state that there are many similarities between what happened in the classrooms of Maria and John in North School, and in those of Anna and Nina in South School, there are certain differences in attitude and classroom organization. While the North School teachers mainly assigned procedural-level tasks, in the South School classrooms there were examples of challenging lessons and opportunities for students' influence over their learning. Maria and John seemed to adhere to what Runfors (2003) called a deficiency theory regarding their students, which results in undemanding education and a high level of teacher control regarding learning. Anna and Nina, on the other hand, may be characterized as holding a theory of ability and potential regarding their students. In their classrooms we see a high level of student involvement. In the classrooms of Maria and John, tasks were mainly procedural and questions rarely demanded more than one- or two-word answers. While work in their classes was mainly based on teaching aids, followed from the first stage to the last, students in Anna's and Nina's classes were assigned work that demanded active involvement. When comparing the morning routines in the classrooms, we see that Maria and John followed a strict formula, for example, having students in each grade say what the date is, whereas Anna took a more flexible approach, inviting a student to talk about a personal experience. This flexibility, along with Anna's use of English when writing the schedule, placed more demands on students and enabled them to influence what took place in the classroom. Nina's inclusion of students' personal interests in school work, by having them design home pages, for example, gave students opportunities to develop particular skills. By making room for students to work with topics she herself had not mastered, Nina extended the potential for learning. These types of skills were not observed in the classrooms of Maria and John.

As may be expected, Anna's and Nina's students performed well in national tests, while the students of Maria and John did not.

Language use in the classrooms. Linguistic factors in the school situation are particularly relevant for students who have not yet achieved the expected proficiency level in the language of instruction, in this case Swedish. In North School, language may be characterized as fragmented. Talk consisted mainly of short statements, in the form of small talk. Rarely did anyone, student or teacher, take the floor to express complicated thoughts or to talk about school subjects; in fact, the school subjects were seldom talked about at all. Most of the students for whom Swedish was a second language spent very little time reading or writing, and usually what they read or wrote consisted of single words or short sentences. In South School, in contrast, there were more frequent lengthy discussions, in which complex thoughts were expressed. Through small-group work, which demanded active participation of all students, language use became more varied; this applies mainly to oral expression, but also to written forms. Teachers focused on the form of the language by directing students' attention to words, phrases and styles, and also on its use by ensuring that students were given opportunities to use language in demanding situations in both oral and written forms, as in the case of Marie's narration about her experiences in Thailand. The higher level of engagement among students in the classrooms of Anna and Nina also had an effect on the amount of reading and writing done by students. When considering that the low-performing students in Maria's and John's classes claimed to read and write only in school, classroom organization stands out as of particular importance for the development of these students' literacy skills.

Discussion

I conclude that some of the teachers studied in these projects seem to hold a deficiency perspective, as did the teachers in the studies by Runfors (2003), Knapp et al. (1995) and Johnston & Hayes (2008). However those two teachers who dared to risk giving responsibility to students, to change roles and take the role of learner, to give the floor to students and at the same time to demand students' attention and require them to focus on their work may be characterized as holding a perspective of ability, potential and development.

In the examples from North School, students' proficiency was low and so were the cognitive and linguistic demands of their school work. The classrooms were inclusive in the sense that students took care of each other and made sure that new students were included, but tasks in the classrooms seldom challenged students' thought processes. In earlier grades, when tasks were context-embedded, students who had recently started to acquire Swedish were involved in classroom activities, but in the higher grades second-language students whose proficiency in Swedish was low tended to occupy themselves with other things and needed to be re-engaged constantly by the teachers.

As in the cases studied by Johnston & Hayes (2008) and Knapp et al. (1995), in these classrooms students spent most of their time occupied with lower-order intellectual tasks, showed little enthusiasm and poor concentration. Similar to the results of the QSRLS (2001), in this case the teachers seemed to identify social needs and to provide a socially supportive environment in school but at the cost of academic challenges. While students seldom actively opposed the teachers' efforts, the energy they invested in classroom activities remained low. Furthermore, the students' level of engagement decreased over the years.

In the classrooms from South school, however, classroom work that demanded active involvement by students in combination with high level of students' influence on what took place in classrooms resulted in high level of students' engagement and high outcome. It is interesting to see that also the actual amount of reading and writing done

by students, particularly among students from low income backgrounds, was higher in these classrooms. That teachers gave room for students to develop skills in areas where students' knowledge went beyond the teacher's extended students opportunities for learning. In the technology intensive development we see today this is particularly important.

High teacher control over content and learning seemed to be linked to low student engagement in these studies also, while low teacher control in combination with high control regarding focus on learning was linked to high student engagement and high outcome. The results highlight the risk of treating immigrant students, as well as other students from socio-economically unprivileged backgrounds, as less competent and less able than those from other backgrounds. A focus on basic skills at the cost of a demanding and challenging education denies students equal opportunities to achieve academic success. Ensuring that all students have access to an education that is linked to their experiences and builds on their potential is a democratic issue. In any school with democratic aspirations, teachers need to be aware of each student's potential. Social, economic or linguistic background should not exclude any student from access to an exciting and challenging education. This means that teachers need to dare to decrease their control of details in the learning process, such as when and how different things are learned. In order to create classrooms where negotiated interactive learning takes place, teachers need to present students with intellectually demanding tasks and challenging education.

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References

Author, (2008). Monologen som en resurs i klassrummet. (The monologue as a resource in the classroom) *Pedagogisk forskning i Sverige, 13(4),* 241-256.

Author, (2010a). A restricted curriculum for second language learners. *A self-fulfilling teacher strategy? Language and Education, 24(3),* 171-184.

Author, (2010b). Narration in Pre- and Primary School. *A resource for language development and multilingualism. Language, Culture and Curriculum, 23(3),* 219-233.

Author, (2011). Utveckling av tal och skriftspråk hos andraspråkselever i skolans tidigare år. (Development of oral and written language in second language students in primary school) *Didaktisk tidskrift, 20(2),* 95-118.

Baker, C. (2006). *Foundations of Bilingual Education and Bilingualism*. Clevedon: Multilingual Matters.

Cummins, J. (1984*). Bilingualism and Special Education. Issues in assessment and pedagogy.* Clevedon: Multilingual Matters.

Cummins, J. (1996). *Negotiating Identities.* Education for empowerment in a diverse society. Ontario: California Association for Bilingual Education.

Cummins, J. (2000). *Language, Power and Pedagogy.* Bilingual children in the crossfire. Clevedon: Multilingual Matters Ltd.

Cummins, J. & Early, M. (2011*). Identity Texts. The Collaborative Creation of Power in Multilingual Schools.* London: Institute of Educational Press.

Gibbons, P. (1998). Classroom talk and the learning of new registers in a second language. *Language and Education, 12(2),* 99-118.

Gibbons, P. (2006). *Bridging discourses in the ESL classroom.* Students, teachers and researchers. London: Continuum.

Gibbons, P. (2008). "It was taught good and I learned a lot". Intellectual practices and ESL learners in the middle years. *Australian Journal of Language and Literacy, 31(2),* 155-173.

Halliday, M. A. K. (1993). Towards a language-based theory of learning. *Linguistics and Education, 5 (344),* 93-116.

Hammond, J. (2006). High challenge, high support. Integrating language and content instruction for diverse learners in an English literature classroom. *Journal of English for Academic Purposes, 5,* 269-283.

Hammond, J. (2008). Intellectual challenge and ESL students. Implications of quality teaching initiatives. *Australian Journal of Language and Literacy, 31(2),* 128-154.

Johnston, K. & D. Hayes, (2008). "This is as good as it gets": Classroom lessons and learning in challenging circumstances. *Australian Journal of Language and Literacy, 31(2),* 109-127.

Knapp, M., P. Shields, & B. Turnball, (1995). Academic challenge in high poverty classrooms. *Phi Delta Kappan, 76*, 770-776.

Lahdenperä, P. 1997. *Invandrarbakgrund eller skolsvårigheter.* En textanalytisk studie av åtgärdsprogram för elever med invandrarbakgrund. PhD Diss. Stockholm: H L S förlag.

Newmann, F. M. & Associates (1988). *Authentic Achievement.* Restructuring schools for intellectual quality. San Francisco: Jossey-Bass.

Parszyk, I.-M. (1999). *En skola för andra.* Minoritetselevers upplevelser av arbets- och livsvillkor i skolan. PhD Diss. Stockholm: H L S förlag.

Queensland School Reform Longitudinal Study. 2001. School of education, University of Queensland. Australia: The State of Queensland.

Runfors, A. (2003). *Mångfald, motsägelser och marginaliseringar: En studie av hur invandrarskap formas i skolan.* Stockholm: Prisma.

Schechter, S. & Cummins, J. (2003). (Eds.) Multilingual Education in Practice. *Using Diversity as a resource.* Portsmouth, NH: Heinemann.

Schleppegrell, M. (2004). *The Language of Schooling.* London: Lawrence Erlbaum.

Skolverket (2009). [Retrieved June 16, 2009]. Available at http://www.Skolverket.se/statistik/grundskolan/betyg och prov

Thomas, W. & V. Collier, (1997). School Effectiveness for Language Minority Students. NCBE Resource Collection Series, No. 9, George Washington University. http://www.ncbe.gwu.edu/ncbepubs/resource/effectiveness

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[i] That is, the boys who had Swedish as a second language.

International Electronic Journal of Elementary Education, 2014, 6(2), 295-314.

The Investigation of Elementary Mathematics Teacher Candidates' Problem Solving Skills According to Various Variables

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Received: 25 August 2013 / Revised: 25 January 2014 / Accepted: 28 February 2014

Abstract

The aim was to determine elementary mathematics teacher candidates' problem solving skills and analyze problem solving skills according to various variables. The data were obtained from total 306 different grade teacher candidates receiving education in Department of Elementary Mathematics Education, Buca Faculty of Education, Dokuz Eylul University in the fall term of 2012-2013. As a result of analyses, there was not a significant difference between male and female candidates' perceptions of their problem solving skills. There was a significant difference on their problem solving skills and impulsive approach to problem solving according to grades. Additionally, there was not a significant difference between their problem solving skills and their level of family income, settlement and region where they were lived before coming to the university and leisure activities. It was suggested to give weight to achievement that will leave a positive lasting impact on students' attitudes like metacognitive skills, for the reason that students' impulsive approach to the problems.

Keywords: Problem solving skill, elementary mathematics education, teacher candidate.

Introduction

Problem solving skills is the leading of basic skills that somebody must have and use in many fields of everyday life. Hence, problem solving is a process, not a matter in hand. The target point with teaching this process is learning and using of problem solving

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skills (Republic of Turkey Ministry of National Education [RTMNE], 2005). Problem solving skills is in the basis of curriculum in many countries today (National Council of Teachers of Mathematics [NCTM], 1989; Cai & Nie, 2007). The present curriculum in Turkey is based on problem solving skills and problem solving is handled as a process rather than a subject. Problem solving enables that students both apply learned information and internalize their acquired achievements. For this reason, problem solving should be focal point of lessons learned at school especially mathematics (NCTM, 1980). Problem solving is an effective method used in teaching mathematics (Stigler & Hiebert, 1999) and it can be an important approach that will help to transcend traditional mathematics education which is transmission of facts (Lerman, 2000). Hence, the opinion that the development of problem solving skills should be among the precedence of education build consensus among math teachers (Karataş & Güven, 2004).

Problem solving skills should encourage students to think and use the information that they have. In other words, no matter what the subject or level, thinking should be turned into the most obvious form of an issue or problem solving activity (Yıldırım, 2004). According to Ulgen (2001), this transformation is described as that a person finds a solution that he can handle situations preventing to reach his goal. Similarly, Anderson (1980) defined problem solving as sequence of mental processes towards the target. Especially, most of the thinking processes are used in solving word problems (Soydan, 2001). According to Dewey, problem is described as everything that confuses the human mind, challenged him and obscures the belief (Baykul & Aşkar, 1987).

The main purpose of math teaching should be to take students competent problem solvers as a generally accepted idea (Schoenfeld, 1992). Problem solving requires separate solutions for each problems rather than a single path of thinking and solution (Baykul, 2006). Students who are academically successful are students who use effective strategies in problem solving and have acquired their perception (Garrett et. al, 2006). There are many stages of problem solving. These are basically collected in three phases such as understanding the problem, solving the problem and answering the problem (Charles et. al, 1994).

Decision-making competence in problem solving skills, which is a mental activity, is a result of the thinking process. For this reason, in the problem solving process, there are two types of thinking process including understanding and searching (Newell & Simon, 1972). Problem solving process is to research with controlled activities to achieve the aim that clearly designed but could not be achieved immediately (Altun, 2004). Besides, people who have advanced problem solving skills are not hard put to adapt to the environment and lead to the development of interdisciplinary relations. Solving of problems requires interdisciplinary knowledge, versatile thinking and creativity (Senemoğlu, 1997). Beyond these, the main idea is to teach more free and creative thinking in problem solving first of all (Umay, 1994). Web-based instructon model with the creative problem solving process help teachers to construct the theoretical framework easily in order to stimulate students to research the information and use them for the process of problem-solving (Liamthaisong et. al, 2011).

It is seen that the majority of students are hard put to solve similar problems. Here, it can be mentioned both operational and structural deficiency at the point of the transfer of knowledge to the application. That is to say, the characteristics that different problems have can lead to confusion. Hence, students have difficulty in making sense an experienced problem in given context to another context and thus have difficulty to solve it (Bransford et. al, 1999). Several methods, techniques and strategies have developed in terms of removing these and similar conditions or providing convenience

to individuals in problem solving. All these developments involve the steps for knowing inside out and using effectively of problem solving (Demirel, 2003) to raise a youth who solve problems not pose problems. These steps do not address the structure of single operational steps. These steps refer to find a result, as well as find a way; get rid of difficulty (Polya, 1957).

There are a large number of concepts on problem-solving skills in the literature. For example, such as creativities, discrimination and defining of problem, producing solutions, cognizance the salient features of problem, making an effort for solution and performing an application, reaching conclusion, giving a decision, mental processes, imagination, imagining based on experiences are dealt with problem solving. Individuals experience with many concepts in daily life and have to cast about the problem. This process is a complicated process involving cognitive, affective and behavioral activities (Taylan, 1990), as well as it affects individual's problem solving performance and the process of coping with problems (Bonner & Rich, 1988).

Enhancing the quality of teaching relate to the degree of demonstrating of students' acquired skills. Hence, students' potential problem solving skills should be determined besides that problem solving skills should be gained to students. Because, the evaluation of students' problem solving skills provide both having information about students' knowledge of mathematics and the obtainment of information having the characteristics of clue that may guide education programs (Karataş, 2002). Problem solving skills learned and developed ever since pre-school period is gained from childhood and developed in school years (Miller & Nunn, 2001). When education is considered as a problem-solving process, students are expected to be a good problem solver in primary school years (Serin & Derin, 2008). According to Demirel (1999), problem solving methods should be in all levels of education from primary school to university (cited in Bayraktar et al., 2011). Bruner, reading students as individuals who solve actively problems, handles the teaching-learning process as a period helping students to discover problems that can be managed or solved (Balay, 2004).

So that students are successful at web-based education applications, they should have advanced problem solving skills. Students with advanced problem solving skills successfully navigate their learnings through highly complex Web-based environments (Kauffman et al., 2008). Providing learners with manipulative function in multimedia learning improves their problem solving (Zheng et al., 2009).

In this study, it is tried to determine primary mathematics teacher candidates' problem solving skills and whether their problem solving skills change according to various of variables as class, gender, the region and settlement lived before coming to the university, level of family income and leisure activities.

Method

Research model

Progressive methods of descriptive research method were used in this study. This kind of research study is used to explore the onset, direction, growth rate, pattern, indication of decline in development and interaction between factors affecting the development (Uysal, 1974). This model intends to reveal how the investigated fact, case or subject changes or develops in a specific period of time (Cohen et. al, 2007). Addition, rather than to follow the same sample in the cross-sectional studies, the research can be completed as soon as possible by working with the samples used in different years and may be equivalent (Çepni, 2010).

Research group

The research group was composed of 306 students studying in different class levels in Department of Elementary Mathematics Education, Buca Faculty of Education, Dokuz Eylul University, in the fall semester of 2012-2013 academic years, as showed in Table 1.

Table 1. *Distribution of the sample of the research according to class and gender variables*

Variables	*Subcategory*	*N*	*%*	*Total*
Class	1	71	23.20	306
	2	86	28.11	
	3	84	27.45	
	4	65	21.24	
Gender	Female	221	72.22	306
	Male	85	27.78	

Data Collection Tools

The Problem Solving Inventory (PSI) developed by Heppner and Petersen (1982) and adjusted Turkish was used as a data collection tool in the research. The part composed of personal information of the students participated in the study which was chosen to determine students' class, gender, the region and settlement lived before coming to the university, level of family income and leisure activities was added to the PSI. The PSI was implemented to volunteer students. The implementation lasted twenty minutes for each group.

Problem Solving Inventory (PSI). The Problem Solving Inventory (Form A (PSI); Heppner, 1988; Heppner & Petersen, 1982) is a tool containing 32 items like Likert which was constructed in order to determine the people's problem solving skills and their perceptions related to problem solving strategies (Heppner, 1988). The inventory in fact contains 35 items but 9th, 22nd and 29th items were not included in scoring. The answers which can be given to the items change as 1 (absolutely agree), 2 (usually behave like that), 3 (often behave like that), 4 (sometimes behave like that), 5 (rarely behave like that) and 6 (absolutely not agree). The scores which can be obtained from the inventory show variance between 32 and 192; (32-80 the highest level, 81-192 the lowest level). The low score which is gathered from the inventory means that the individual has perceived his problem solving skill positive and the high score means that the individual has perceived himself negative about his problem solving skill. When the scores gathered from sub-items which survey the attitudes to problem solving manners which can be indicated as positive in grading the sub-items, have been decreasing it is perceived as related manners used much more. When the grades gathered from sub-items which survey the problem solving attitudes (hasty attitude-avoider attitude) indicated as negative-ineffective have been decreasing it is thought that the desired attitudes are used much less (Ferah, 2000).

Heppner (1988) determined three factors in the result of the factor analysis which he carried out in his research. These were "problem-solving confidence" which states the individual's confidence in solving new problems; "approach-avoidance style" which states the effective research in order to revise their first problem solving effort and "personal control" which states the skill of maintains self-control in problematic situations (Bayraktar et. al, 2011). Taylan's (1990) who tried to adapt the inventory to

Turkish obtained factors in the results of his research are the same factors. However, 6 factors were encountered as a result of factor analyzes of the study of adaptation to Turkish by Şahin et al. (1993). The reliability of these six factors were indicated as: the reliability of the items in impulsive style (13,14,15,17, 21, 25, 26, 30, 32) was *r* = .78, the reliability of the items in reflective style (18, 20, 31, 33, 35) was *r* = .76, the reliability of the items in problem-solving confidence (5, 11, 23, 24, 27, 28, 34) was *r* = .74, the reliability of the items in avoidant style (1, 2, 3, 4) was r=.69, the reliability of the items in monitoring (6, 7, 8) was *r* = .64 and the reliability of the items in planfulness (10, 12, 16, 19) was *r* = .59.

In addition to this, the reliability and validity results about Problem Solving Inventory in Şahin et al. (1993)'s research are like that: Cronbach Alpha reliability correlation of the scale was found as *r* = .88 and split-half reliability was *r* = .81 found via split-half technique by dividing odd and even numbers. Criterion-related validity; the total correlation coefficiency between the total score of the scale and Beck Depression Inventory was found as .33 and the correlation coefficiency with STAI-T total score as .45.

Construct validity; the end groups which were constructed according to the scores obtained from Beck Depression Inventory and STAI-T were indicated to be separated meaningfully. As a result of discriminant analysis results, the scale was found dysphoric and without dysphoric groups to be graded into their own groups with 94% and 55% proportions respectively; anxiety and without anxiety groups to be graded into their own groups with 90% and 80% proportions respectively (Savaşır & Şahin, 1997: 80).

The reliability coefficiency (cronbach-alpha) of the problem solving inventory which was conducted with 306 students was found as .90. The reliability results of 6 factors were like: the reliability of the items in impulsive style was *r* = .75, the reliability of the items in reflective style was *r* = .74, the reliability of the items in problem-solving confidence was *r* = .72, reliability of the items in avoidant style was *r* = .67, the reliability of the items in monitoring was *r* = .55 and the reliability of the items in planfulness was *r* = .64. The obtained reliability coefficiency scores are perceived as the reliable ones.

Data Analysis

SPSS 15 program, independent samples t-test and one-way analysis of variance (ANOVA) were used in data analysis. Mean, standard deviation, independent samples t-test for the comparison of binary groups and one-way analysis of variance (ANOVA) for the comparisons of more than binary groups were used in data analysis. Assumptions for t-test and ANOVA were controlled and it was seen that the scores had normal disturbance and assumptions of the homogeneity of variances were provided. The significance level for all statistical calculations was determined as 0.05.

Findings

Means and standard deviations belonging to elementary mathematics teacher candidates' problem solving skills are given in Table 2.

Table 2. *The Results of Descriptive Statistics of Primary Mathematics Teacher Candidates' Problem Solving Skills and Problem Solving Subcategories*

Problem Solving Skills and Subcategories	*N*	$\bar{x}$	*SD*
Impulsive Style	306	27.91	6.72
Reflective Style	306	12.55	3.84

Table 2 (Cont). *The Results of Descriptive Statistics of Primary Mathematics Teacher Candidates' Problem Solving Skills and Problem Solving Subcategories*

Problem-Solving Confidence	306	18.43	4.96
Avoidant Style	306	10.79	3.58
Monitoring	306	7.70	2.55
Planfulness	306	10.15	3.08
Total Score	306	87.55	18.60

Whether primary mathematics teacher candidates differently perceive the problem solving skills based on their gender was analyzed via independent samples t-test. The data about analysis results were given in Table 3. According to the result, problem solving skills did not show difference in impulsive style [t_{304} = 1.778, p > .05], reflective style [t_{304} = -.140, p > .05], problem-solving confidence [t_{304} = -281, p > .05], avoidant style [t_{304}=.918, p > .05], monitoring [t_{304} = 1.682, p >.05], planfulness [t_{304} = -.847, p > .05], and total score [t_{304}=.800, p > .05] according to gender.

Table 3. *t-Test Results of The Comparison of Means of Elementary Mathematics Teacher Candidates' PSI Subcategory and Total Scores According to Gender*

	Gender	*N*	$\bar{x}$	*SD*	*sd*	*t*	*p*
Impulsive Style	Female	221	27.49	6.44	304	1.778	.076
	Male	85	29.01	7.31			
Reflective Style	Female	221	12.57	3.72	304	-.140	.889
	Male	85	12.51	4.15			
Problem-Solving Confidence	Female	221	18.48	4.67	304	-281	.779
	Male	85	18.31	5.68			
Avoidant Style	Female	221	10.67	3.41	304	.918	.359
	Male	85	11.09	3.99			
Monitoring	Female	221	7.55	2.59	304	1.682	.094
	Male	85	8.09	2.44			
Planfulness	Female	221	10.24	3.05	304	-.847	.397
	Male	85	9.91	3.19			
Total Score	Female	221	87.02	17.79	304	.800	.425
	Male	85	88.92	20.63			

Descriptive statistics of primary mathematics teacher candidates' perception of their problem solving skills according to grade variable take place in Table 4. One-way analysis of variance (ANOVA) was used in order to determine whether primary mathematics teacher candidates' perception of their problem solving skills changes according to their grades.

According to results of the test (as seen in Table 5), primary mathematics teacher candidates' perceptions of problem solving skills did not show any difference in reflective style [F(3,302) = 2.384, p > .05], problem-solving confidence [F(3,302) = 1.465, p > .05], avoidant style [F(3,302) = .315, p > .05], monitoring [F(3,302) = 1.570, p > .05] and planfulness [F(3,302) = 1.880, p > .05]. However, a significant difference was seen in impulsive style [F(3,302) = 5.947, p < .05] and total score [F(3,302) = 2.949, p < .05] according to the students' grade levels. According to Scheffe test results which were examined to determine why the difference occurs, the first (= 29.76) and third (= 29.21) graders have higher problem solving scores in impulsive style than the second (= 26.42) and fourth (= 26.20) graders. According to this situation, the first and third graders have been thought to use Impulsive Style in problem solving than the second and fourth graders. According to Scheffe test results

which were examined to determine why the difference occurs in total scores, the third (= 91.13) graders have higher problem solving scores in total scores than the second (= 83.72) graders. According to this situation, the third graders have lower perception of problem solving skills than the second graders.

Table 4. *Primary Mathematics Teachers' Problem Solving Skills According to Grade*

	First grade		Second grade		Third grade		Fourth grade	
	$\bar{x}$	***SD***	$\bar{x}$	***SD***	$\bar{x}$	***SD***	$\bar{x}$	***SD***
Impulsive Style	29.76	7.19	26.42	6.25	29.21	7.05	26.20	5.49
Reflective Style	12.39	3.86	11.79	3.56	13.32	3.93	12.75	3.93
Problem-Solving Confidence	18.77	5.16	17.51	4.48	18.98	4.71	18.58	5.56
Avoidant Style	11.03	3.66	10.89	3.84	10.74	3.44	10.46	3.37
Monitoring	7.52	2.63	7.39	2.38	8.19	2.51	7.66	2.70
Planfulness	10.37	3.04	9.71	3.15	10.69	2.71	9.78	3.42
Total Score	89.86	19.15	83.72	17.04	91.13	18.11	85.45	19.75

(N First grade = 71, N Second grade = 86, N Third grade = 84, N Fourth grade = 65)

Table 5. *ANOVA Results of Primary Mathematics Candidates' PSI Scores According to Their Grades*

	Source of variance	Total of squares	sd	Mean of squares	*F*	*p*	Meaningful Difference
Impulsive Style	Among groups	767.388	3	255.796	5.947	.001	1-2, 1-4
	In groups	12990.403	302	43.015			3-2,3-4
	Total	13757.791	305				
Reflective Style	Among groups	103.982	3	34.661	2.384	.069	Not
	In groups	4391.573	302	14.542			
	Total	4495.556	305				
Problem-Solving Confidence	Among groups	107.573	3	35.858	1.465	.224	Not
	In groups	7391.620	302	24.476			
	Total	7499.193	305				
Avoidant Style	Among groups	12.221	3	4.074	.315	.814	Not
	In groups	3900.394	302	10.186			
	Total	3912.614	305				
Monitoring	Among groups	30.557	3	10.186	1.570	.197	Not
	In groups	1959.783	302	6.489			
	Total	1990.340	305				
Planfulness	Among groups	53.234	3	17.745	1.880	.133	Not
	In groups	2851.148	302	9.441			
	Total	2904.382	305				
Total score	Among groups	3004.345	3	1001.448	2.949	.033	2-3
	In groups	102555.515	302	339.588			
	Total	105559.859	305				

Table 6. *Descriptive Statistics of Primary Mathematics Teacher Candidates' Perceptions of Their Problem Solving Skills According to Their Region Which They Lived Before They Started The University*

	Central Anatolia		Aegean		Marmara		Eastern Anatolia		Southeastern Anatolia		Black Sea		Mediterranean	
	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*
Impulsive	29.68	5.64	28.40	6.95	27.39	6.43	26.33	6.18	26.50	4.20	29.00	6.46	25.95	6.54
Reflective	13.56	3.40	12.59	3.87	11.52	3.31	13.66	3.72	11.00	3.36	12.70	4.97	13.06	4.09
Problem-Solving Confidence	18.81	4.88	18.62	4.93	17.32	4.48	18.83	6.27	17.25	2.87	17.70	4.71	18.91	5.60
Avoidant	12.00	3.38	10.92	3.71	9.84	2.59	11.50	2.58	11.25	2.87	11.10	4.60	10.60	3.85
Monitoring	7.81	1.55	7.79	2.56	7.34	2.25	7.83	.75	5.75	1.25	8.20	2.82	7.68	3.18
Planfulness	10.25	2.54	10.39	3.23	9.26	2.76	11.00	3.46	9.50	1.73	9.40	3.20	10.13	2.92
Total score	92.19	18.19	88.73	18.84	82.69	14.59	89.17	18.75	81.25	2.75	88.10	20.3	86.35	21.5

Descriptive statistics of primary mathematics teacher candidates' perceptions of problem solving skills according to their region which they lived before they started the university was given in Table 6.

Table 7. *ANOVA Results of Primary Mathematics Candidates' PSI Scores According to Their Region Which They Lived Before They Started The University*

PSI and subcategories	Source of variance	Total of squares	sd	Mean of squares	*F*	*p*	Meaningful Difference
Impulsive Style	Among groups	313.923	6	52.321	1.164	.326	Not
	In groups	13443.868	299	44.963			
	Total	13757.791	305				
Reflective Style	Among groups	94.677	6	15.780	1.072	.379	Not
	In groups	4400.878	299	14.719			
	Total	4495.556	305				
Problem-Solving Confidence	Among groups	87.151	6	14.525	.586	.742	Not
	In groups	7412.042	299	24.789			
	Total	7499.193	305				
Avoidant Style	Among groups	73.825	6	12.304	.958	.454	Not
	In groups	3838.790	299	12.839			
	Total	3912.614	305				
Monitoring	Among groups	25.288	6	4.215	.641	.697	Not
	In groups	1965.052	299	6.572			
	Total	1990.340	305				
Planfulness	Among groups	59.075	6	9.846	1.035	.403	Not
	In groups	2845.308	299	9.516			
	Total	2904.382	305				
Total score	Among groups	1919.760	6	319.960	.923	.479	Not
	In groups	103640.100	299	346.622			
	Total	105559.859	305				

ANOVA was used in order to determine whether primary mathematics teacher candidates' perception of their problem solving skills changes according to their region which they lived before they started the university. According to ANOVA results (as seen in Table 7), there were not meaningful differences between primary mathematics teacher candidates' perceptions of problem solving skills and the region which they lived in before they started the university in impulsive style, reflective style, problem-

solving confidence, avoidant style, monitoring, planfulness and total score. [$F_{6\text{-}299}$ = 1.164, p > .05], [$F_{6\text{-}299}$ = 1.072, p > .05], [$F_{6\text{-}299}$ = .586, p > .05], [$F_{6\text{-}299}$ = .958, p > .05], [$F_{6\text{-}299}$ = .641, p > .05], [$F_{6\text{-}299}$ = 1.035, p > .05], [$F_{6\text{-}299}$ = .923, p > .05]. That is to say, candidates' region which they lived before they started the university do not have an effect on their problem solving skills and approaches to the problems.

Descriptive statistics of primary mathematics teacher candidates' perceptions of problem solving skills according to their settlement which they lived before they started the university was given in Table 8. ANOVA was used in order to determine whether primary mathematics teacher candidates' perception of their problem solving skills changes according to their settlement which they lived before they started the university.

Table 8. *Descriptive Statistics of Primary Mathematics Teacher Candidates' Perceptions of Their Problem Solving Skills According to Their Settlement Which They Lived Before They Started The University*

	Village			Town			District			Province		
	N	$\bar{x}$	*SD*	*N*	$\bar{x}$	*SD*	*N*	$\bar{x}$	*SD*	*N*	$\bar{x}$	*SD*
Impulsive Style	27	27.67	5.72	16	29.25	6.59	144	27.93	6.74	119	27.77	6.97
Reflective Style		13.74	3.32		12.12	3.81		12.35	3.88		12.59	3.89
Problem-Solving Confidence		19.22	4.68		17.94	4.74		18.42	5.18		18.33	4.81
Avoidant Style		11.44	3.10		10.69	2.47		10.93	3.79		10.49	3.55
Monitoring		8.04	2.81		7.62	2.19		7.67	2.52		7.67	2.60
Planfulness		10.89	2.66		10.37	3.03		9.98	2.98		10.15	3.31
Total score		91.00	15.17		88.00	16.52		87.28	19.17		87.02	18.99

According to ANOVA results (as seen in Table 9), there were not meaningful differences between primary mathematics teacher candidates' perceptions of problem solving skills and the settlement which they lived in before they started the university in impulsive style, reflective style, problem-solving confidence, avoidant style, monitoring, planfulness and total score [F(3,302) = .239, p > .05], [F(3,302) = 1.071, p > .05], [F(3,302) = .294, p > .05], [F(3,302) = .660, p > .05], [F(3,302) = .173, p > .05], [F(3,302) = .689, p > .05], [F(3,302) = .353, p > .05]. In other words, candidates' settlement which they lived before they started the university do not have an impact on their problem solving skills and approaches to the problems.

Table 9. *ANOVA Results of Primary Mathematics Teacher Candidates' Problem Solving Skills According to The Settlement Which They Lived Before They Started The University*

PSI and subcategories	Source of variance	Total of squares	sd	Mean of Squares	*F*	*p*	Meaningful Difference
Impulsive Style	Among groups	32.611	3	10.870	.239	.869	Not
	In groups	13725.180	302	45.448			
	Total	13757.791	305				

Table 9 (Cont). *ANOVA Results of Primary Mathematics Teacher Candidates' Problem Solving Skills According to The Settlement Which They Lived Before They Started The University*

Reflective Style	Among groups	47.343	3	15.781	1.071	.361	Not
	In groups	4448.213	302	14.729			
	Total	4495.556	305				
Problem-Solving Confidence	Among groups	21.874	3	7.291	.294	.829	Not
	In groups	7477.319	302	24.759			
	Total	7499.193	305				
Avoidant Style	Among groups	25.474	3	8.491	.660	.577	Not
	In groups	3887.141	302	12.871			
	Total	3912.614	305				
Monitoring	Among groups	3.408	3	1.136	.173	.915	Not
	In groups	1986.931	302	6.579			
	Total	1990.340	305				
Planfulness	Among groups	19.751	3	6.584	.689	.559	Not
	In groups	2884.631	302	9.552			
	Total	2904.382	305				
Total score	Among groups	368.567	3	122.856	.353	.787	Not
	In groups	105191.293	302	348.316			
	Total	105559.859	305				

Descriptive statistics of the students' families' income are shown in Table 10. ANOVA was used in order to determine whether primary mathematics teacher candidates' perceptions of problem solving skills show meaningful differences according to their families' income.

Table 10. *Descriptive Statistics of Primary Mathematics Teacher Candidates' Perceptions of Their Problem Solving Skills According to Their Families' Incomes*

Income	500TL and under		500-1000TL		1000-1500TL		1500-2000TL		2000TL and above	
PSI and subcategories	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*
Impulsive Style	27.14	5.61	28.68	6.73	27.88	6.55	27.58	6.39	27.88	7.62
Reflective Style	12.86	3.76	13.02	4.30	12.60	3.72	11.95	3.37	12.69	4.08
Problem-Solving Confidence	18.85	3.91	18.51	4.51	18.82	5.07	18.16	5.17	18.10	5.32
Avoidant Style	10.71	3.12	11.32	3.93	10.63	3.82	10.32	2.82	11.06	3.90
Monitoring	8.14	2.31	7.42	2.31	8.01	2.54	7.54	2.66	7.65	2.74
Planfulness	10.90	3.01	10.37	2.89	10.12	2.91	9.81	3.07	10.13	3.49
Total score	88.62	15.02	89.32	18.19	88.08	18.28	85.37	17.92	87.53	21.21

(N 500 and under=21, N 500-1000=62, N1000-1500=76, N 1500-200=79, N 2000 and above=68)(TL; Turkish Lira)

Table 11. *ANOVA Results of Primary Mathematics Teacher Candidates' Problem Solving Skills According to Their Family Incomes*

PSI and subcategories	Source of variance	Total of squares	sd	Mean of squares	*F*	*p*	Meaningful Difference
Impulsive Style	Among groups	57.463	4	14.366	.316	.867	Not
	In groups	13700.328	301	45.516			
	Total	13757.791	305				
Reflective Style	Among groups	45.530	4	11.383	.770	.545	Not
	In groups	4450.025	301	14.784			
	Total	4495.556	305				
Problem-Solving Confidence	Among groups	29.221	4	7.305	.294	.882	Not
	In groups	7469.972	301	24.817			
	Total	7499.193	305				
Avoidant Style	Among groups	42.243	4	10.561	.821	.512	Not
	In groups	3870.372	301	12.858			
	Total	3912.614	305				
Monitoring	Among groups	18.560	4	4.640	.708	.587	Not
	In groups	1971.779	301	6.551			
	Total	1990.340	305				
Planfulness	Among groups	24.210	4	6.053	.633	.640	Not
	In groups	2880.172	301	9.569			
	Total	2904.382	305				
Total score	Among groups	616.537	4	154.134	.442	.778	Not
	In groups	104943.323	301	348.649			
	Total	105559.859	305				

According to the results (as seen in Table 11), meaningful difference has not been seen in impulsive style, reflective style, problem-solving confidence, avoidant style, monitoring, planfulness and total score according to primary mathematics teacher candidates' perception of problem solving skills [F(4,301)=.316, p>.05], [F(4,301)=.770, p>.05], [F(4,301)=.294, p>.05], [F(4,301)=.821, p>.05], [F(4,301)=.708, p>.05], [F(4,301)=.633, p>.05], [F(4,301)=.442, p>.05]. Namely, candidates' family incomes do not have an effect on their problem solving skills and approaches to the problems.

Descriptive statistics of the students' interested activities are shown in Table 12. ANOVA was used in order to determine whether there were meaningful differences between primary mathematics teacher candidates' perceptions of problem solving skills according to the activities which they are interested in.

Table 12. *Descriptive Statistics of Primary Mathematics Teacher Candidates' Perceptions of Their Problem Solving Skills According to Their Interested Activities*

PSI and subcategories	Sport		TV		Internet		Music art		Cultural		Other	
	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*	$\bar{x}$	*SD*
Impulsive Style	29.62	7.45	27.55	6.14	30.65	6.40	28.32	6.87	26.72	6.27	27.81	7.70
Reflective Style	12.80	4.08	12.98	3.73	13.73	4.51	11.72	3.84	12.13	12.13	14.05	3.87
Problem-Solving Confidence	17.95	5.91	18.43	3.97	18.96	4.78	18.73	4.28	18.02	5.07	20.57	5.38
Avoidant Style	10.64	3.74	10.93	3.40	11.54	3.33	10.72	3.56	10.51	3.62	11.71	3.87
Monitoring	7.73	2.36	7.66	2.57	8.38	2.61	7.41	2.22	7.66	2.75	7.71	2.45
Planfulness	9.98	3.13	10.11	2.71	10.81	4.09	10.11	2.95	10.00	3.07	10.71	2.88
Total score	88.73	20.88	87.68	16.03	94.08	19.74	87.02	16.67	85.04	18.35	92.57	21.38

Table 13. *ANOVA Results of Primary Mathematics Teacher Candidates' Problem Solving Skills According to Their Interested Activities*

PSI and subcategories	Source of variace	Total of squares	*sd*	Mean of squares	*F*	*p*	Meaningful Difference
Impulsive Style	Among groups	517.952	5	103.590	2.347	.041	Not
	In groups	13239.839	300	44.133			
	Total	13757.791	305				
Reflective Style	Among groups	148.049	5	29.610	2.043	.073	Not
	In groups	4347.507	300	14.492			
	Total	4495.556	305				
Problem-Solving	Among groups	138.585	5	27.717	1.130	.345	Not
Confidence	In groups	7360.608	300	24.535			
	Total	7499.193	305				
Avoidant Style	Among groups	44.443	5	8.889	.689	.632	Not
	In groups	3868.172	300	12.894			
	Total	3912.614	305				
Monitoring	Among groups	16.288	5	3.258	.495	.780	Not
	In groups	1974.052	300	6.580			
	Total	1990.340	305				
Planfulness	Among groups	22.192	5	4.438	.462	.804	Not
	In groups	2882.190	300	9.607			
	Total	2904.382	305				
Total score	Among groups	2494.748	5	498.950	1.452	.205	Not
	In groups	103065.111	300	343.550			
	Total	105559.859	305				

According to the results (as seen in Table 13), meaningful difference has not been seen in impulsive style, reflective style, problem-solving confidence, avoidant style, monitoring, planfulness and total score according to primary mathematics teacher candidates' perceptions of problem solving skills in terms of the activities they interested in [F(5,300)=2.347, p>.05], [F(5,300)=2.043, p>.05], [F(5,300)=1.130, p>.05], [F(5,300)=.689, p>.05], [F(5,300)=.495, p>.05], [F(5,300)=.462, p>.05], [F(5,300)=1.452, p>.05]. That is to say, the activities that candidates have an interest in do not affect their problem solving skills and approaches to the problems.

Result and Discussion

Male and female teacher candidates' problem solving skills have been seen to intensify in impulsive style whereas they have lesser intensity in monitoring in the research study which was carried out in aim of investigating primary mathematics teacher candidates' problem solving skills and whether they differ according to various variables. When problem solving skill subcategories were examined in terms of males have been seen to be in more hasty, avoidant and evaluative attitudes than females. Females have been seen to intensify more in other subcategories: Reflective style, problem-solving confidence and planfulness than males. When the gender variable was generally examined meaningful difference has not been seen between female and male teacher candidates' problem solving subcategories and total scores. In the same manner, Aslan and Uluçınar Sağır (2012) did not find a meaningful difference in among female and male teacher candidates' total scores of PSI in their study; however, they found a difference between female and male in impulsive style. On the other hand, D'Zurilla, Maydeu-Olivares and Kant (1998); Güven and Akyüz (2001); Gölgeleyen (2011); Özbulak et al. (2011); Gündoğdu (2010) stated that there was a meaningful difference in problem solving skills in terms of gender in their studies. Gold et al., (1984) and Graybill (1975) remarked that males were more successful than females in their studies whereas Sezen and Paliç (2011) stated that females had more positive perception on their own problem solving skills than males. However, Polat and Tümkaya (2010) researched primary school teacher candidates' problem solving skills in terms of thinking needs and they found a meaningful difference in problem solving skill in terms of the students' gender and grades. In the same manner; Saygılı (2000); Saraçoğlu et al. (2001); Taylan (1990); Gültekin (2006); Sarıbıyık et al. (2004); Çilingir (2006); Özkütük et al. (2003) found a meaningful difference between problem solving skills and the students' gender.

When primary mathematics teacher candidates' problem solving skills were examined in terms of grade levels there were meaningful difference in their impulsive style and total PSI scores, but there were not a meaningful difference in their reflective style, problem-solving confidence, avoidant style, monitoring and planfulness scores. In the same manner; Sezen and Paliç (2011); Gündoğdu (2010) found that candidates' grade levels do not have a meaningful effect on their perception of problem solving skills. On the other hand, Saraçoğlu et al. (2001) found that students' problem solving skills and their overall achievements changes meaningfully according to department. Polat and Tümkaya (2010) found that primary school teacher candidates' problem solving skills in terms of their grade level differs significantly in favor of fourth grades. Besides, Taylan (1990) and Ünüvar (2003), Yıldırım et al. (2011), Ferah (2000) and Doğan (2009) found that there were not a meaningful difference between students' problem solving skills according to their grade levels in their research carried out with college and high school students.

According to the analysis results, there were not a meaningful difference between primary mathematics teacher candidates' perceptions of problem solving skills and the regions which they lived in before they started the university in impulsive style,

reflective style, problem-solving confidence, avoidant style, monitoring, planfulness. Basmacı (1998) stated that the students' birth place does not have a significant effect on their perceptions of problem solving skills in her study named as the study of university students' perception of problem solving skills in terms of some variables.

Meaningful relationship between problem solving skills and family income has not been found in the study. Gölgeleyen (2011) did not found a relationship between family income level and problem solving skills. Çilingir (2006) and Türkçapar (2009) and Cengiz (2010) found that students' problem solving skills do not show a meaningful difference according to their families' incomes in parallel with the study results. Meaningful difference does not occur between parents' occupations and education level and problem solving skills levels (Barut & Genez, 2000:361). However, Kasap (1997) reached the conclusion that there was relationship between problem solving attitude and problem solving success in her study researched the problem solving attitude according to socio-economic status. Bilge and Aslan (1999) have put forward that university students' problem solving skills increase in parallel with their income level. Nacar and Tümkaya (2011) found that problem solving skills increase with income level.

Meaningful difference has not been seen between primary mathematics teacher candidates' perception of problem solving skills and the activities they are interested in. Türkçapar (2009) also indicated that there is not difference in problem solving skills in terms of the ways of recreation. Gölgeleyen (2011) found that industrial vocational high school students' problem solving skills do not have a meaningful difference in terms of participation to the social events. However, Yıldırım et al. (2011) researched the factors affecting the problem solving skills and found meaningful difference in terms of the students' gender, grades, fathers' education level and occupation, studying style, academic success, parents' attitude, feeling lonely, self-confident and consuming cigarette and alcohol.

Suggestions

- The suggestions below are recommended following the study carried out:
- Education programs should be developed and provided their continuity with reference to meaningful difference in the students' problem solving skills.
- Educational attainments like the ones having long time effect on the attitudes like metacognitive skills should be given importance because female and male students are generally in impulsive style in problem solving skills.
- Social skills which provide the students to feel strong in social and emotional perspectives should be supported in order to use their problem solving skills in the activities they interested in and in this manner, desired behaviors should be gained in the students.
- Education environment subjecting the teacher candidates' creativity in problem solving situations should be created in order to bring up teacher candidates who have internal locus of control and feel themselves competent in problem solving.
- Problem solving education should be given more places in teacher candidates. They should be provided to organize their own thoughts. They should develop more real-life thinking skills and construct more realistic thinking models. These are because teacher candidates take place less in monitoring.

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References

Altun, M. (2004). Mathematics education. 3th Edition, Bursa: Alfa Publishing.

Anderson, J.R. (1980). Cognitive psychology and implications. San Francisco: Freman.

Aslan, O., & Uluçınar Sağır, Ş. (2012). Problem solving skills of science and technology teacher candidates. Turkish Science Education Journal, 9(2), 82–94.

Balay, R. (2004). Globalization, the information society and education. Journal of Ankara University Faculty of Educational Sciences, 37(2), 61–82.

Barut, Y., & Genez, D. (2000). The relations between problem solving and optimism levels of families having physically handicapped children. 1st Istanbul Conference Proceedings Manual of Child, İstanbul.

Basmacı, S. K. (1998). The examination of university students' perceptions of problem solving skills in terms of some variables. Malatya: İnönü University, Institute of Social Sciences, Department of Counseling and Guidance, Unpublished Master's Thesis.

Baykul, Y. & Aşkar, P. (1987). Problem and problem solving, mathematics education. Eskişehir: Anadolu University Open Education Faculty Publications, 94.

Baykul, Y. (2006). Mathematics education at primary 1–5. grades (Ninth Edition), Ankara: PegemA Publishing.

Bayraktar, G., Güngörmüş, H. A., Gülbahçe, Ö., Şahin, S., & Bastık, C. (2011). A comparison of Turkish language and physical education teacher candidates ın terms of their perception

levels of problem solving skills. e-Journal of New World Sciences Academy, Sports Sciences, 6(2), 159–168.

Bilge, F., & Aslan, A. (1999). The assesment of problem solving skills of university students whose ırrational thoughts are different. Journal of Counseling and Guidance, 9(13), 7–18.

Bonner, R., & Rich, A. (1988). Negative life stress, social problem solving self appraisal and hopelessness: implications for suicide researches. Cognitive Therapy and Research, 12(1), 549–556.

Bransford, J. D., Brown, S. J., & Cocking, R. (1999). How people learn. Washington, D.C.: National Academy Press.

Cai, J., & Nie, B. (2007). Problem solving in Chinese mathematics education: research and practice. ZDM:The International Journal on Mathematics Education, 39, 459–473.

Cengiz, S. (2010). Aggression and problem-solving of adolescents. Ankara: Gazi University, Institute of Social Sciences, Department of Educational Sciences, Department of Counseling and Guidance, Unpublished Master's Thesis.

Charles, R., Lester, F., & O'Daffer, P. (1994). How to evaluate progress in problem solving. Fifth Edition, Virginia: The National Council of Teachers of Mathematics.

Cohen, L., Manion, L., & Morrison, K. (2007). Research methods in education. 6th ed., Abingdon: Routledge

Çepni, S. (2010). Introduction to research and project, Fifth Edition, Trabzon.

Çilingir, A. (2006). The comparison between social and problem solving skills of science high school and high school students. Erzurum: Atatürk University, Institute of Social Sciences, Department of Educational Sciences, Unpublished Master's Thesis.

D'Zurilla, T. J., Maydeu-Olivares, A., & Kant, G. L. (1998). Age and gender differences in social problem solving ability. Personality and Individual Differences, 25, 241–252.

Demirel, Ö. (2003). Instructional planning, evaluation and teaching art. Ankara: PegemA Publishing.

Doğan, U. (2009). The examination of emotional ıntelligence levels and problem solving skills of high school students according to some variables. Muğla, Muğla University, Institute of Social Sciences, Department of Educational Sciences, Department of Counseling and Guidance, Unpublished Master's Thesis.

Ferah, D. (2000). The examination of Turkish Military Academy students' perceptions of problem solving skills and styles of problem solving approch in terms of gender, grade level, academic achievement and leadership. Ankara, Hacettepe University, Institute of Social Sciences, Unpublished Master's Thesis.

Garrett, A.J., Mazzocco, M.M.M., & Baker, L. (2006). Development of the metacognitive skills of prediction and evaluation in children with or without math disability. Learning Disabilities Research & Practise, 21(2), 77–88.

Gold, D., Crombie, G., Brender, W., & Mate, P. (1984). Sex differences in children's performance in problem-solving situations involving and adult model. Child Development, 55, 543–549.

Graybill, L. (1975). Sex differences in problem-solving ability. Journal of Research in Science Teaching, 12 (4), 341–346.

Gölgeleyen, Y. (2011). The examination of Industrial Vocational High School students' problem solving skills. Ankara, Gazi University, Institute of Social Sciences, Department of Counseling and Guidance, Unpublished Master's Thesis.

Gültekin, A. (2006). The examination of phsyhological counseling and guidance students' problem solving skills. Erzurum, Atatürk University, Institute of Social Sciences, Department of Social Sciences, Unpublished Master's Thesis.

Gündoğdu, Z. (2010). The examination of relation between conflict tendency and problem solving skills of 9. and 12. grades students at Anatolian High Schools, Vocational High Schools for Girls and General High Schools in Bursa. Ankara: Gazi University, Institute of Social Sciences, Department of Child Development, Department of Child Development and Education. Unpublished Master's Thesis.

Güven, A., & Akyüz, M (2001). Teacher candidates views relevant to communication and problem solving skills. Journal of Ege Faculty of Education, 1(1), 13–22.

Heppner, P. P. (1988). The problem solving inventory. Manual, Consulting Psychologist Press.

Heppner, P. P., & Petersen, C. H. (1982). The development and implications of a personal problem-solving inventory. Journal of Counseling Psychology, 29(1), 66–75.

Karataş, İ. (2002). 8th grade students' using levels of information types used in process of problem solving. Trabzon, Karadeniz Tecnical University, Institute of Science and Technology, Unpublished Master's Thesis.

Karataş, İ., & Güven, B. (2004). The determination of 8th grade students'problem solving skills: a special case study. Journal of Education and Social Sciences, 163.

Kasap, Z. (1997). The relation between 4th grade students' success in problem solving and attitudes towards problem solving according to socio-economic status. İstanbul, Marmara University, Institute of Social Sciences, Department of Primary Education, Unpublished Master's Thesis.

Kauffman, D. F., Ge, X. , Xie, K., & Chen, C. H. (2008). Prompting in web-based environments: supporting self-monitoring and problem solving skills in college students. J. Educational Computing Research, 38(2), 115–137.

Lerman, S. (2000). The social turn in mathematics education research. In J. Boaler (Eds.), Multiple Perspectives on Mathematics Teaching and Learning, 19–44. Westport, CT: Ablex Publishing.

Liamthaisong, K., Pumipuntu, S., & Kayapard, S. (2011). Developing a web-based instruction blended learning model using the creative problem-solving process for developing creative thinking and problem-solving thinking of undergraduate students. European Journal of Social Sciences, 24(2), 246–251.

Miller, M., & Nunn, G. D. (2001). Using group discussions to improve social problem-solving and learning. Education (Chula Vista, Calif), 121, 470–475.

Nacar, F. S., & Tümkaya, S. (2011).The examination of primary teachers' communication and interpersonal problem-solving skills. Elementary Education Online, 10(2), 493–511.

National Council of Teachers of Mathematics (NCTM) (1980). An agenda for action: Recommendations for school mathematics of the 1980s. Reston, VA: Author.

National Council of Teachers of Mathematics (NCTM) (1989). Curriculum and evaluation standards for school mathematics. Reston, VA: NCTM.

Newell, A., & Simon, H. (1972). Human problem solving. Englewood cliffs, NJ: Prentice-Hall.

Özbulak, B., Aypay, A., & Aypay, A. (2011). The relation between problem solving and mettle skills of students in secondary education and some variables. Electronic Journal of Social Sciences, 10(36), 77–93.

Özkütük, N., Silkü, A., Orgun, F., & Yalçınkaya, M. (2003). Problem solving skills of teacher candidates. Ege Educational Journal, 2(3),1–9.

Polat, R. H., & Tümkaya, S. (2010). An Investigation of the students of primary school problem solving abilities depending on need for cognition. Elementary Education Online, 9(1), 346–360.

Polya, G. (1957). How to solve it?. Trans. Feryal Halatçı, İstanbul: Sistem Publishing.

Republic of Turkey Ministry of National Education (RTMNE) (2005). Primary mathematics program 1–5. grades. Ankara, MEB Publishing.

Saracoğlu, S., Serin, O., & Bozkurt, N. (2001). The relation between problem solving skills and achievements of students in Dokuz Eylül University Institute of Educational Sciences. M. U. Atatürk Faculty of Education Journal of Educational Sciences, 14, 121–134.

Sarıbıyık, S., Altunçekiç, A., & Yaman, S. (2004). A study on the examination of teacher candidates' level of ınterest in science course and problem solving skills. XIII. Book of Abstracts of the National Congress of Educational Sciences (06–09 July), İnönü University, Faculty of Education.

Savaşır, I., & Şahin, N.H. (1997). Assessment in cognitive-behavioral therapy: commonly used scales. Ankara: Turkish Psychological Association Publication.

Saygılı, H. (2000). The examination of the reelation between problem solving skills and social and personal adjustment. Erzurum, Atatürk University, Institute of Social Sciences, Department of Educational Sciences, Unpublished Master's Thesis.

Schoenfeld, A. (1992). Learning to think mathematically:Problem solving, metacognition, and sense making in mathematics. In D. A. Grouws (Ed.), Handbook of research on mathematics teaching and learning, 334–370. Macmillan: New York.

Senemoğlu, N. (1997). Development, learning and teaching. Ankara: Spot Publishing.

Serin, N. B., & Derin, R. (2008). The factors affecting primary school students' perceptions of ınterpersonal problem-solving skills and focus of control levels. International Journal of Human Sciences, 5(1), 1–18.

Sezen, G., & Paliç, G. (2011). Determination of high school students' perception of problem solving skills. 2nd International Conference On New Trends In Education And Their Implications, April 27 to 29, Antalya, Turkey.

Soydan, S. (2001). Development of instruments for the assessment of metacognitive skills in mathematics: An Alternative Assessment Attempt. İstanbul, Boğaziçi University, Unpublished Master's Thesis.

Stigler, J. W., & Hiebert, J. (1999). The teaching gap: best ideas from the world's teachers for improving education in the classroom. New York: Free Press.

Şahin, N. H., Şahin, N., & Heppner, P. (1993). Psychometric properties of the problem solving ınventory in a group of Turkish university students. Cognitive Therapy and Researc,. 17(3), 379–385.

Taylan, S. (1990). Customization, reliability and validity studies of Heppner's Problem Solving Inventory. Ankara, Ankara University Institute of Social Sciences, Department of Psychological Services in Education, Unpublished Master's Thesis.

Türkçapar, Ü. (2009). Problem solving skills of students in school of physical education and sport in terms of different variables. Journal of Ahi Evran University Kırşehir Faculty of Education, 10(1), 129–139.

Ulgen, G. (2001). Concept development (Third Edition). Ankara: Pegem Publishing.

Umay, A. (1994) Can all mathematics problem solving behavior be teached and measured? I. Education Congress: Papers I. Volume., 28-30 Nisan, Ç.U. Faculty of Education, Adana.

Unüvar, A. (2003). The effects of versatile perceived social support on problem solving skills and self-esteem of high school students between the ages of 15–18. Konya: Selçuk University, Institute of Social Sciences, Department of Educational Sciences, Department of Psychological Services in Education, Unpublished Master's Thesis.

Uysal, Ş. (1974). Educational research methods. Journal of Ankara University Faculty of Education, 7(1), 19–36.

Yıldırım, C. (2004). Mathematical reasoning (4. Edition), İstanbul: Remzi Bookstore.

Yıldırım, A., Hacıhasanoğlu, R., Karakurt, P., & Türkleş, S. (2011). Problem solving skills of high school students and factors affecting to their problem solving skills. International Journal of Human Sciences, 8(1), 905–921.

Zheng, R., McAlack, M., Wilmes, B., Kohler-Evans, P., & Williamson, J. (2009). Effects of multimedia on cognitive load, self-efficacy, and multiple rule-based problem solving. British Journal of Educational Technology, 40(5), 790–803.

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International Electronic Journal of Elementary Education, 2014, 6(2), 315-332.

Teaching Language Minority Students in Los Angeles and Oslo -A Metropolitan Perspective nr 1

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Received: 02 September 2013 / Revised: 21 January 2014 / Accepted: 26 February 2014

Abstract

Receiving, accommodation and education of children with immigrant background is one of the challenging issues in almost all the metropolitan areas in many countries. In our study we are exploring the impact of demographic changes on political agendas, legal frames, educational approaches, research findings and student achievement in the field of education of linguistic minorities in Los Angeles, USA and Oslo, Norway. Although there are significant historical and socio economical differences between Los Angeles and Oslo, many of the educational challenges facing the educational policy makers and the linguistic minority students are quite similar.

Keywords: Linguistic Diversity in Education, Education in Metropolitan Areas, Los Angeles, Oslo

Introduction

Although different in many respects, both Los Angeles and Oslo are ports of immigration in their respective countries. The public school systems in each city are charged with educating large numbers of immigrant children whose home language differs from the national language of the country. In both cities, the academic achievement of the largest immigrant group lags in national and local measures. In both cities, the education of immigrants and the strategies to be used have become politically controversial, and policies for learning the national language have been buffeted by ideological winds. In both cities, the economic and social future depends on the successful education of immigrant children. Thus, an exploration of immigrants and their progress as learners of the national language may be profitable to educators in both countries, and such an exploration may serve as a basis for future research. In

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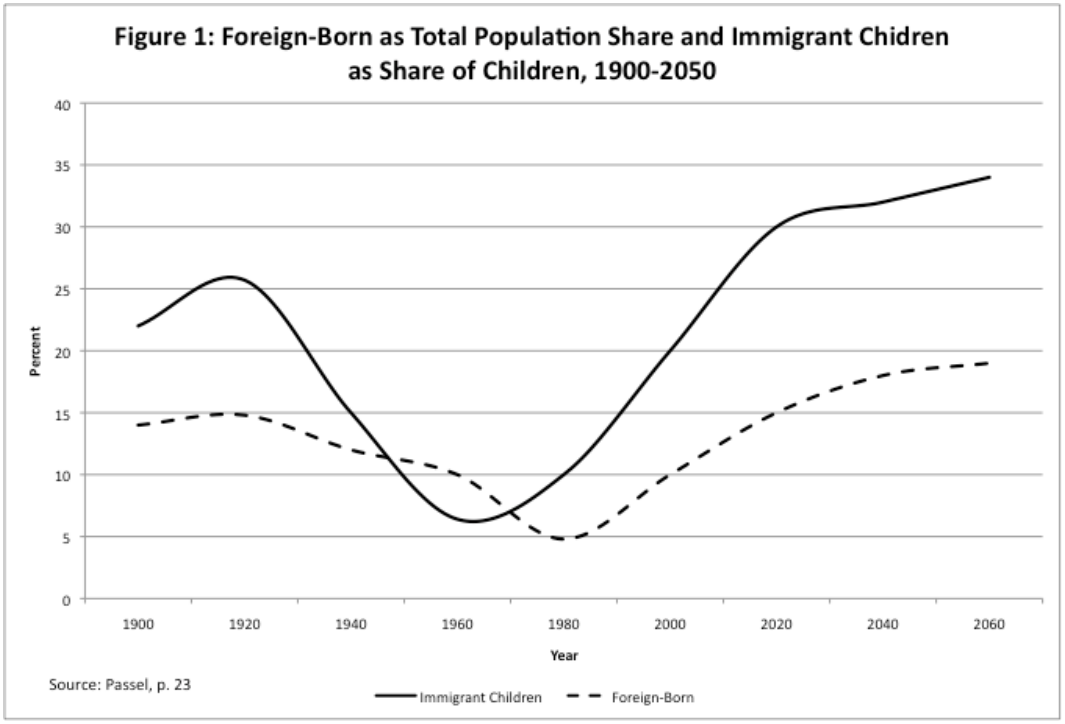
this first paper we are focusing on the situation in Los Angeles. In the second paper, which will be appear in this journal, we'll be focusing on Oslo.

Immigration in the U.S.

Immigrant children are the fastest growing segment of the U.S. population. Nearly 25 percent of youth under age 17 live with an immigrant parent, and among younger children immigrants account for nearly all the recent population growth (Tienda and Ron, 2011, p.3).

At the same time, the U.S. population is aging. Although the number of children is at an all-time high, their share of the total population is decreasing, reflecting decreasing fertility rates and the aging of the post-World War II baby boom (Passel, 2011, p.22).

These children are part of a wave of immigration that began in earnest in 1965 after passage of legislation that allowed immigration to expand. In the 1980s more than 10,000,000 persons immigrated to the United States, the greatest absolute rise in the nation's history. In some ways it repeats the "Ellis Island" wave of immigration in the early 20th century, although the port of immigration differs. According to Jeffrey Passel's calculations, "By 2009 almost 40 million residents, or 12.8 percent of a U.S. population of more than 300 million, were foreign-born. This share was only slightly below the twentieth-century peak of 14.8 percent attained in 1910, when 13.5 million residents, of a total population of 92 million, were foreign-born." (Passel, 2011, p.25).



However, this new wave of immigrants differs substantially from the older, largely European migration that first settled largely on the East Coast and in the Midwest, the upper Midwest in the case of Norwegians who immigrated heavily in the late 19th Century. The 1965 legislation placed immigrants from Asia and Latin America on an equal footing with those from Europe, and this has changed the composition of the U.S. population. "By the late 1990s annual inflows of unauthorized immigrants began to exceed inflows of legal immigrants and continued to do so for about a decade." (Passel, 2011, p.25). Since 1980 more immigrants, both legal and unauthorized, have

come from Mexico than from any other country. By 2007 more than 12.5 million Mexican immigrants were living in the United States; about 55 percent of them were unauthorized. Other leading sources of immigrants: India, the Philippines, China, El Salvador, Cuba, Vietnam, and Korea (Passel, 2011, p.25).

One of the consequence of a flood of immigration from rural Mexico, where families were fleeing from that country's economic collapse, was to substantially lower the education level of immigrant adults coming to the U.S. For example, the average immigrant arriving from Mexico between 1960 and 1964 had more than eight years of schooling. Immigrants in the late 1980s and early 1990s averaged lass than six years of schooling (Luschei, 1995, p.13).

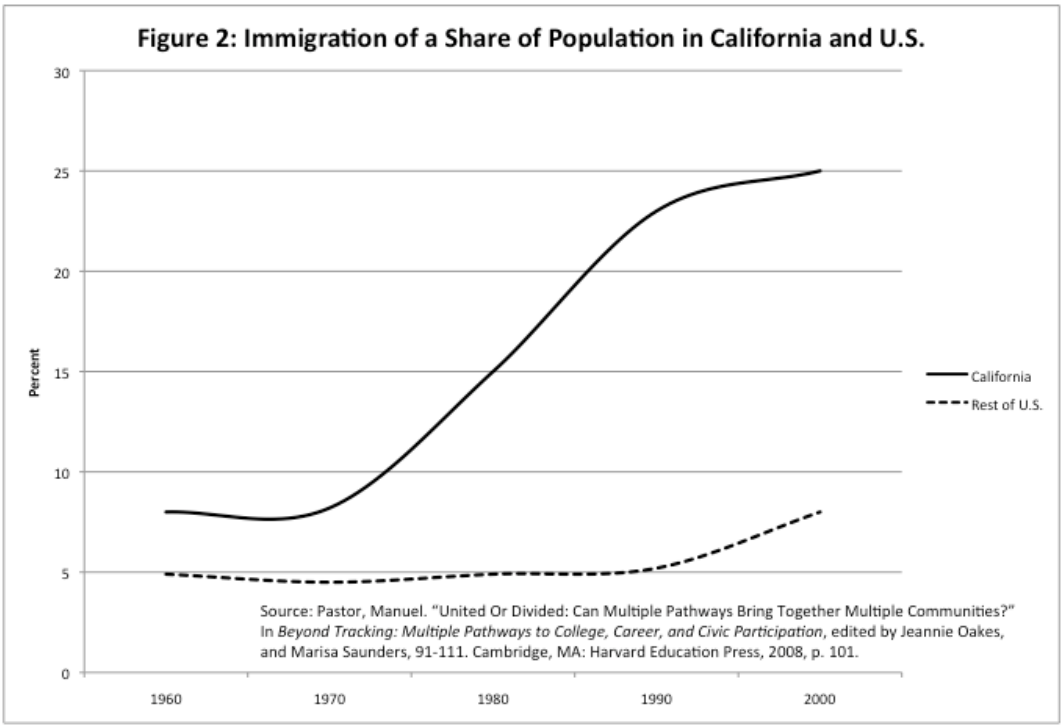
Immigration and the Public Schools

As Gándara and Rumberger write, "The ideal of the public school in the United States has historically been one of a great equalizer, the place where a common culture was inculcated in students, regardless of the culture they brought to school. As such, immigrant incorporation into the society has been viewed primarily as a job of the schools." (Gándara and Rumberger, 2009). In addition to skills and literacy, schools were expected to socialize newcomers. This practice was well understood by school leaders early in the 20th Century, when the idea of America as a "melting pot" was unabashedly advanced (Raftery, 1992). The meaning of socialization is more difficult, and more controversial, in a pluralistic society where maintaining a cultural identity is a strong value and where one's home country is little more than two hour's drive away.

Immigration Has Profoundly Affected California and Los Angeles

Almost half the youth in California, which offers immigrants relatively generous access to social services, are children of immigrants. It is joined by Nevada, Arizona, Texas, Florida, New York and New Jersey in having an immigration youth fraction that exceeds 30 percent. In terms of total population, by 2000, immigrants made up more than 25 percent of the state's population. While other states considered together have seen a rise from 4.7 to 8.1 percent, the increase in California has been much steeper and larger (Figure 2).

Figure 2: Immigration of a Share of Population in California and U.S.



This concentration of immigrants is important socially and also politically. As the wave of Latino immigrants has achieved citizenship and begun to vote, its political influence is beginning to be felt. The Latino vote was decisive in electing Barack Obama as President in 2012. Los Angeles has a Latino mayor, sheriff, and substantial representation on the city council, county commission, and school board. The president of the state senate is a Latino, and the son of an immigrant has been the speaker of the state assembly. Latino political influence will soon be strongly felt in the U.S. House of Representatives, which unlike the Senate reflects a state's population. Four large states—California, Texas, Florida, and New York—will have a near majority in the House, and each of those has a rapidly increasing number of Latino voters.

Immigration and the Los Angeles Schools

With more than 671,000 students in 2009-2010, the Los Angeles Unified School District (LAUSD) is the nation's second largest trailing New York City, which has about 1.25 million students (Table 1). The student enrollment in Los Angeles is larger than the entire population of three U.S. states: Wyoming, Vermont, or North Dakota.

Table 1. *Los Angeles Unified School District Students by Race/Ethnicity, 2010*

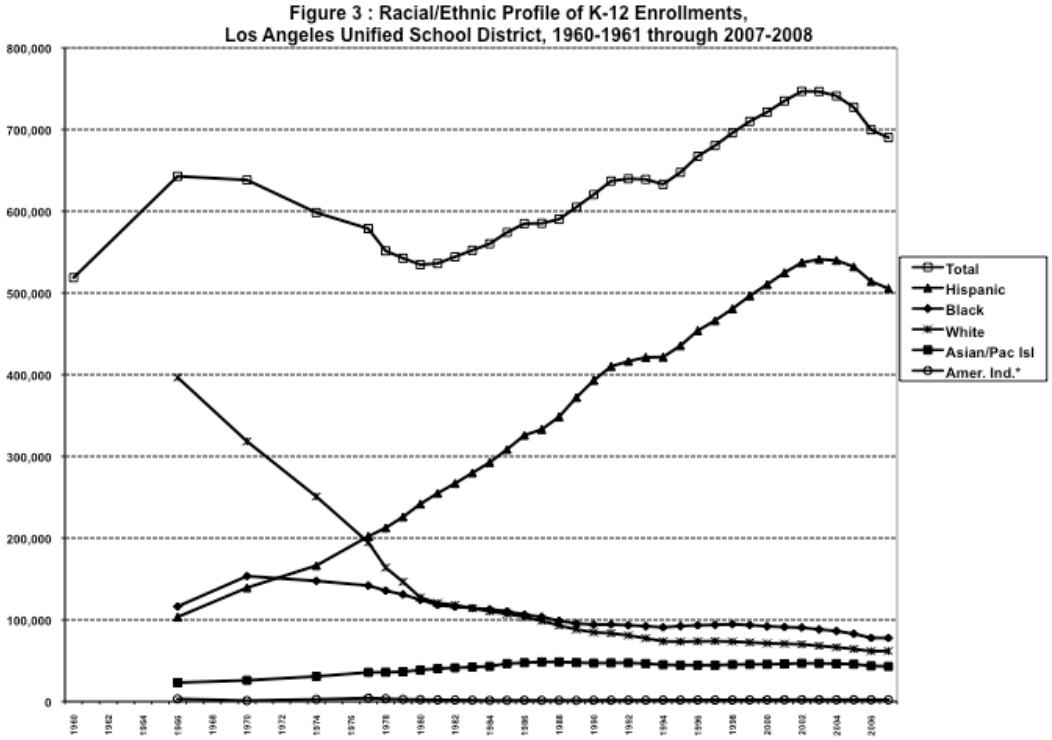
	Los Angeles District		L.A. County
	Enrollment	Percent of Total	Percent of Total
Hispanic or Latino	493,713	73.6%	63.5%
African American	68,972	10.3%	8.8%
White	60,014	8.9%	15.1%
Asian	25,308	3.8%	7.9%
Filipino	11,618	1.7%	2.2%
American Indian or Alaska Native	2,192	.3%	.3%
Native Hawaiian or Pacific Islander	2,192	.3%	.4%
Two or more races	1,887	.3%	.8%
None reported	5,193	.8%	1.0%
Total	671,088		

Source: California Department of Education, Education Demographics Office (CBEDS, sifb0910 10/22/10)

The student population is 74 percent Latino, about 10 percent African-American, about 9 percent white, and 4 percent Asian. Thus, the vast majority of immigrants are from Latin America, predominantly Mexico, and 93 percent of the English Language Learners come from households where Spanish is the first language.

For LAUSD, the changes in demographics are best seen in the long sweep of history. As the top line in Figure 3 shows, enrollments in the city's schools continued to rise in the post World War II baby boom, and then as was the case with nearly every city in the country, they started to decline in the mid 1970s. But then, starting in the 1980s enrollments increased rapidly, as the new wave of immigrants arrived. Thus, Los Angeles, unlike most central city American school districts did not experience massive enrollment declines. Detroit and Milwaukee, for example now enroll fewer than half the students they did at their peak.

The next two lines in Figure 3 show the population exchange between Latino and White students. The rapidly declining line (+) illustrates the decline in White students as the baby boom generation passed through the schools. The rapidly rising line (•) shows the effect of immigration and the rise of Hispanic or Latino students. Note that African-American students declined slightly in number and Asian/Pacific students increased slightly, but the fundamental demographic story is the switch of enrollments from White European background students to Latinos.



Source: Kerchner, Charles Taylor, David J. Menefee-Libey, Laura Steen Mulfinger, and Stephanie E. Clayton. Learning From L.A.: Institutional Change in American Public Education. Cambridge, MA: Harvard Education Press, 2008, p. 59.

English Language Learners in Los Angeles

Educating English Language Learners is the most significant educational challenge facing the Los Angeles public schools, LAUSD.

About 210,000 students, 31 percent of the total enrollment, are classified as English Learners, meaning that they have been determined to lack the comprehension, reading, or writing skills to succeed in the school's regular instructional programs. In addition, about 222,000 students, whose native language was other than English have met the qualifications to be classified as Fluent-English-Proficient. During the last school year, more than 33,000 met the qualifications for reclassification.

As massive as these numbers are, the number of English Language Learners has decreased by nearly one-third over the last six years, from 326,893 in 2004. The decline in English learners reflects both an emphasis on achieving English fluency on the part of the district and a dramatic slowing of both legal and illegal immigration (DATAQuest, ?).

As Table 2 shows, the presence of English Language Learners is not confined to LAUSD. In the County of Los Angeles, which includes most of the suburban communities surrounding the central city and is served by 79 school districts, more than a quarter of the students are classified as English learners, and statewide the figure is nearly 24 percent.

Table 2. *English Learners in Los Angeles Unified, L.A. County, and California, 2009-2010*

District	Enrollment	English Learners	Fluent-English Proficient Students	Students Redesignated in Past Year
Los Angeles Unified	670,745	209,501 (31.2%)	221,718 (33.1%)	33,224 (15.1%)
Los Angeles County	1,574,150	409,777 (26.0%)	424,416 (27%)	59,451 (13.4%)
California	6,190,425	1,468,771 (23.7%)	1,155,116 (18.7%)	175,417 (11.6%)

Source: www.cde.ca.gov Educational Demographics Unit (DATAQuest)

The Importance of English Fluency in the U.S.

There have been sustained, ideologically charged debates over the value of bilingual instruction, and these will be addressed in a later section, but there is no question that early English fluency is associated with academic success.

English Language Learners typically perform much worse academically than their English-fluent peers. One of the most comprehensive studies, involving more than 28,000 LAUSD students, Flores, et al found that moving from English learning instruction to mainstream classes resulted in improved academic performance (Flores, Painter, Harlow-Nash and Pachon, 2009).

Reclassified students scored significantly higher on standardized reading and math tests, were much more likely to pass the high school exit exam or take an Advanced Placement course. These students also performed better than their peers who were initially classified as English Fluent and who received no special English-learner instruction. (Some parents resist placing their students in English learner classes because they feel that there is a stigma attached.)

A smaller study, followed students in the Boyle Heights neighborhood of Los Angeles, historically home to immigrant families. It found that English language achievement in the 5th grade was the single greatest predictor of scores on nationally normed tests and on the California high school exit exam (Kerchner and Mulfinger, 2006).

But a substantial number of students are not reclassified as English-fluent by 8th grade. In the Flores, et al, study, 29 percent of the students in English learner classes had not been reclassified by grade 8. Three-quarters of these students had been in Los Angeles schools since the first grade. Most of them were not recent immigrants, but born in the United States (Flores, Painter, Harlow-Nash and Pachon, 2009, p.1).

Particularly with Latino students, whose families often live in neighborhoods where Spanish is spoken at home, on the streets, and in stores, there can be little environmental pressure to adopt English, but the workforce and educational consequences for students are very high. Such students are very unlikely to obtain

either a college or university education or specialized technical training. They are much more likely to leave school before completing secondary education.

The problem of long-term English Learners is not restricted to California. Nationwide studies also reveal that some students remain in the English-Learner category for 10 years or more (Olsen, 2010).

Learning English in the early grades carries high stakes for children. If a student is not classified as English-fluent by the time they enter the 7th grade, they are unlikely to be placed in the higher-level classes that qualify them to attend college, or a selective occupational program. They are much less likely to complete high school, and dropping out of high school is a chronic problem in schools with a large Latino population.

One of the most troubling comparisons is between Latino immigrant students, who often lag behind in school, and Asians, who often excel. Indeed, when Achievement Gap statistics are calculated, Asian students are grouped with Whites, and they often exceed them in test scores. Part of the relative success can be attributed to parental situation. Asian immigrants tend to be more highly educated, but that is not always the case, and there appear to be strong differences in family expectations.

Hector Becerra, talked with students at Lincoln High School, located in a working class area of the city. There, Asian students make up about 15 percent of the student body, but they account for more than 50 percent of the enrollment in advanced placement courses. Students there reported acculturated expectations. Carlos Garcia, who has a knack for math said, “My friends, most of them say, ‘You’re more Asian than Hispanic.’” Asian students report relentless parental pressure for academic success. “They only start paying attention if I don’t do well,” said Karen Chu, 15, whose parents emigrated from Vietnam (Becerra, 2008).

While part of the differences between Latinos and Asian students may be a function of cultural expectation, part is behavioral. A proven approach to systemically increasing the capacity for students to work in groups is to make it easy to create and operate them. We know that students who study together learn more and are more highly motivated than those who study alone. In a well-known example, Uri Treisman, who was a teaching assistant at UC Berkeley, became aware of the high rate at which Black students were failing freshman calculus. As a part of his research about the causes of failure, Treisman found that African-American students almost always studied alone while Chinese students studied together, and they studied longer. The Chinese students averaged 14 hours of study a week, and they went beyond the problem sets. They “critiqued one another’s work, correcting errors and suggesting innovative solutions,” as David Drew has written (Drew, 1996). In a practice that has been repeated many times with similar results, Treisman created a workshop for African-American students to study together and within a year the students who were getting Ds were getting Cs or better. Triesman’s work at Berkeley later included a study group of Latino students, with similar results.

The Political and Policy Dimensions of Immigration and English Language Learning the U.S.

Politics drives the education of immigrants in California, what they are taught, and how. There are at least six powerful political issues that continue in legislatures, the courts, and before the electorate in general.

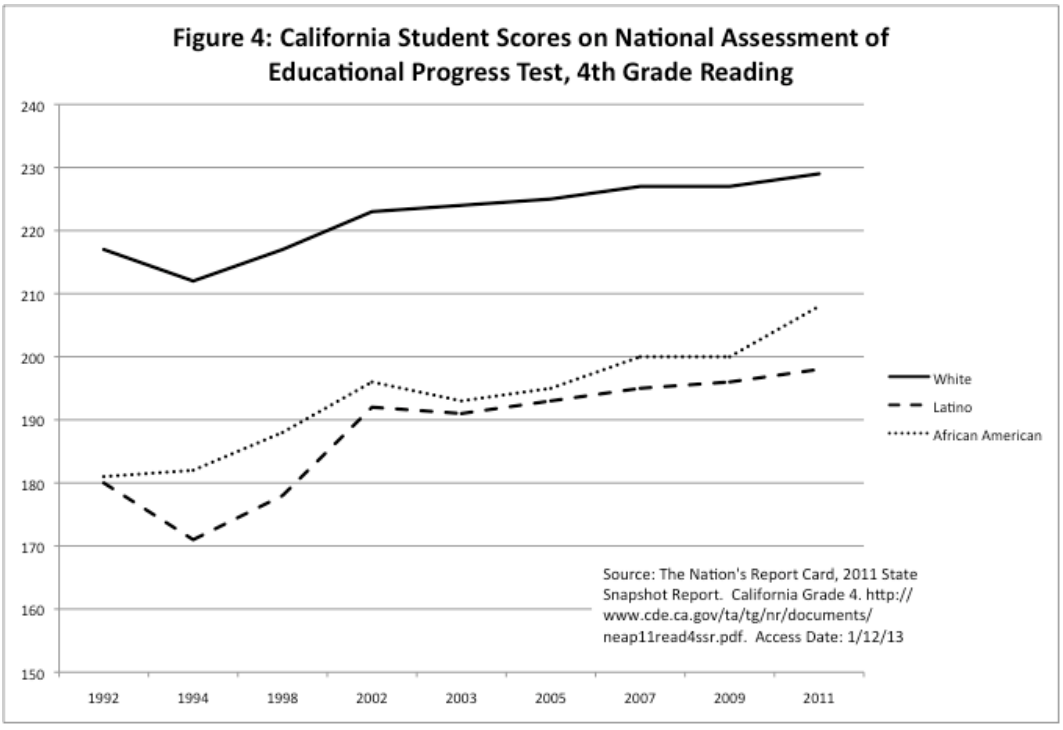
1) First, language acquisition and achievement have been raised to the level of a civil right, both in the courts and in policy rhetoric surrounding education.

2) Second, the teaching of immigrants has been subject to waves of nativism, seeking to restrict the access of immigrants to education and other social services and counter forces seeking to expand opportunities for immigrants.
3) Third, these political issues have been joined with both pedagogical and ideological contests over whether immigrant students (and others) benefit more from bilingual education or through what is known as English-only instruction.
4) Fourth, immigrant literacy instruction has been joined with what is known as "the language wars," with one side favoring a phonics-based approach to teaching reading and the other a contextual literature-based approach.
5) Fifth, English Language Learners have become a part of an increasingly shrill debate over testing, particularly the use of standardized tests to measure achievement and to determine how teachers and students are ranked and whether students gain access to higher education.
6) Sixth, immigrant students, like all other Californians, are caught in the gridlock of California politics that has rendered the state incapable of raising necessary revenue or governing itself effectively. Although at first these gross political issues seem far removed from the classroom, they have highly detrimental effects.

The Achievement Gap and its Civil Rights Dimension

The continuing of low achievement among "long term" English language learners is reflected in the persistent achievement gap between Latino and African-American students and Whites.

Achievement for all racial and ethnic groups is improving, and as Figure 5 shows the gap is narrowing, but slowly. The National Assessment of Educational Progress, administered by the U.S. government show similar trends. Over the period 2000 to 2011, the achievement levels of White and Latino students rose, but the gap between them did not change significantly. In 2011, the gap was 31 points, not different statistically from the 37 point gap in 1992.

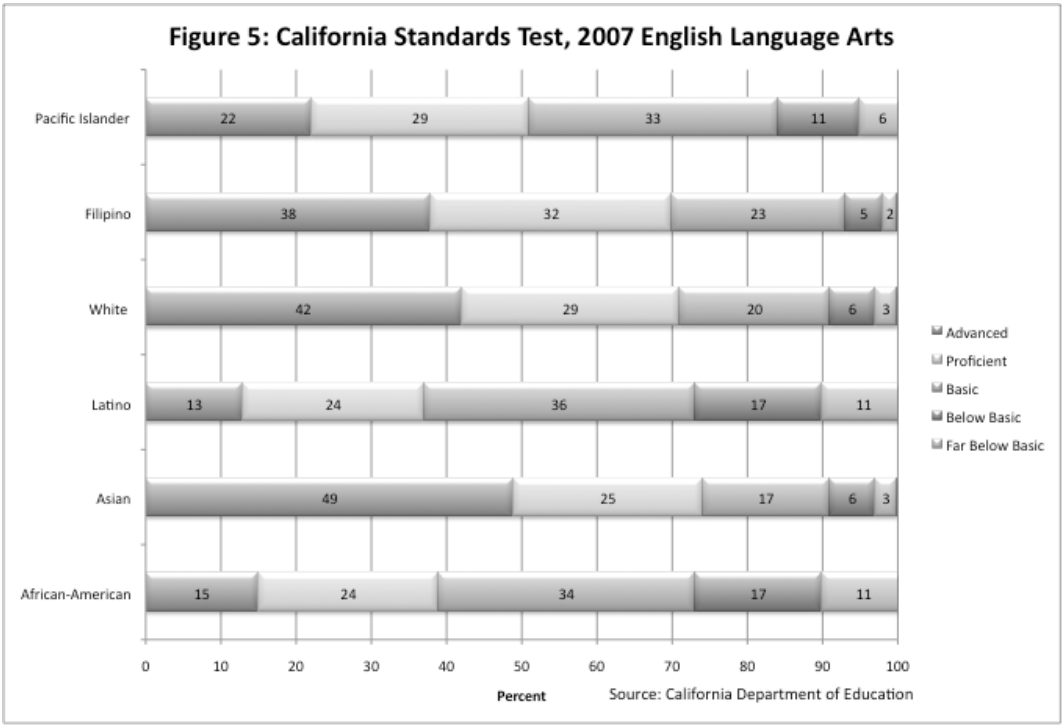


When compared to the nation, the gaps between Latino and White students in California were larger in both reading and math (Cadelle Hemphill and Vanneman, 2011).

Although the achievement gap in California is confounded by the presence of large numbers of English Language Learners, its roots are much more wide spread. The performance of African-American students in California is substantially lower than those of White students, and Asian students tend, including a growing immigrant population, perform at a par or above white students.

In 4th Grade Language Arts, as shown in Figure 5, some 73 percent of Asian, and 71 percent of White students scored in the Proficient or Advanced categories, while only 37 percent of Latinos and 39 percent of African-Americans scored in the highest two ranks. (The California Standards Test is given to all students each year, and the results are reported to parents along with teachers' grades. The CST is also used by the state in evaluating schools and sanctioning those that do not meet performance targets. Students are frequently given special preparation for taking the test, including practice exams that give students experience with the types of questions asked. In contrast, the National Assessment of Educational Progress is a matrix exam. Not all students take the test, and of those, not all students are given the same questions. Policy analysts use the results on NAEP, but they are not used by the states in ranking schools, nor are results reported for individual students.)

Although the achievement gap has been a longstanding phenomenon, it has taken on political and policy significance in the last decade. This is the case because the most important federal law effecting schools, the Elementary and Secondary Education Act, which since 2001 has been known as the No Child Left Behind Act, requires schools to track academic disparities by disaggregating data on standardized test performance by various socioeconomic and demographic characteristics.



Also, in the case Lau v. Nichols (1974) the U.S. Supreme Court decided unanimously that sameness in curriculum did not constitute equality: “there is no equality of treatment merely by providing students with the same facilities, textbooks teachers and curriculum; for students who do not understand English are effectively foreclosed from any meaningful education.” (Olsen, 2010, p.5).

Thus, by law English learners became a legally protected class, and that the schools had an obligation to address their language and curricular needs. In a sense, the Lau decision rested on prior action by the U.S. Congress, which in 1968 passed Title VII of the Elementary and Secondary Education Act that offered capacity-building grants to local districts to develop programs in a student’s native language. Thus, there was both appropriations and advocacy for bilingual instruction. These provisions were later attacked and limited beginning during the Ronald Regan presidency (Hakuta, 2011).

In 2000, what is known as the Williams lawsuit (Eliezar Williams et. al. vs. State of California) was filed alleging that the state failed to provide poor, minority, and immigrant children equal access to educational materials, safe and decent schools, and qualified teachers. The suit was settled in 2004, creating both supplemental funds to low performing schools, and additional oversight.

Nativism and Opportunity

In the United States—where everyone, save the 1.2 percent of the population who can rightfully claim to be Native Americans, came from somewhere else—immigration has always fostered a mixture of generosity and cruelty. Throughout U.S. history, waves of nativism have fired fears of cultural identity and economic prosperity being ruined by “hordes” of newcomers. Because the latest wave of immigration has been predominantly Latino, arguments about their threat have largely been directed toward them.

At an academic level, most notably Samuel P. Huntington has articulated these fears:

The persistent inflow of Hispanic immigrants threatens to divide the United States into two peoples, two cultures, and two languages. Unlike past immigrant groups, Mexicans and other Latinos have not assimilated into mainstream U.S. culture, forming instead their own political and linguistic enclaves—from Los Angeles to Miami—and rejecting the Anglo-Protestant values that built the American dream. The United States ignores this challenge at its peril (Huntington, 2004).

Huntington’s assertion has been wildly controversial, not rooted in empirical research, and it does not stand up well to the evidence that Latino/Hispanic children learn English rapidly (Portes and Rivas, 2011). Still, such fears have inflamed the public and been exploited by politicians. Deadlock in the U.S. Congress has prevented any meaningful reforms in immigration policy, even though presidents George W. Bush and Barack Obama each supported such legislation. In 2010 and 2011 the political vacuum created by federal inaction, several state legislatures, led by Arizona, have enacted strong anti-immigrant measures. However, after the 2012 election, when Latinos overwhelmingly voted to reelect President Obama, opposition to meaningful immigration reform has dulled, and as this is written there is the prospect that Congress will pass legislation in 2013.

California’s most prominent attempt to legislate against illegal immigrants took place in 1994, with the passage of what is known as Proposition 187, an amendment to the state constitution that would have bared access to public education to children who entered the country illegally or whose parents had. The measure was approved by 59 percent of the voters, only to be declared unconstitutional by the federal courts. Indeed,

in 1982, the U.S. Supreme Court, in the case Plyer v. Doe, ruled that undocumented children must be provided access to public education.

But the political implications of anti-immigrant measures in California continued. The rapid increase in the seeking of U.S. citizenship by Latino immigrants, and their participation in the political process has drastically curbed the attractiveness of the Republican Party in California. Since Proposition 187, which was supported by the incumbent Republican Gov. Pete Wilson, no Republican has won statewide elected office except for former governor Arnold Schwarzenegger (an immigrant himself), who had substantial prior name recognition as a movie actor.

Alongside the nativist reactions to immigration, there has also been a compassionate and enlightened response. The state's duty to provide education does not extend to higher education, and the children of parents who entered this country illegally are frequently put at jeopardy by not having the proper documents to fill out a college application or in not qualifying for the lower tuition rates that legal California residents are entitled to. For years, members of both political parties have attempted to pass a federal law that would be called Development, Relief, and Education for Alien Minors (DREAM) Act. It would create a pathway to citizenship for undocumented youth who meet certain criteria. In spring 2011, it failed to pass the U.S. House of Representatives by four votes.

William Perez, who has been a tireless advocate of the DREAM Act, writes about the anguish of thousands of hard working students whose pathway to college and jobs are clouded by their status. Many of them have no memory of having lived in another country:

They have grown up "American," their dominant language is English, and they strongly identify as Americans, yet they are unable to pursue higher education despite their remarkable academic qualifications. Despite the numerous social, political, economic, and educational challenges they have faced, the students exhibit the same type of tenacious optimism, drive, and perseverance that fueled their parents desire to pursue a better future in the U.S (Perez, 2009, p.4).

In the face of federal inaction, the California legislature has moved forward with its own version of the act that gives these students access to public colleges and universities. Gov. Jerry Brown has signed the first part of the state's Dream Act legislation making it possible for students who had been brought to the U.S. illegally by their parents, who finished secondary school and otherwise qualify for admission to state colleges and universities to accept private scholarship assistance to pay their tuition. Companion legislation that would allow these students to receive scholarships from state funds is still being debated in the legislature (Baron, 2011). California legislation, of course, cannot deal with the question of citizenship.

Bilingual Education v. English Only

There has always been a paradox to immigration and public schooling. While one of the duties of schooling has been socialization and integration into U.S. society, immigrant families also seek to use schooling as a way of achieving ethnic recognition. In addition to its intellectual and practical value, bilingualism and foreign-language instruction has become a symbol of national identity.

[My own family history of immigration from Germany in the mid 1700s reveals that the family settled in a German-speaking area of Pennsylvania and that church records were kept in that language for a full half-century following the wave of immigration.]

In her history of the early 20th Century Progressive Era in Los Angeles schools, Judith Raftery relates the story of the Molokan Russians, a pious but largely illiterate Protestant sect that had fled persecution and conscription in the Czar's army. "Schools played no part in the Molokan culture," she writes, and compulsory attendance, which was enforced by truant officers, took older girls away from the household and boys away from paid work. The elders also feared assimilation, and in 1908 they decided to write the Board of Education requesting the use of a room at Utah Street School in Boyle Heights to instruct the children in Russian. The request, and a subsequent one for another room, was granted, and three years later the community expressed its thanks to the board. Repeated throughout the city, these small accommodations for Jews, Swedes, French, Croatians, Germans and others "reflected the skill with which newcomers asserted themselves" and also the capacity of the school district to make marginal accommodations and thus create legitimacy for itself (Kerchner, Menefee-Libey, Mulfinger and Clayton, 2008).

Researchers disagree about the most effective way to teach English to non- English speakers. Some U.S. schools with large populations of Spanish-speaking English learners have developed a variety of bilingual programs to instruct English learners in both Spanish and English. Programs labeled as "bilingual" vary substantially. Alejandro Portes and Rubén Rumbaut distinguish between English-dominant, Spanish-dominant, and fluent bilingualism. The latter is associated with the strongest academic outcomes, followed by English dominance. Spanish-dominant bilingualism is highly problematic for academic achievement (Portes and Rumbaut, 2001).

Other schools have implemented English as a Second Language (ESL) programs in which teachers instruct only in English but use second-language acquisition instructional strategies (sometimes called "Structured English Immersion"). Researchers have fiercely debated the merits of both forms of instruction.

California voters forced the state's schools into ELS instruction. They overwhelmingly passed an initiative, Proposition 63, in 1986 to require English-only instruction. That same year, the governor, vetoed three attempts to reauthorize the state's bilingual education program (Luschei, 1995, p.19). As a result, funds for English Learning education must come from the general funds of each school district. (The initiative process in California allows a group of citizens, or as is most likely an interest group, to write a piece of legislation and place it before the voters. If approved it becomes law with the same standing as a bill passed by the legislature. The initiative process is now generally regarded as dysfunctional (Schrag, 1998)).

Calderón, Slavin, and Sánchez assert that the key to achievement is the quality of instruction and programmatic features in a whole-school approach to instructing English learners rather than whether the program in bilingual or not (Calderón, Slavin and Sánchez, 2011). Several organizational characteristics are important, for example, the constant collection of data that allows school staffs to know "which students are succeeding and failing and why." (Calderón, Slavin and Sánchez, 2011, p.109). These schools have intensive professional development, standards of behavior for students, and they are highly predictable as organizations.

Effective programs in these schools build student vocabulary. Children who grow up in poverty in the U.S. hear about 615 words an hour; those who are children of professionals hear about 2,153 words an hour, and a child's vocabulary in the first grade is a good predictor of reading comprehension in the middle grades and secondary school (Calderón, Slavin and Sánchez, 2011, p.110).

Effective programs also integrate reading, writing, and language development, have substantial time for cooperative learning among students, and the schools have the

support of parents, who see that their students attend regularly and on time and that they keep up with assignments.

Many of these same attributes were found by Hakuta in the Sanger (CA) Unified School District, an 11,000-student system that has gained national recognition for the achievement of its mostly low-income Latino students. The district used intensive professional development and a focus on data and instructional strategies (Hakuta, 2011, p.169).

Phonics, Literature and the Language Wars

The "reading wars" about how to teach children to read is at least a century old in California, and it shows no sign of abating (Reyner, ?). Currently, the advocates of phonics instruction as the gateway to reading dominate policy in California.

The story of battle is alternately entertaining and horrifying, centering around former state Superintendent of Public Instruction Bill Honig, who during his term of office strongly endorsed a whole language approach linked to a generally constructivist pedagogy. Honig was a powerful educational leader, but his political ambitions caused him to have equally powerful enemies, who charged him with mismanagement of public funds. He was convicted of a felony and removed from office. Honig, along with the state school board, later became phonics advocates, some would say zealots. Now, only phonics based reading programs can be approved for use in the state (Lemann, 1997).

Since 2000, LAUSD has required schools to use the phonics-heavy Open Court reading program published by McGraw-Hill. While marketed as a "universal" reading program, it has been criticized as ineffective in building the contextual knowledge and vocabulary needed for English learners.

Adoption of Open Court was accompanied by "mainstreaming" ELL students (placing them in the same classes as English proficient students), a reduction in class size to 20 students per teacher in the early grades and a coordinated program of professional development, test feedback, and intervention. LAUSD reported student test score gains in the early grades for five years in a row. But ELL students consistently lagged behind. Achievement scores in the upper grades did not change very much.

Teachers have been critical of the program primarily on the grounds that the scripted nature of the program prevented them from using their professional judgment about strategies for individual students, but also because the universal nature of the program did not appear to match the needs of ELL students. However, teachers perceived that the program did a good job of teaching phonic awareness and skills to both English-proficient and English-learning students (Lee, Lasisi and Rachel, 2007).

Testing and Accountability

The No Child Left Behind Act (which is the major federal education law more generally called the Elementary and Secondary Education Act) made student performance on statewide tests critical to student success and school reputation. In addition, California law mandates that students pass a high school exit exam in addition to amassing sufficient course credit to graduate. Both these hurdles have been very controversial, and opposition to them has grown over recent years.

The equity and legitimacy of these tests has come under increasing criticism, from civil rights groups and from educators who believe that the tests are not good measure of what students know and can do, and that they interfere with substantive instruction in schools, and that they are biased against English Language Learners.

Part of the bias against English Language Learners is systemic. Simply holding students learning English to the same standards as students who are already fluent creates a built in bias. Because the national assessment of Annual Yearly Progress requires all subgroups within a school to make progress, including language learners, schools have a tendency to game the system by not reclassifying students as fluent, even though they may be. Thus the scores of these stronger students can be counted along with those who are struggling as language learners. But creating this testing artifact has negative consequences for students, as the earlier discussion about reclassification or redesignation shows. The National Center for Research on Evaluation, Standards, and Student Testing has recommended substantial changes in the way English Language Learners are tested (Wolf, Herman and Dietel, 2010).

Testing for ELL students is also confounded by the movement to create nationwide standards and assessments. Two research and development groups are creating sets of standards and assessments attached to them. Along with 29 other states, California has joined the more innovative of the two consortia called SMARTER Balanced Testing Consortia (Wolf, Herman and Dietel, 2010). One of the two plans is supposed to be a part of the rewritten federal Elementary and Secondary Education Act, which Congress is expected to consider in 2013.

California and Gridlock

The five political battles over how to educate immigrant children nest inside a larger political context that involves the hollowing out of the political and policy assumptions surrounding public education in Los Angeles, and to a substantial degree elsewhere in the state and nation.

Public education in the United States is the legacy of what is know as the Progressive Era of the early 20th Century, which was in many ways America's answer to European social democracy. Careful design and planning were to be an answer to the failure to address social problems and the assumptions of classical economics.

Public education was built around four policy assumptions. First, school policy and governance would be primarily a local concern. Locally elected school board would raise needed revenues and provide wise guidance. Second, education was removed from partisan politics. Schools, for example, were governed separately from cities, and school board elections were not connected to political parties. Third, operations and substantial influence on education policy was the province of educational professionals. Teaching and school administration became licensed occupations, and a well-run bureaucracy was thought to be the most efficient form of organization. Fourth, the whole system enjoyed what became known as "a logic of confidence" in which the public was assured that schools were well run and teachers, school heads, and superintendents were generally given wide latitude in performing their jobs (Boyd, Kerchner and Blyth, 2008). By the 1920s, an historian of the period noted, Los Angeles had become a paradigm of Progressive reform (Raftery, 1992).

Over the last 40 years, these assumptions have been challenged. The state and national governments, rather than local school boards, initiate most education policy, and in California most of school tax funds are raised by the state, which relies heavily on income and sales taxes. School politics have become explicitly partisan with the Democratic Party, supported by employee unions, promoting expansion of services and the Republican Party taking increasingly strident positions against increases in taxes and for more market-based forms of education. Anti-tax measures, most notably Proposition 13 passed in 1978, severely limited the ability of a school district to raise taxes. Financial support for school and colleges has decreased in California when measured by the percentage of family income. It ranks 49th among the states.

Conservatives argue that the school budgets have increased markedly, even when inflation is considered, and this is the case. But California is also a relatively expensive state in which to live, particularly in the cost of housing, and as a consequence wages, including those of teachers, are relatively high. At the same time, schools have been repeatedly challenged to provide more equal services for students from poor backgrounds and students of color, including immigrants. Professional domination of education policy and trust in professionals has broken down substantially.

Both California and the Los Angeles Unified School District remain in substantial financial peril. However, the state is recovering from the post-2007 recession, in the fall of 2012 voters approved a tax increase that will prevent further cutbacks in services. Still, the education budgets are below their 2007 level.

This story applied to Los Angeles, and parallel chronicles of other cities can be told in much more detail (Kerchner, Menefee-Libey, Mulfinger and Clayton, 2008). Of particular importance, it would seem, for a comparison of Los Angeles and Oslo is to understand the mixture of "what works," what is known about educational techniques and their successes with immigrant children in the context of a great wave of immigration and settlement, and "what can work," the capacity of the political system to support and advance the education of these students.

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References

Baron, K. (2011). Gov. Brown Signs Dream Act--Part 1. http://toped.svefoundation.org/2011/07/26/gov-brown-signs-dream-act-part-1/ (accessed July 26, 2011).

Becerra, H. (2008). Trying to bridge the grade divide: why to Asians generally get higher marks than Latinos? Lincoln high school students have candid ideas. *Los Angeles Times*, July 16 2008, A1.

Boyd, W. L., Kerchner, C. T., & Blyth, M. (2008). A shift from one institutional form to another is described in: William Lowe Boyd, Charles Taylor Kerchner, and Mark Blyth (eds.) *The transformation of great American school districts: How big cities are reshaping public education*. Cambridge: Harvard Education.

Cadelle Hemphill, F., & Vanneman A. (2011). *Achievement Gaps: How Hispanic and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress. Statistical Analysis Report*. Washington: Institute for Education Sciences, National Center for Education Statistics.

Calderón, M., Slavin, R. E., & Sánchez, M. (2011). Effective Instruction for English Learners. *The Future of Children*, *21*(1), 103-28.

DATAQuest (?).*California Department of Education*. http://dq.cde.ca.gov/dataquest/ (accessed provided from)

Drew, D. E. (1996). *Aptitude revisited: Rethinking math and science education for America's next century*. Baltimore: The Johns Hopkins University.

Flores, E., Painter, G., Harlow-Nash, Z., & Pachon, H. (2009). *¿qué pasa?: are English language learning students remaining in English learning classes too long?*, October. TRPI Policy Brief.

Gándara, P., & Rumberger, R. W. (2009). Immigration, language, and education: How does language policy structure opportunity?. *Teachers College Record*, *111*(3), 750-782.

Hakuta, K. (2011). Educating language minority students and affirming their equal rights: Research and practical perspectives. *Educational Researcher*, *40*(4), 163-173.

Huntington, S P. (2004). The Hispanic Challenge, Foreign Policy. http://www.civicamericana.org /HispanicChallenge.pdf (accessed July 25, 2011).

Kerchner, C. T., & Mulfinger, L. S. (2006). Creating a Culture of Literacy in Boyle Heights: An Evaluation Report to the Annenberg Foundation of the Boyle Heights Learning Collaborative Grant. Claremont: Claremont Graduate University.

Kerchner, C. T., Menefee-Libey, D., Mulfinger, L. S., & Clayton, S. (2008). Learning from L.A.: Institutional change in American education. Cambridge: Harvard Education.

Lee, S. K., Lasisi, A., & Rachel, R. (2007). Teachers' perception of the efficacy of the open court program for English proficient and English language learners. *Teacher Education Quarterly*, 34(3), 19-33.

Lemann, N. (1997). The Reading Wars, the Atlantic Online. http://www.theatlantic.com/past/do cs/issues/97nov/read.htm (accessed July 25, 2011).

Luschei, T. (1995). Learning from Los Angeles: Immigrant education in the Los Angeles unified school district. *Journal of Public Affairs*, *7*(1), 11-25.

Olsen, L. (2010). *Reparable harm: Fulfilling the unkept promise of educational opportunity for California's long term English learners*. Long Beach: Californians Together.

Passel, J. S. (2011). Demography of immigrant youth: Past, present, and future. *The Future of Children*, *21*(1), 19-42.

Perez, W. (2009). Loss of Talent? Citizenship and Higher Education Access for Undocumented Students. *The Claremont Letter*, *4*(1) (2009): 1-5, See also: Perez, W. (2009). *We are Americans: Undocumented students pursuing the American dream*. Sterling: Stylus.

Portes, A., & Rivas A. (2011). The adaptation of migrant children. *The Future of Children*, *21*(1), 219-246.

Portes, A., & Rumbaut R. G. (2001). *The story of the immigrant second generation*. Berkeley: University of California.

Raftery, J. (1992). *Land of fair promise: politics and reform in Los Angeles schools 1885-1941*. Stanford: Stanford University.

Reyner, J. (?). For a review of the controversy over reading at the national level, with particular referenced to English Language Learners see: http://jan.ucc.nau.edu/~jar/Reading_Wars.html

Schrag, P. (1998). *Paradise lost: California's experience, America's future*. Berkeley: University of California.

Tienda, M., & H., Ron (2011). Immigrant children: Introducing the issue. *The Future of Children*, *21*(1), 3-18.

Wolf, M. K., Herman, J. L., & Dietel, R. (2010). *Improving the Validity of English Language Learner Assessment Systems*. CRESST Policy Brief 10-full report. Los Angeles: University of California. http://toped.svefoundation.org/2011/06/10/california-jumps-to-other-test-consortium/ (Assessed, July 25, 2011).

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International Electronic Journal of Elementary Education, 2014, 6(2), 333-346.

Using Drawings to Bridge the Transition from Student to Future Teacher of Mathematics

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Received: 24 June 2013 / Revised: 18 October 2013 / Accepted: 1 January 2014

Abstract

This study examines a group of prospective teachers' reflections upon the way they were taught (Set 1) and the way they want to teach (Set 2) through drawings which respectively describe their past learning experiences as students and their future plans as teachers. The purpose of this study is to identify: (a) the emerging themes that appear in each set of drawing data, (b) the possible factors that influence prospective teachers' drawings, and (c) the implications for mathematics teacher educators. Overall, prospective teachers showed predominantly negative or mixed feelings about their past experiences as mathematics students. In response to their own past negative experiences and struggles, the prospective teachers tended to highlight emotionally supportive classroom environment and versatile instructional teaching strategies in their future plans. This study suggests that this activity of reflecting past experience and planning future teaching assimilates prospective teachers' identities as math students and math teachers and provides a window into the thinking of others.

Keywords: Pre-Service Teacher Education, Teacher Attitude, Reflective Drawing.

Introduction

> One day, a woman was about to cook a roast. Before putting it in the pot, she cut off a small slice. When asked why she did this, she paused, became a little embarrassed, and said she did it because her mother had always done the same thing when she cooked a roast. Her own curiosity aroused, she telephoned her mother to ask why she always cut off a little slice before cooking her roast. The mother's answer was the same: "Because that's the way my mother did it." Finally, in need of a more helpful answer, she asked her grandmother why she always cut off a little slice before cooking a roast. Without hesitating, her grandmother replied, "Because that's the only way it would fit in my pot" (Langer, 1989, pp. 43-44).

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We often hear that teachers teach the way they were taught. Although teaching is more complicated than cooking, we frequently hear this saying and often observe that teachers teach in a certain way because that is the way their teachers did it. Today's classrooms and students are ever evolving as the content and pedagogical measures in mathematics education continue to advance. The teachers of today are expected to demonstrate effective mathematics teaching that "requires understanding what students know and need to learn and then challenging and supporting them to learn it well" (National Council of Teachers of Mathematics [NCTM], 2000, p. 16). Successful mathematics teaching cannot be demonstrated just by parroting the way my teacher did. It requires "continuing efforts to learn and improve" (NCTM, 2000, p. 19) in a mindful way. The nature of mindfulness in Langer's (1989) work exemplifies the characteristics that impactful teachers demonstrate to improve their teaching: the ability to create new categories, the willingness to welcome new information, the capacity to present more than one perspective, the power to manage context, and the desire to put process before outcome.

We believe that teacher educators should provide turning points to help prospective teachers "unpack the way it is" (Hinchey, 1998, p. 17). In other words, as prospective teachers are about to embark on their own professional journey, they need to mindfully reflect upon their own learning experiences and use that process as a means to improve their own future teaching practices. With this in mind, we utilize drawing exercises in an attempt to promote this opportunity for reflection. The second author began incorporating drawings into an elementary mathematics methods course in early 2000. The first author began using the technique shortly after and together we have collected data of drawings from our prospective elementary teachers. Our archival data consist of several themes including teachers' depiction of "How I Feel about Math" and their portrayal of "My Math Teacher and Me." This study reports the findings from drawings of "My Math Teacher and Me."

We asked prospective teachers to draw their past mathematics learning experiences taught by their mathematics or homeroom teachers along with a descriptive paragraph at the beginning of a semester-long elementary mathematics methods course. At the end of the semester, the same assignment was given but students were instead asked to draw and write about their own mathematics classrooms in five years. The purpose of this activity is for prospective teachers to critically reflect upon the way they were taught and to mindfully plan and transform their own teaching. In this article we will discuss: (a) the emerging themes that respectively appear in the prospective teachers' reflections upon their past learning experiences and their future plans, (b) the possible factors that influence the prospective teachers' future plans, and (c) the implications for mathematics teacher educators.

Related issues in the literature

Issues on mathematics teacher preparation. Previous research studies on mathematics teacher preparation have developed into several themes including previous experiences, knowledge structures, and belief systems (Ambrose, Clement, Philipp, & Chauvot, 2004; Frykholm, 1999; Munby, Russell, & Martin, 2001). These themes are interrelated and ultimately influence the effectiveness of mathematics teaching methods. It has been purported that prospective teachers in the United States lack sound subject matter knowledge, and that their beliefs about mathematics teaching and learning do not quite match the new vision for teaching and learning (e.g., Ball, 1990; Ma, 1999). Teacher preparation programs offer various opportunities to enhance subject matter knowledge and to influence prospective teachers' beliefs. Even so, these beliefs are often difficult to change in the limited time the programs have. As noted in several previous studies, a major obstacle is the prior experience and

knowledge that prospective teachers carry into the program (e.g., Eisenhart, Borko, Underhill, Brown, Jones, & Agard, 1993; Thompson, 1992). In particular, the beliefs about what to teach and how to teach it have been shaped through years of experience spent observing what their own K-16 teachers did when they were students and it is almost unrealistic to completely unite their prior experience with the new vision of mathematics teaching (e.g., Ambrose, 2004). As Doerr, Lesh (2003) and others have noted, the prospective teachers' prior experience is obstacle, not because they have observed poor teaching, but because they have not been exposed to how teachers think. One problem for prospective teachers is that their actual teaching practice is commonly limited to a few hours in field experience settings when they take the mathematics methods course. Because of this, many researchers encourage teachers to reflect upon their own teaching as a way of changing their beliefs and determining best practice for their students (e.g., Cooney, 1999; Schön, 1983; Simon, 1995). With this in mind, we believe that reflecting upon their own learning experiences is an alternative way to provide prospective teachers with opportunities to think about effective teaching and learning processes.

Drawings as research method

Over the last several decades, psychologists and other researchers have utilized drawings to facilitate the rich exploration of children's and adults' views on multiple phenomena (Mitchell, Theron, Stuart, Smith, & Campbell, 2011). In the field of education, drawings are used predominantly to investigate young students' perceptions, emotions, and attitudes towards various content areas. For example, students' drawings of scientists and mathematicians were used to examine children's perceptions of mathematics and science (e.g., Finson, 2002; Picker & Berry, 2000). Zambo and Zambo (2006) used thought bubble pictures to examine students' feelings toward mathematics. Perceptions of literacy and environmental issues were also examined through students' drawings (e.g., Alerby, 2000; Kendrick & McKay, 2004). Some previous research studies suggested extending this method to include adults or pre-service and in-service teachers (e.g., Finson, 2002). Our archival data collection efforts are consistent with these suggestions. We recently discovered a number of published studies that use drawings to investigate prospective teachers' attitudes and feelings about mathematics (e.g., Burton, 2012; Rule & Harrell, 2006). The majority of research studies on pre-service and in-service teachers' subject matter knowledge, attitudes, and beliefs primarily use paper and pencil tests, structured interviews, or specific math concept related performance tasks. The alternative approach, utilizing drawings, can help to determine additional factors that influence prospective teachers' beliefs and knowledge that cannot be solely obtained by a paper and pencil survey or specific math concept oriented performance tasks. This approach may also provide a less stressful research environment. Realizing the existence of math anxiety in the general public (Burns, 1998) as well as in the teaching profession (Trice & Ogden, 1986/1987), we believe an alternative approach, like drawing, will provide ways of facilitating teacher candidates' self-reflection.

Methodology

Participants

We gathered two sets of drawings and accompanying written descriptions which respectively focused on prospective teachers' past mathematics learning experiences as students and their future plans as teachers. These samples were taken from 100 prospective teachers who enrolled in one of five sections of an elementary mathematics methods course over two semesters. This elementary mathematics methods course is a 4-credit, required course for all elementary education majors at a

Midwestern United States university and is typically taken prior to student teaching. All of the prospective teachers had successfully completed their mathematics content courses prior to this methods course. Participants consisted of 84 female and 16 male teacher candidates.

Throughout the semester, participants engaged in various modes of instruction, including lectures, large and small group discussions on theories and educational trends or issues, and hands-on activities that involved technology tools and manipulatives. In addition, participants were asked to complete several course assignments in their field setting while they interacted with actual students. Those assignments included developing and implementing a mathematics lesson and assessment for their field students.

Data source

Prospective teachers' reflections upon their past mathematics experiences and plans for future teaching were identified through the drawings and corresponding descriptions that they completed on two separate occasions during the semester. The first set of drawings and descriptions (Set 1) was collected at the second class meeting. Participants were asked to draw a picture that portrayed their past math teachers or other memorable mathematics learning experiences on a standard sheet of paper. Participants were also asked to include a written paragraph that described their picture and clarified the meaning embedded in their drawing, as suggested in other similar studies using drawings as research methods (Mitchell et al., 2011). These were shared in a small group discussion and a few volunteers even presented their drawings to the class. The second set of drawings and descriptions (Set 2) was collected on the last day class. This time, participants were asked to draw a picture that portrayed their own elementary mathematics classes in five years. Participants' drawings were presented in various formats including hand-drawings, computer clip arts, and collages. Some drawings contained realistic descriptions of classroom settings or people while others used metaphorical objects or words. In order to encourage participants to respond honestly, it was promised that the quality of their artwork and writing would not be assessed and students would earn full credits by simply completing their work. These two sets of drawings were worth approximately 5 percent of the total course assignment points.

Data analysis

Participants' drawings and written descriptions were examined based on aspects of open-ended coding and a double-coding procedure (Miles & Huberman, 1994; Strauss & Corbin, 1998). This study was not intended to utilize the pre/post design that asks the same question to compare changes. Instead, the sets of drawings and written descriptions were analyzed separately highlighting participants' views on teaching and learning mathematics when they positioned themselves in different roles (i.e., as a student or as a teacher).

We created a text translation of the drawings by listing specific items or settings depicted in each (e.g., "a crying face in the middle surrounded by numbers and signs of operations"). We then noted specific words and phrases in the corresponding written descriptions. The text translations and notes made from the written descriptions were used together as data and categorized into several themes. Initially, we reviewed the data independently to identify recurring themes and intentions. We then revised and refined the identified themes together through comparison and discussion and then coded our findings. Doing this together allowed us to resolve coding discrepancies immediately. After the completion of coding, frequencies of coded themes were

identified. In the results section, selected excerpts and examples of drawings were used to illustrate the common themes identified.

Results

Analysis of Set 1

Set 1 portrayed past mathematics learning experiences and was categorized into three main themes that represent positive, mixed, and negative feelings toward mathematics learning experiences. Table 1 shows the categories of themes and frequencies followed by additional explanations of the sub-themes identified.

Table 1. *Themes in Set 1*

Major Themes	Sub-Themes	Number of Entries (%)*
Positive experiences: Entries that describe positive aspects of past teachers or personal experiences in their classrooms	• Positive portrayal/description of teachers' and/or the participant's subject matter knowledge	4
	• Positive portrayal/description of teachers' and/or the participant's affective aspects	8
Mixed experiences: Entries that describe both positive and negative aspects of past teachers or personal experiences in their classrooms	• The participant's inconsistent perceptions about the teacher	4
	• The participant's liking of mathematics and disliking of the teacher's teaching practices	3
	• The participant's disliking of mathematics and liking of the teacher's teaching practices	4
	• Varying perceptions about mathematics by grade level	7
Negative experiences: Entries that describe negative aspects of past teachers or personal experiences in their classrooms	• Participants' negative emotions towards mathematics	18
	• Participants' negative emotions towards teachers	20
	• Physical distance and emotional disengagement between the teacher and student	22
	• Static nature/environment of math instruction	25

(* Note: The percentages total more than 100% as some entries contain multiple sub-themes)

It was noted that, even within one entry of drawing/description, participants frequently referred to several sub-themes; identifying multiple dimensions of their thoughts on the different aspects of teaching and learning that they experienced as students. Thus, one entry often contained multiple themes, particularly those that fell into the negative category. The coding process focused on whether the specific theme was present or absent in each participant's drawing/description.

Positive experiences. Twelve out of 100 entries expressed positive past math experiences with their teachers. While a few words/phrases referred to teachers' knowledge (e.g., knowledgeable, talented), most presentations and descriptions were about their emotional experiences. For example, some of the most frequently used expressions included: pictures of smiley faces, hearts, a teacher and a student holding hands, and words like fun, enthusiastic, approachable, supportive, helpful, and patient (see Figure 1).

Figure 1. *Example of Set 1 drawing: Positive past math experiences*

Mixed experiences. Eighteen entries contained both positive and negative experiences. These drawings and written descriptions illustrated participants' mixed emotions about their math teachers or the subject matter. For example, one entry was divided into two sections: one part has a sun and smiling faces, while the other part has clouds and lightening. Its written description states that the picture portrays two different sides of her teacher: very warm, funny, and helpful and at the same time very strict and moody (see Figure 2-a). The other entries in this category were divided into three subcategories: (1) Overall, I enjoyed math but did not like the way my teachers taught, (2) Overall, my teachers were great, but I did not like math, and (3) I had different experiences grade by grade; generally, positive experiences in the early grades, negative experiences in later grades (see Figure 2-b).

Figure 2-a

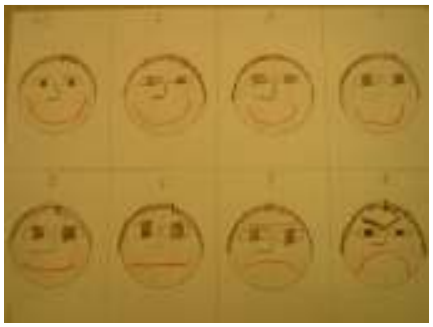

Figure 2-b

Figure 2. *Examples of Set 1 drawings: Mixed experiences*

Negative experiences. The remaining entries highlighted negative past experiences. Some negative images included sad faces, sleeping students, clouds, and multiple question marks. They often also included words like confusion, boring, frustrated, and struggle. These results support the idea that adults' math anxiety is deeply rooted in their early mathematics interactions with teachers (e.g., McLeod, 1992; Newstead, 1998). A few common themes in the drawings/descriptions further explained the root of participants' negative experiences: (1) A big emotional and physical distance between the teacher and the student, and (2) The static/unchanging nature of math instruction.

In terms of the emotional and physical distance, not a single drawing in the negative responses portrayed the scene of student and teacher working together. In most of the drawings, teachers were lecturing at the board in front of the classroom or were sitting at their desks or overhead projectors in front. Some drawings and written descriptions even went so far as to depict teachers' backs turned to their students. There was a distinct physical distance between teachers and students (see Figure 3-a).

Twenty-two entries in negative responses explicitly or implicitly expressed the emotional disengagement between teachers and students. Several extreme expressions include portraying teachers as monsters, witches, dead people, and even

a woman holding a gun (see Figure 3-b). Other drawings and descriptions in this category typically show teachers who love math and students who did not like doing math. For example, many pictures show teachers' outfits, materials in their desks, or posters around the classroom covered with positive and encouraging words, such as "I love math," "Math is so simple," "Math is fun," "Math is easy," "math + math = my life," "Math rocks." However, in the same pictures, the feelings and attitudes on the students' part were described quite negatively. Several examples include: teachers' names were "Mrs. Confusing" and "Mr. No fun"; teachers say "blah, blah…"; students say, "What am I doing here?" "I don't get it" "I don't understand"; students think "recess" or something else; students are sleeping (see Figures 3-c, 3-d, 3-e, 3-f).

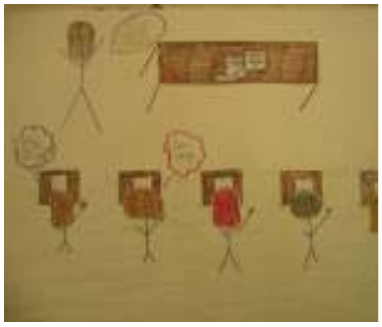

Figure 3-a

Figure 3-b

Figure 3-c

Figure 3-d

Figure 3-e

Figure 3-f

Figure 3. *Examples of Set 1 drawings: Emotional and physical distance between the teacher and the student*

Regarding the depiction of math class and teachers' ways of teaching, 25 entries categorized as negative responses addressed the teachers' unchanging pedagogical practices or physical and emotional environments of math classrooms, saying: "teachers taught math pretty much the same way"; "K-8 math teacher were very similar"; "desks were in rows – never changed throughout the years." Typical images or descriptions included: students sit in rows, teachers showing examples on the board, students doing worksheets independently, students memorizing formulas, teacher giving homework, paper/pencil test, and showing all assignments coming from the textbook (see Figure 4-a, 4-b, 4-c).

Figure 4-a

Figure 4-b

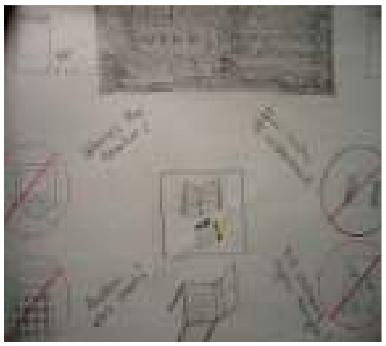

Figure 4-c

Figure 4. *Examples of Set 1 drawing: Static nature of math instruction*

Analysis of Set 2

Drawings and written descriptions from Set 2 portray participants' math classrooms or themselves as active teachers in five years. This set illustrated the beliefs, pedagogical knowledge, and attitudes of participants, as they are close to becoming professional educators. Without doubt, the majority of Set 2 entries are predominantly positive, highlighting what kinds of teacher they want to be and what kind of math classroom they want to create. Table 2 shows the categories of themes and frequencies followed by additional explanations. Each entry can belong to multiple sub-themes according to the presence of specific themes in the drawings/descriptions.

Table 2. *Themes in Set 2*

Major Themes	Sub-Themes	Number of Entries (%)*
Uncertainty: Entries that describe mixed feelings about their future teaching	• Mixture of some level of uncertainty and hope for improvement	3
Emotionally supportive classroom: Entries that describe the teacher-student relationship	• Teachers' encouragement of students	57
	• Close physical distance between the teacher and student	23
	• Students' positive attitude towards mathematics and teachers	45
Incorporation of various teaching methods: Entries that describe various ways of teaching mathematics	• Use of various representations	74
	• Constructive pedagogy	55
	• Connections	25

(* Note: The percentages total more than 100% as some entries contain multiple sub-themes)

Uncertainty: Only three entries expressed some level of fear, frustration, confusion, and lack of confidence in their ability to teach mathematics effectively. They do show, however, that success increases as math-teaching experience is gained (see Figure 5).

Figure 5. *Example of Set 2 drawing: Uncertainty (gradual improvement)*

Emotionally supportive classroom. In 57 entries, participants expressed that they would emotionally support their students' learning. These drawings and descriptions clearly indicated teachers' efforts to encourage students as shown in statements and exclamations such as: "You can do it"; "There is no stupid question!"; "Go explore, you can do it"; and "My door is always open for questions." Smiling faces on both teachers and students appeared frequently in the drawings, as well. There were 23 entries that described close physical distance between the teacher and student (e.g., a teacher sitting at a round table with students, the teacher and students holding hands). In 45 entries, students' were shown making positive comments about mathematics and the teachers were identified (e.g., students saying "I am never frustrated in this math class", "We love our math teachers", "Math is fun", and "Math rocks".)

Figure 6-a

Figure 6-b

Figure 6-c

Figure 6-d

Figure 6. Examples of drawings in Set 2: Future plans

Incorporation of various teaching methods. Seventy-four entries demonstrated participants' willingness to incorporate a variety of representations in their math instructions. These entries included specific manipulatives, pictorial representations, and written and verbal explanations of the mathematical process. Fifty-five entries expressed the participants' desire to change the general format of instruction to be a more student-centered, cooperative learning environment. Examples mentioned include grouped seating arrangements, learning centers, group/partner work, and phrases such as "adaptable for all different types of learners", "learn from each other", "many ways to teach", "exploration" frequently appeared. Twenty-five entries showed participants' plans to make sense of mathematics through various mathematical connections. Included are connections within mathematics, literature, technology integration (e.g., virtual manipulatives, computer programs), and real-life applications. The drawings that highlighted the sub-themes in "emotionally supportive classroom"

and “incorporation of various teaching methods” are illustrated together in Figure 6 since most drawings in Set 2 addressed multiple themes.

Discussion and implications

In an attempt to examine teacher candidates’ reflections upon the way they were taught (Set1) and the way they want to teach (Set 2) in the near future, we present the common themes and features of prospective teachers’ drawings and written descriptions. Prospective teachers’ mathematics knowledge, beliefs, and attitudes will eventually be translated into their future teaching methods. Therefore, it is important for prospective teachers’ to be aware of their own perceptions toward teaching and learning mathematics. In this study, we provide prospective teachers with opportunities to reflect upon how they were taught and to envision how they will teach by bridging the gap between teacher candidates’ past mathematics experiences and future plans.

Findings from the negative images and words in the Set 1 drawings/descriptions explained the possible causes of participants’ mathematics anxiety that were investigated in previous research studies (e.g., Newstead, 1998; Taylor & Fraser, 2003; Trujillo & Hadfield, 1999). Also, the descriptions of their past teachers’ methods that highlight the static/unchanging nature of instruction confirm the findings in other studies addressing typical traditional math or science instruction (Battista, 1999; Schoen, Fey, Hirsch, & Coxford, 1999; Lindgren & Bleicher, 2005; Stodolsky & Grossman, 2000). The common features of typical mathematics classes in the previous studies and the current study include: mimicking what the teacher demonstrates; a focus on computational procedures; little relevance to students’ lives; and multiple drills and worksheets from textbooks with almost no exploration, investigation, or explanations. This study added additional data regarding prospective teachers’ past learning experiences and their perceptions of mathematics, which seem to be deeply imbedded and consistent.

We believe that the results in Set 2 depict participants’ reactions to synthesizing their past learning experiences. In other words, the reflection upon the prospective teachers’ past learning experiences using drawings provided an opportunity to elicit the reasons for the struggles they encountered as students and to respond to potential struggles that their future students might have. We also believe that the Set 2 results were influenced by the prospective teachers’ learning experiences in the methods course. The multiple pedagogical measures demonstrated and used in the methods course might influence the prospective teachers’ depiction of their future mathematics classrooms.

We believe that the reflection process we initiated using drawings along with written descriptions encouraged participants to develop plans to bridge their past and future mathematical teaching experiences. We believe that their plans will continue to change throughout their professional lives as teachers. These prospective teachers now know how they think and how other prospective teachers think about teaching mathematics. The implications for math teacher educators are paramount: this activity assimilates prospective teachers’ identities as math students and as math teachers and provides a window into the thinking of others. As this study contributes to raising awareness about the gap between past experience and future math teaching, the importance of modeling through constructivist pedagogy and reflective practice is evident. These prospective teachers will not mindlessly be cutting off a small “slice of the roast” unless it needs to be done in order to fit into the pan!

A follow-up study is needed to resolve some limitations of this study. We noticed that the importance of the teachers’ subject-matter knowledge was very vaguely represented in the drawings/descriptions. For example, some participants stated that

they felt much more confident and comfortable after taking this methods course without specifics. Of course, to utilize various instructional methods, teachers must hold strong subject-matter and pedagogical knowledge. However, it is not clear whether or not participants implicitly addressed the importance of teacher subject-matter knowledge in the way we interpreted. It is also not evident whether or not this result indicates that participants weighed more affective aspects than cognitive aspects as qualities of good math teachers. This result may be influenced by the fact that this study was conducted within the context of a methods course and the immediacy of the methods experience the participants had just encountered. The key question would be whether or not this tendency persists and to what degree of intensity does it persist once the participants are in the field. Thus, it will be a meaningful follow-up study involving prospective teachers as they become novice in-service teachers to determine if the same gains hold for participating in the methods course.

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References

Alerby, E. (2000). A way of visualizing children's and young people's thoughts about the environment: A study of drawings. *Environmental Education Research, 6*(3), 205-222.

Ambrose, R., Clement, L., Philipp, R., & Chauvot, J. (2004). Assessing prospective elementary school teachers' beliefs about mathematics and mathematics learning: Rationale and development of a constructed-response-format beliefs survey. *School Science and Mathematics, 104*(2), 56-70.

Ambrose, R. (2004). Initiating change in prospective elementary school teachers' orientations to mathematics teaching by building on beliefs. *Journal of Mathematics Teacher Education, 7*, 191-119.

Ball, D. L. (1990). The mathematical understandings that prospective teachers bring to teacher education. *Elementary School Journal, 90,* 449-466.

Battista, M. T. (1999). The mathematical miseducation of America's youth [Electronic version]. *Phi Delta Kappan, 80*(6), 424-433.

Burns, M. (1998). *Math: Facing an American phobia.* Math Solutions Publications.

Burton, M. (2012). What is math? Exploring the perception of elementary pre-service teachers. *IUMPST: The Journal, Vol 5 (Teacher Attribute). [www.k-12prep.math.ttu.edu]*

Cooney, T. (1999). Conceptualizing teachers' ways of knowing. *Educational Studies in Mathematics, 38*, 163-187.

Doerr, H.M. & Lesh, R. (2003) A modeling perspective on teacher development. In R. Lesh & H.M. Doerr (Eds.). *Beyond constructivism: A models and modeling perspective on mathematics problem solving, learning and teaching* (pp.125-139). Hillsdale, NJ: Lawrence Erlbaum.

Eisenhart, M., Borko, H., Underhill, R., Brown, C., Jones, D. & Agard, P. (1993). Conceptual knowledge falls through the cracks: Complexities of learning to teach mathematics for understanding. *Journal for Research in Mathematics Education, 24*(1), 8-40.

Finson, K. D. (2002). Drawing a scientist: What we do and do not know after fifty years of drawings. *School Science and Mathematics, 102*(7), 335-345.

Frykholm, J. A. (1999). The impact of reform: Challenges for mathematics teacher preparation. *Journal of Mathematics Teacher Education, 2*, 79-105.

Hinchey, P. H. (1998). *Finding freedom in the classroom: A practical introduction to critical theory.* New York: Peter Lang.

Kendrick, M., & Mckay, R. (2004). Drawings as an alternative way of understanding young children's constructions of literacy. *Journal of Early Childhood Literacy, 4*(1), 109-128.

Langer, E. J. (1989). *Mindfulness*. Reading, MA: Addison-Wesley.

Lingren, J. & Bleicher, R. E. (2005). Learning the learning cycle: The differential effect on elementary preservice teachers. *School Science and Mathematics, 105*(2), 61-72.

Ma, L. (1999). *Knowing and teaching elementary mathematics: Teachers' understanding of fundamental mathematics in China and the United States.* Mahwah, NJ: Erlbaum.

McLeod, D. B. (1992). Research on affect in mathematics education: A reconceptualization. In D.A. Grouws (Ed.). *Handbook of research on mathematics teaching and learning* (pp.575-596). New York: Macmillan.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* Thousand Oaks, CA: Sage.

Mitchell, C., Theron, L., Stuart, J., Smith, A., & Campbell, Z. (2011). Drawing as research method. In L. Theron et al (eds.), *Picturing research: Drawing as visual methodology* (pp. 19-36). Rotterdam, Netherlands: Sense Publishers.

Munby, H., Russell, T., & Martin, A. (2001). Teachers' knowledge and how it develops. In V. Richardson (Ed.), *Handbook of research on teaching (4th ed.)* (pp.877-904). Washington, DC: American Educational Research Association.

National Council of Teacher of Mathematics. (2000). *The principles and standards for school mathematics.* Reston, VA: NCTM.

Newstead, K. (1998). Aspects of children's mathematics anxiety. *Educational Studies in mathematics , 36,* 53 – 71.

Picker, S. H. & Berry, J. S. (2000). Investigating pupils' images of mathematicians. *Educational Studies in Mathematics, 43*(1), 65-94.

Rule, A. C. & Harrell, M. H. (2006). Symbolic drawings reveal changes in preservice teacher mathematics attitudes after a mathematics methods course. *School Science and Mathematics, 106(*6), 241-258.

Schoen, H. L., Fey, J. T., Hirsch, C. R., & Coxford, A. F. (1999). Issues and options in the math wars. *Phi Delta Kappan, 80*(6), 444-453.

Schön, D. A. (1983). *The reflective practitioner: Toward a new design for teaching and learning in the professions.* San Francisco: Jossey-Bass.

Simon, M. (1995). Reconstructing mathematics pedagogy from a constructivist perspective. *Journal for Research in Mathematics Education, 26*(2), 114-145.

Stodolsky, S. S. & Grossman, P. L. (2002). Changing students, changing teaching. *Teachers College Record, 102*(1), 125-172.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage Publication.

Taylor, B.A., & Fraser, B.J.(2003). *The influence of classroom environment on high school students' mathematics anxiety.* (ERIC Document Reproduction Service No. ED 476644).

Thompson, A. (1992). Teachers' beliefs and conceptions: A synthesis of the research. In D. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (pp.127-146). New York: Macmillan.

Trice, A. D., & Ogden, E. D. (1986/87). Correlates of mathematics anxiety in first-year elementary school teachers, *Educational Research Quarterly, 11*(3), 3-4.

Trujillo, K.M., & Hadfield, O.D. (1999). Tracing the roots of mathematics anxiety through in-depth interviews with preservice elementary teachers. *College Student Journal, 33* (2), 219-232.

Zambo, D. & Zambo, R. (2006). Using thought bubble pictures to assess students' feelings about mathematics. *Mathematics Teaching in the Middle School, 12*(1), 14-21.

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International Electronic Journal of Elementary Education, 2014, 6(2), 347-356.

"Going going....." Why are Males Underrepresented in Pre-Service Primary Education Courses at University?

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Received: 29 April 2013 / Revised: 2 October 2013 / Accepted: 29 November 2013

Abstract

This sociological qualitative study identifies reasons why female pre-service teachers believe males are underrepresented in primary education courses at Australian universities. The findings of the study suggest that the nineteenth century naturalistic discourse of nurturance continues to sustain the notion that primary school teaching is a female profession. The study argues that this socially-conservative gender discourse remains essentially unchallenged and maintains a significant negative influence on males' willingness to take up a career in primary teaching.

Keywords: Gender, Nurturance, Primary Teachers, Caring, Social Constructionism, Masculinities.

Introduction

The following small-scale qualitative sociological study addresses some of the past and ongoing reasons for and concerns about the underrepresentation of males in pre-service primary teaching courses at Australian universities. Research over the last century confirms that primary school teaching is typically identified as a women's profession and current evidence indicates that most students entering pre-service primary education at university are females (ABS, 2010). An institutionalized gender regime that perpetuates certain masculinities and femininities continues to affect school processes in Australian education (Connell, 1985). To avoid challenging socially-constructed notions of masculinity, men often choose not to take up careers in primary teaching (Smith, 2004; Williams, 1993). This particular study suggests the naturalistic discourse of the late nineteenth century that identified primary school teaching with nurturance (Smith, 2004), has replaced the social and institutional changes brought about by twentieth century feminism. It is argued that this often unchallenged and regressive traditional gender discourse perpetuates the belief that primary teaching is an unsuitable profession for males and as such informs contemporary pre-service male enrolments in primary education courses.

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Background literature

The low number of male primary school teachers continues to be a concern in education and governments throughout the western world are developing strategies to address the decline. Reasons why men are not taking up the profession are complex. Some factors identified for the fall in numbers relate to issues such as: males' unwillingness to work in a female-dominated environment, low status and salary, as well as men's disquiet about working with young children (Connell, 1987; Cushman, 2005; Foster and Newman, 2005; Lingard and Douglas, 1999; Skelton, 2003; Smith, 2004; Taylor, 2004). Cushman (2007) adds however that the inability to attract more men to the profession is not as straightforward as some of the previous research suggests.

Gender discourses of masculinity and femininity are influenced by everyday social practices (Taylor, 2004). Discourses affect knowledge production through language and influence how ideas are put into practice and used to govern what people do (Foucault, 1972). We only pay attention to the way gender is produced when the familiar day to day gender expectations of men and women are disrupted (Lorber, 1994). Social and cultural assumptions about the natural order often characterize males as protectors who are resourceful and strong. Supporting and caring, on the other hand, are attributes generally identified with women. Cultural beliefs are essentially theories about the way the world works and from a naturalistic perspective two sexes equate to two genders (Wadham, Boyd and Pudsey, 2007). Positivism requires a simple definition of what gender is or what men and women are (Connell, 2005). Beliefs concerning human nature and child development reinforce gender differences and make them appear natural or inevitable (Clark, 1989 p. 92). Research by White (2003) for example found both young Australian women and men were of the opinion that child rearing was a woman's responsibility. An understanding of what it means to be male or female however, does not rely on biological differences. More recent theoretical perspectives question modernist assumptions about truth, universality, and certainty (Blaise, 2009 p. 2). Rather than a singular discourse of gender it is now recognized that other social influences such as class and ethnicity shape different versions of masculinity and femininity (Taylor, 2004 p. 89). Connell, Ashenden, Kessler and Dowsett (1982 p. 174) agree that masculinity and femininity are not a simple reflection of one's biological identity. Gender is socially constructed and historically contextual.

Although gender discourses are apparent in wider society they are also a cultural phenomenon in education and a central site of context and practice within schools (Wadham et al. 2007 p. 234). Gender and sexuality have traditionally influenced teaching, and are concepts that significantly affect the attitudes and conduct of those involved in education (Haywood and Mac an Ghaill, 1996; Taylor, 2004; Wadham et al. 2007). Gendered roles in teaching were specifically affected by the introduction of compulsory education during the late nineteenth century. The influx of women to the profession for example influenced males to take up positions that were distinct from those of females. Men's and women's roles were characterized by the age of students and subjects taught as well as the administrative functions each of the sexes performed (Skelton, 2001). As a consequence the perpetuation of an institutionalized gender regime in schools is something that has received only sporadic attention (Connell, 1985). According to Connell schools encourage certain masculinities and femininities while discouraging others. During the 1970s feminism challenged the gender stereotypes found in schools and continues to have an impact on teachers' thinking. Teaching reflects certain types of masculinity and femininity. There is a division among teachers themselves regarding the educational issues that are

constructed around gender (Connell, 1985 p. 138, 183). Male primary teachers for example experience and engage with a range of masculinities and femininities found in schools. As a profession teaching is often seen as an extension of the culturally-assigned nurturing role that is associated with women and as a consequence most teachers currently working in state primary schools in Australia are female (ABS, 2010; Taylor, 2004; Wadham et al. 2007).

The discourse of nurturance, or child-centred approach, that permeates Australian primary schools, identifies teachers as caring, empathetic and patient. This discourse is in direct contrast to the more didactic, hierarchical teacher-centred approach identified in the past (Smith, 2004 p. 6). Smith goes on to say that males were less threatened by earlier approaches because not only was there a safe physical and emotional distance from children but also nurturing was not emphasised. At the secondary level, on the other hand, males have been better represented owing to the general perception that secondary schools are places where ‘serious’ learning rather than just ‘caring for kids’ occurs (Wadham et al. 2007). Nonetheless the representation of males in Australian state secondary schooling, in a similar way to the state primary sector, also appears to be in decline (ABS, 2010).

Teachers demonstrate caring in a number of ways: through commitment, relating to others, physical care, mothering and expressing affection. Mothering for example is associated with femininities whereas commitment is not confined to a specific gender (Vogt 2002). It has already been said that a positivist discourse aligns human caring (or mothering) with human nature (Clark, 1989). However, femininity and mothering, characteristics often associated with primary school teachers, are also identified as social constructions (Connell et al. 1982; King, 1994). The culture of nurturance that exists within primary schools challenges the masculine identity of males who work within the primary context because these men are often perceived to be doing women’s work. A consequence is that males tend to avoid doing things construed as feminine, including caring, in order to construct a ‘normative’ masculine identity (Smith, 2004; Williams, 1993). Smith (2004) adds that although men are willing to position themselves as nurturers, they are not prepared for the caring role that is associated with being a primary school teacher, particularly when becoming too close or caring raises consternation among others.

Positioning oneself or having oneself positioned as an ‘other’ can make individuals feel insecure and uncomfortable. Males who work in a female dominated environment such as a primary school are constantly constructing and negotiating their masculine identities (Francis and Skelton, 2001). Allan (1993) found that female primary teachers doubted the ability of prospective male colleagues to nurture and care: the females’ reasoning related to what they thought was men’s biological incapacity to be carers. Views that regard caring for primary-aged children, as the natural domain of women need to be challenged (Acker, 1999). It is evident from the literature that the ethic of care or the concept of ‘caring as relatedness’ is a characteristic more often associated with women. However being responsible for and having an ability to relate to children are attributes shared by both sexes not just women (Vogt, 2002). Vogt’s study concluded that when care is understood to be the responsibility and relatedness a teacher has for his/her students then gender is not relevant.

According to Skutnabb-Kangas (2000) it is the universal right of individuals to define themselves. Unfortunately it is the ideas of the dominant social group that preside over the taken for granted categorization of people. Skutnabb-Kangas argues that the names used to describe groups or individuals are symbolic and often related to power. A person’s individual identity is shaped by his/her ties with others and who an individual perceives their ‘self’ to be is both contemporary as well as chronological and always

subject to change. Identity is not fixed but rather something one uses. It is the means by which individuals position and explain themselves in relation to others (Bessant and Watts, 2002; Maguire, 2008). One's identity can also be part of a collective and therefore identity is responsive to changes in the way the group identifies itself at a particular point in time. Boundaries of identification are continually constructed and reconstructed (Barth, 1969; Berger and Luckman, 1967; Goffman, 1959). Skutnabb-Kangas (2000) recognizes that conferring social labels on others is problematic because an individual simultaneously has multiple identities. At any one time an individual can be identified not only in relation to their gender but also in terms of their: culture, class, sexuality, occupation, political affiliation, marital status, generation, religion and geography (regional, national and global). Categorizing people with a single label such as gender is too simplistic.

The literature has summarized and analysed some of the important sociological themes for understanding the effects of gender both within education and throughout society more generally. It is evident that gender discourses have a significant influence on the conduct, attitudes and expectations of individuals within the context of education (Taylor, 2004). The review also demonstrates that schools reproduce certain gender discourses. Many recent investigations into the issue challenge modernist assumptions concerning sex and gender. Current sociological studies have been shown to rely more on social constructionist theories to understand the social relationships between men and women (Connell et al. 1982). There is also a view that the ethic of care when understood as a teacher's responsibility for and ability to relate to students is a characteristic that both men and women share (Vogt, 2002). While people might be classified socially and culturally by others it is how individuals personally identify themselves that is the most important aspect for those individuals in knowing who they really are (Skutnabb-Kangas, 2000).

Methodology

This is specifically a qualitative investigation although statistical biographical information, generated from a demographic survey, informs parts of the study. The epistemological assumptions however, concerning the nature of the information generated are subjective. The interpretivist paradigm in which the point of view of the actors is axiomatic to understanding a social phenomenon, underpins the collection, analysis and interpretation of the data (Weber, 1947). The study involves my interpretation of what I understood from the participants' written responses. This methodology is often referred to as the interpretive-descriptive approach (Belenky, 1992; Maykut and Morehouse, 1994).

Data were in the form of short written responses given by participants in answer to the research question "Why are males underrepresented in pre-service primary education teaching courses at university?" The written responses were informed by each individual's personal understanding and experience. It is impractical to infer that the experiences of this specific sample are typical of all students and therefore generalizable. McMillan (2004) suggests that finding a single exemplar representative of others is difficult in qualitative educational research. The study sample, of fifty predominantly second-year female pre-service teachers, enrolled in an introductory research methods course, comprised three separate tutorial groups conducted during second semester of 2012. Descriptions of individuals in the participant sample are constructed from data supplied on the generic demographic survey given by me during the specified tutorials. Participant descriptions include characteristics such as: sex, age, postcode, marital status, nationality and religion. During the tutorials individuals were given an opportunity to reveal what they personally thought about the phenomenon by providing first-hand written accounts based on their own experience.

This study was emergent therefore the collected and analyzed data were used to refine the study’s focus (Lincoln and Guba, 1985). A hypothesis was not formulated and there was no attempt to either prove or disprove a proposition.

The participants’ written responses were read with Ricoeur’s (1976) interpretation theory in mind. The first or naïve reading was followed by a more detailed examination that identified specific units of meaning. Each of the written texts was examined for themes, participants’ use of particular words and inconsistencies in an individual’s written response. Themes are conceptual labels aligned with events and other phenomena. They are abstract constructs that connect the expressions in the written responses to objects and images (Strauss and Corbin, 1990).

Examples of participant responses

> *Males are underrepresented in uni courses because teaching has always been seen as a female-orientated job. Teachers are thought of as caring, loving, mother-like figures and this matches the stereotypical idea of a female (Sarah 19).*

> *…younger children should be in a maternal setting more suitable for females (Abby 19).*

Preliminary analysis described all of the participants’ responses individually. Interpretation of those responses occurred in the next stage of the study. Interpretation while acknowledging each participant’s experiences and views separately treated the themes, such as those identified above, collectively. The interpretive approach adopted in this investigation precluded definitive conclusions and findings. Presented are general understandings of what was evident in the data and the questions these understandings raised. The intention of the study was to leave readers of the research thinking about both prominent and uncertain issues (Wolcott, 2001) that relate to the underrepresentation of males in primary pre-service university courses.

Analysis

The analysis of the data did not set out to solve a specific problem but presents a particular point of view regarding the underrepresentation of males in pre-service university courses. The point of view is based on my understanding of the personal written responses given by the participants who took part in the research. The literal and interpretive treatment of the data provides evidence that a significant number of the pre-service teacher sample believed men do not take up primary school teaching because males are not innately programmed for caring. Reviewed and supplementary literature related to gender and gender in education was used to support the interpretation of the data.

This study revealed there are numerous and differing perceptions among pre-service educators as to why males are underrepresented in pre-service primary education courses. Many of the participants’ perceptions (indicated below) such as males’ reluctance to work in a typically female-environment, the comparatively low status and salary of teaching, as well as men’s concerns about interacting with children are consistent with previous research (Connell, 1987; Cushman, 2005; Foster and Newman, 2005; Lingard and Douglas, 1999; Skelton, 2003; Smith, 2004; Taylor, 2004).

I suppose it's because teaching primary students is generally seen as a female job. Women … have the teaching, office type jobs. Males are the ones who should be out doing physical work such as mining etc (Karen 19).

There is a perception in the community that teaching (in the primary years) is a female profession (Rhonda 21).

…there's an opinion in society that females are teachers and men are tradesmen. …if a male became a teacher then others may think that this is a bit odd (Jess 19).

…males might be put off being a primary school teacher as they may be seen as sexual predators for being interested in young children. …younger children should be in a maternal setting more suitable to females (Wendy 19).

…my dad quit teaching because of Mem Fox and a bunch of other feminists. They were openly hostile to him because he is a man and they figured teaching was women's work (Deb 20).

…there are more career opportunities (for males) elsewhere. The pay (in teaching) is not good enough (Samantha 19).

A dominant theme, identified by thirty percent of the participant sample, was the notion that males, unlike females, do not have a natural capacity for caring and are therefore unsuited for primary school teaching.

...females should be teachers as they are known to be more caring and in tune with emotions. This is …how teachers should interact with students, especially junior primary students as female teachers are perceived to connect with younger people better than males (Sally 19).

…males might not possess the qualities primary school teachers need such as warmth and being able to relate to children (Annette 20).

…dealing with children is viewed in many circles as a female dominated field. Even fathers that stay at home are seen as unusual. Childcare seems more prevalent among women (Sheila 25).

The role of the teacher is portrayed as having certain characteristics that are usually associated with the female gender role e.g. caring, mothering, patience etc especially with younger children. The typical male gender role is associated with more 'hands on' trades therefore primary school teaching does not appeal to males (Sue 20).

Discussion

The participant responses suggest that among female pre-service teachers the discourse of nurturance (Smith, 2004) remains a significant impediment to males becoming primary school teachers. This discourse perpetuates the idea that caring is a natural and inevitable characteristic of women (Clark, 1989). What emerged from the data was evidence of those discourses that position males in more traditional, rather than nurturing, roles and the way these discourses continue to influence young people’s perceptions of a primary school teaching identity. The data indicate that who or what a primary school teacher should be remains synonymous with socially-constructed notions of females and mothering (King, 1994). Perceptions of the respondents in this study correspond with those found by Smith (2004) which suggest that males who do pursue a career as primary teachers will not necessarily be perceived as effective carers or nurturers even if they are capable in those roles. The data in this study similarly agree with Smith that if males do become close or caring with children they risk accusations of impropriety.

Perceptions of a primary school teacher identity, among this participant sample, remain congruous with traditional social attitudes and expectations of gender. Such socially-conservative views of primary school teachers reflect nineteenth century notions of teaching as an extension of a woman’s natural role i.e. mother, nurse and instructress (Steedman, 1985). Social-class issues, in the latter part of the nineteenth century, influenced a trend toward the feminisation of teaching. Ironically prior to this point in time teachers of young children were predominantly men who, it was said as head of the family, were acquainted with intelligent exercise and judicious tenderness (McCann and Young, 1982 pp. 172-174). This often neglected point confirms Connell’s (1986) assertion that emphasising gender differences suppresses rather than recognises the natural similarities between the sexes. The suggestion in this study is that the influential gains, in school equality, made by feminism during the 1970s and 80s (Taylor, 2007 p. 88), have been supplanted by a return to the naturalistic educational discourse of the late nineteenth century.

It is not surprising, given the responses in this study, that attracting males to primary education courses remains difficult. In order to address the decline in the number of males taking up a career in primary teaching Smith (2007) suggests that educationalists need to learn from the experiences of those males who currently work in the primary system. Stories of males who either work or are intending to work in the area are needed to inform an alternate discourse to the one that is currently perpetuated in education and society more generally: namely that caring primary teachers are surrogate mothers.

Conclusion

This study has generated an understanding of the effect certain gender discourses have on males’ underrepresentation in primary education courses at university. Traditional perceptions of men’s unsuitability for primary teaching continue to influence the number of men willing to take up the profession. This is a serious issue that needs to be addressed through more open debate in order to challenge the socially-conservative discourses that inform current school practices. This study agrees with Smith (2004) that reasons why men are suited to primary school teaching need to be better articulated. Furthermore ways must be found to ensure that those males already enrolled in primary teaching courses at university complete their studies and remain in the profession. Understanding the difficulties male primary teachers face is not enough. It is the responsibility of all within society to look at this issue from a pragmatic rather than traditional point of view and realize that men in fact can and do care.

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References

Australian Bureau of Statistics, (2010). Retrieved September 29 2012 http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1345.4Feature%20Article1Sep%202010m

Acker, S. (1999). *The Realities of Teachers' Work*: never a dull moment (London, Cassell).

Allan, J. (1993). *Male elementary teachers: experiences and perspectives,* in: C. Williams (Ed.) Doing Women's Work (London, Sage).

Barth, F. (1969). Ethnic Groups and Boundaries. Boston: Little Brown.

Belenky, M. (1992). *Bringing balance to the classroom or workplace.* Paper presented at the Wisconsin Women's Studies Conference, Preconference Workshop, Greenbay Wisconsin.

Berger, P., & Luckman, L. (1967). *The Social Construction of Reality:* Allen Lane Penguin Press.

Bessant, J., & Watts, R. (2002). *Sociology Australia.* Sydney: Allen and Unwin.

Blaise, M. (2009). What a Girl Wants What a Girl Needs: Responding to Sex, Gender and Sexuality in the Early Childhood Classroom. *Journal of Research in Childhood Education 23 (4),* 450-460.

Clark, M. (1989) *The Great Divide: The construction of gender in the primary school.* Canberra: Curriculum Development Centre.

Cohen, L., Morrison, M., & Morrison, K. (2002). *Research Methods in Education* (Fifth ed.). London: Routledge Falmer.

Connell, R. (1985). *Teachers' Work. Sydney*: Allen and Unwin Pty Ltd.

Connell, R. (1987). *Gender and Power.* Cambridge: Polity Press.

Connell, R. (2005). *Masculinities.* Sydney: Allen & Unwin.

Connell, R., Ashenden, D., Kessler, S., & Dowsett, G. (1982). *Making the Difference: Schools, Families and Social Division.* Sydney: Allen and Unwin Australia Pty Ltd.

Cushman, P. (2005). Let's hear it from the males: Issues facing male primary school teachers. *Teaching and Teacher Education 21,* 227-240.

Foster, T., & Newman, E. (2005). Just a knock back? Identity bruising on the route to becoming a male primary school teacher. *Teachers and Teaching: theory and practice 11 (4),* 341-358.

Foucault, M. (1972). *The Archeology of Knowledge.* London: Tavistock.

Francis, B. & Skelton, C. (2001). Men teachers and the construction of heterosexual masculinity in the classroom, *Sex Education, 1,* 1–17.

Goffman, E. (1959). *Presentation of the self in everyday life.* New York: Doubleday Anchor Books.

Haywood, C. & Mac an Ghaill, M. (1996). *Schooling masculinities,* in: M. Mac an Ghaill (Ed.) Understanding Masculinities (Buckingham, Open University Press).

King, J. (1994). Uncommon Caring: Primary Males and Implicit Judgments, Viewpoints.

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic Inquiry. Beverly Hills CA: Sage.

Lingard, B., & Douglas, P. (1999). *Men Engaging Feminisims. Pro-feminisim backlashes and schooling.* Buckingham: Open University Press.

Lorber, J. (1994). *Night to his day: the social construction of gender.* In Paradoxes of gender (pp. 13-36). New Haven: Yale University Press.

Maguire, M. (2005). Textures of Class in the Context of a 'Class-crossing Teacher'. *Sociology 39 (3),* 427-443.

Maykut, P., & Morehouse, R. (1994). *Beginning Qualitative Research: A Philosophic and Practical Guide* (Second ed.). London: The Falmer Press.

McCann, P., & Young, A. (1982). *Samuel Wilderspin and the Infant School Movement.* London: Croom Helm.

McMillan, J. (2004). *Educational Research Fundamentals for the Consumer* (4th ed.). Boston: Pearson Education.

Ricoeur, P. (1976). *Interpretation Theory: Discourse and the Surplus of Meaning.* Fort Worth: Texan Christian University Press.

Skelton, C. (2001). *Schooling the boys.* Buckingham, Open University Press.

Skutnabb-Kangas, T. (2000). *State Policies Towards Languages - Linguistic Genocide, Language Death, or Support for Languages? Linguistic Genocide in Education - Or Worldwide Diversity and Human Rights?* Mahwah New Jersey: Lawrence Erlbaum.

Smith, J. (2004). Male primary teachers: Advantaged or disadvantaged? Paper presented to the Australian Association for Research in Education Conference, Melbourne, December 2004.

Steedman, C. (1985). The mother made conscious: the historical construction of a primary school pedagogy. *History Workshop Journal 20,* 149-163.

Strauss, A. and Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Thousand Oaks, Sage.

Taylor, S. (2004). *Gender equity and education: what are the issues now?* In B. Burnett, D. Meadmore & G. Tait (Eds.), New Questions for Contemporary Teachers: Taking a Social-Cultural Approach to Education (First ed., pp. 87-101). Frenchs Forest: Pearson Education Australia.

Vogt, F. (2002). A caring teacher: explorations into primary school teachers' professional identity and ethic of care. *Gender and Education 14 (3),* 251-264.

Wadham, B., Boyd, R., & Pudsey, J. (2007). *'Boys will be boys and girls will be girls': Gender and sexuality in school.* Frenchs Forest: Pearson Education.

Weber, M. (1947). *The Theory of Social and Economic Organization.* New York: Free Press.

White, J. (2003). Changing conceptions: young people's views of partnering and parenting. *Journal of Sociology 39 (2),* 149-164.

Williams, C. (1993). Doing "women's work": Men in non-traditional occupations (Vol. 3). Thousand Oaks CA: Sage Publications Inc.

Wolcott, H. (1994). *Transforming Qualitative Data: Description, Analysis, and Interpretation* (First ed.). London: SAGE Publications Ltd.

Wolcott, H. (2001). *Writing Up Qualitative Research* (Second ed.). Thousand Oaks California: Sage Publications Inc.

International Electronic Journal of Elementary Education, 2014, 6(2), 357-370.

An Analysis of the Relationship between Prospective Teachers' Thinking Styles and their Attitudes to Teaching Profession According to Various Variables

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Received: 3 October 2013 / Revised: 14 December 2013 / Accepted: 27 March 2014

Abstract

This study aimed to analyze the relationship between primary school prospective teachers' thinking styles and their attitudes to teaching profession. The study group for the research consisted of fourth-grade Primary School of Elementary Education, Social Sciences Education and Science Education students studying at Dumlupınar University Education Faculty in the fall term of 2013-2014 academic year. The scale was applied to 222 students. Survey model was used. In order to define the prospective teachers thinking styles, "Thinking Styles Inventory"' that was adapted into Turkish by Fer (2005) and "Teaching Profession Attitude Scale" that was developed by Çetin (2006) were used in this research. According to the results of this study, prospective teachers' attitude to teaching profession has been found to be positive and women's attitude to teaching profession is higher than men in all the dimensions. While the most preferred thinking styles are legislative, hierarchic and executive thinking styles, the least preferred thinking styles are oligarchic and conservative thinking styles. In addition, there is a significant relationship between prospective teachers and total attitude point of prospective teachers to teaching profession.

Keywords: Thinking Styles, Attitude to Teaching Profession, Prospective Teacher.

Introduction

Thinking is the disciplined process of the conceptualizing, applying, analyzing and evaluating knowledge gathered through observation, experience, intuition, reasoning and other ways (Özden, 2003). Thinking is a very complex and abstract skill. According to Saban (2005), it would be defined as "going beyond the available knowledge'' and

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"reaching new information by using available knowledge". Style is the way that individuals prefer while using their skills, doing something or thinking over something (Sternberg, 1997; Zhang and Sternberg, 2005). Thinking processes and preferences would vary according to individuals.

Sternberg (1997) advises a thinking style, based on mental self-government, which is related to how an individual prefers to think about a subject during the learning and after the learning. Thinking styles are approaches and leanings that are the results of mental processes related to various problems, events, phenomena and variables (Sünbül, 2004).Thinking styles are related to social environment and they change according to time and culture (Zabukovec and Kobal-Grum, 2004). This theory claims that thinking styles direct people's daily activities like governing a society. According to this, thinking cannot be defined as skill or intelligence but as the way of using skill or intelligence (Fer, 2005; Emir, 2013). Mental self-government speaks of 13 thinking styles under five categories. These categories are: Functions, Forms, Levels, Scopes, and Leanings. These categories and general features of thinking styles related to these categories can be defined as (Fer, 2005; Sternberg, 1997; Zhang and Sternberg, 2005; Sternberg, Grigorenko and Zhang, 2008):

I. Functions:

1. Legislative: Innovative, ideogenetic.

2. Executive: Coherent, regular, following the commands.

3. Judicial: Judging, evaluating, idea expressing.

II. Forms:

4. Monarchic: Deals best with one goal and they focus on it.

5. Hierarchic: Focuses on multiple goals at once and recognizes that all goals cannot be fulfilled equally. S/he can prioritize goals easily.

6. Oligarchic: Deals well with goals that are of equal weight, but s/he has difficulty in prioritizing goals of different weights.

7. Anarchic: Chooses randomly and abstains from the existing mindsets.

III. Levels:

8. Global: Interested in abstract ideas and general portrait.

9. Local: Interested in concrete ideas and details.

IV. Scopes:

10. Internal: Independent, self-sufficient, abstains from communication; likes to be by himself.

11. External: Likes to collaborate and work in groups; s/he is addicted.

V. Leanings:

12. Liberal: Innovator, anti-traditionalist, dreamy.

13. Conservative: Traditionalist, prefers the one that has been experienced, realistic.

According to mental self-government, individuals have many thinking styles rather than a unique thinking style (Sternberg, 1997). Styles may change in order to conform with different duties and events (Sümbül, 2004; Buluş, 2005). Because of the environmental factors, individuals' dominant thinking style may change and differentiate

in time. Thus, various styles may be classified as different; may not be classified as good or bad (Duru, 2004).

In thinking styles, one can show different attitudes towards different events and stimuli. People can learn many attitudes towards the things that can be attitude objects (near-distant) through their experiences, parents, friend environment, mass media, effect of other individuals and conditioning (Üstüner, 2006). Attitude is "a learned leaning of an individual towards apparent people, objects and situations that direct him to defined behaviors" (Demirel, 2005). According to İnceoğlu (2004), attitude is a mental, sensational and behavioral reaction inclination of an individual that he organizes by his knowledge, sense, experience and motive towards himself, an event, an object or a subject.

Knowing the ideas of prospective teachers about teaching is important for the organization of teaching activities. Prospective teachers' gaining attitude to teaching and their evaluating it as valuable are as much important as knowledge (Çetin, 2006). Knowledge, feeling and skills that can be gained in teacher education program is to make their behaviors more influential. Determining the attitudes of students that are educated in teacher education program will also give information about the necessary attitudes that these students should gain during education (Üstüner, 2006).

This study aims to show thinking styles of prospective teachers educated in Dumlupınar University, Primary School Education Program (Elementary Education, Social Sciences Education and Science Education) and the relationship between these thinking styles and prospective teachers' attitudes to teaching profession.

Method

Model of the Research

Because an existing situation is described, survey model (of quantitative research methods) has been used in this research (Gay, Mills and Airasian, 2006; Karasar, 2011). The survey model is a research approach that aims to define an existing or a past situation as itself (Kaptan, 1998).General survey models try to define an individual or an object in a sample or in the whole population within its own conditions in order to come up with a general judgment on the population (Karasar, 2011).

The Study Group

The study group for the research consisted of fourth- grade Primary School of Elementary Education, Social Sciences Education and Science Education students studying at Dumlupınar University Education Faculty in the fall term of 2013-2014 academic year. The Scale was applied to 222 students. All the students answered the whole scale sincerely. Table 1 includes their demographical information.

Table 1. *Demographical Information of Participants*

Variables	**Demographical Information**	***n***	***(%)***
Gender	Female	153	68.9
	Male	69	31.1
	Total	222	100
Department	Science Education	74	33.3
	Elementary Education	78	35.1
	Social Sciences Education	70	31.5
	Total	222	100

According to descriptive statistics, 68.9% of 222 participants are women and 31.1% are men 33% of the participants are the students of science education department,

35% are students of elementary education department and 31% of them are from students of social sciences education department.

Data Gathering Tool

In order to understand the thinking styles of prospective teachers, “Thinking Styles Inventory” adapted into Turkish by Fer (2005) and “Teaching Profession Attitude Scale” developed by Çetin (2006) were used in this research.

Thinking Styles Inventory (TSI). Thinking Styles Inventory, developed by Sternberg and Wagner (1992) and adapted into Turkish by Fer (2005), was used as the data gathering tool.

Turkish form that was adapted by Fer (2005) was prepared in order to test 13 thinking styles in 5 basic categories. It tests each of them by 8 articles. Seven-point Likert Scale item was used:

It is totally unsuitable for me (1), It is not very suitable for me (2), It is a little suitable for me (3), it is almost suitable for me (4), it is suitable for me (5), it is mostly suitable for me (6), it is totally suitable for me (7). There is not a total point in the item because a thinking style that is dominant in an individual, available in a sub-scale under a basic aspect is measured independent from other aspects. Possible point of a sub-scale is between 8 and 56. Constant points is used to group individuals according to thinking style under basic categories. Each individual is appointed to the thinking style that is a part of the sub-scale which is under basic thinking category that s/he got the highest point in it (Fer, 2005). If the point increases, (shown) thinking style under the sub-scale is accepted as high.

According to Pearson product-moment correlation coefficient that was carried out check the consistency between TSI’s Turkish and English Form, in all the articles (except 4. and 73) the significance level was found to be between .40 and .99 (Fer, 2005). According to Pearson product-moment correlation coefficient, the relationship between English and Turkish application of the scale to the same individual was: Legislative .78, Executive .95, Judicial .83, Monarchic .83, Hierarchic .94, Oligarchic .93, Anarchic .93, Global .95, Local .88, Internal.88, External .80, Liberal .92 and Conservative .54.

There are significant and positive ($p < .01$) values in all sub-scales. Average correlation coefficient of sub-scales is .79. According to factor analysis questioning (structural) validity of Turkish scale, there is a scale of 70 articles including %45 variance. While internal reliability alpha of (the whole) Turkish form of TSI that contains 104 articles is .90, alpha coefficient of the form of 70 articles is .89. Findings showed that the13 sub-scales had internal consistency reliabilities ranging from .37 to .88 (Fer, 2005). While reliability co-efficient of the scale is calculated as .94 for n: 222 according to total point in this study, they are calculated according to sub-scales as: Legislative .89, Executive .88, Judicial .89, Monarchic .70, Hierarchic .91, Oligarchic .76, Anarchical .75, Global .81, Local .82, Internal .87, External .91, Liberal .91 and Conservative .90. According to arithmetic mean; the point is: 1. Totally unsuitable (1-1,85), 2. Not very suitable (1,86-2,71), 3. A little suitable (2,72-3,57), 4. Almost suitable (3,58-4,43), 5. Suitable (4,43-5,28), 6. Mostly suitable (5,29-6,14), 7. Totally suitable (6,15-7,00).

Teaching Profession Attitude Scale (TPAS). Teaching Profession Attitude Scale developed by Çetin (2006) was used in this study. In the five-point Likert scale, there are 35 articles; 15 of them are positive and 20 of them are negative. The scale that consists of three aspects (love, value and coherence) gives different points for the total point and 3 sub-scales. Variance for each factor of the scale is for love (29.6%), for

value (12.2%) and coherence (9.4%). Total variance of the scale is (51.2%). Alpha reliability coefficient of the scale in total is .95. It is .95 for love, .81 for value and .76 for the coherence (Çetin, 2006). In this research, reliability coefficient of the scale in total is .94; for love .92, for value .88 and for the coherence .74. While positive sentences of the scale change from "I strongly agree" to "I strongly disagree" and from 5 to 1, there is a change from "I strongly agree" to "I strongly disagree" and from 1 to 5.If the point is close to 5, it shows that students agree premise and if it is close to 1,00 it shows their disagreement. If the point is 2,59 or lower, it shows negative attitude and if it is over than that, it shows positive attitude. Points for each options are so: I strongly agree (4,20-5.00), I agree (3.40-4.19), I agree moderately (2.60-3.39), I don't agree (1.80-2.59) and I strongly disagree (1.00-1.79).

Analysis of the Data

While evaluating the thinking styles of the prospective teachers and the result of the relationship between these styles and their attitude to teaching profession, T-Test; ANOVA and LSD Test (LSD Test has been carried out in order to find the reason of statistically significant difference after ANOVA) were used in addition to descriptive statistical methods (mean, standard deviation, frequency, percentage). Furthermore, the relationship between thinking styles of prospective teachers and their attitude to teaching profession were analyzed after the calculation of Pearson Correlation Coefficient. $p < 0.05$ has been accepted as significant difference.

Results

This part of the study firstly defined the prospective teachers' thinking styles and their attitude to teaching profession. Secondly, prospective teachers' thinking styles and their attitude to teaching profession were compared according to variables such as gender and the program they study. Table 2. includes data of prospective teachers' attitude to teaching profession.

Table 2. *Average of Prospective Teachers' Attitude to Teaching Profession Points and Standard Deviation Value*

Factors	***n***	***($\bar{x}$)***	***Sd***
Love	222	4.00	0.56
Value	222	4.33	0.52
Coherence	222	4.24	0.62
Teaching Profession Attitude (Total)	222	4.11	0.52

Prospective teachers' total attitude to teaching profession degree is ($\overline{X}$ = 4.11) is positive, their total attitude to teaching profession is the highest in the sub-dimension "value" ($\overline{X}$ = 4.33) and the lowest in the sub-dimension "love" ($\overline{X}$ = 4.00).Table 3 includes the data of the comparison of Prospective teachers' attitude to teaching profession according the "gender" variable

Table 3. *T-Test Results of the Prospective Teachers' Attitude to Teaching Profession According the Gender Variable*

Factors	**Gender**	***n***	***($\bar{x}$)***	***Sd***	***p***
Total	Male	69	3.96	0.57	0.004
	Female	153	4.17	0.49	
Love	Male	68	3.83	0.61	0.005
	Female	153	4.06	0.53	
Value	Male	69	4.18	0.59	0.004

Table 3 (Cont). *T-Test Results of the Prospective Teachers' Attitude to Teaching Profession According the Gender Variable*

Factors	Gender	*n*	($\bar{x}$)	*Sd*	*p*
	Female	153	4.40	0.47	
Coherence	Male	69	4.14	0.66	0.101
	Female	153	4.29	0.60	

According to Independent- Sample T-Test, male and female prospective teachers' attitudes to teaching profession points are very high while points of women are significantly higher than men. This finding would show that gender is an effective factor on prospective teachers' attitude to teaching profession. Table 4 includes the data of the comparison of prospective teachers' attitude to teaching profession according to department variable. This is shown by one-way analysis of variance (ANOVA).

Table 4. *Anova Results of the Prospective Teachers' Attitude to Teaching Profession According the Department Variable*

Department	Factors	*n*	($\bar{x}$)	*Sd*	*p*	*Difference*
Science Education (1)	Love	74	4.12	0.51	0.009*	1-3
	Value	74	4.43	0.51	0.022*	1-3
	Coherence	74	4.38	0.53	0.022*	1-3
	Total	74	4.23	0.46	0.007*	
Elementary Education (2)	Love	78	3.98	0.51		
	Value	78	4.33	0.46		
	Coherence	78	4.21	0.66		
	Total	78	4.10	0.46		
Social Sciences Education (3)	Love	70	3.87	0.58		
	Value	70	4.23	0.58		
	Coherence	70	4.14	0.66		
	Total	70	3.99	0.56		

(*) $p < 0.01$ (According to Social Sciences Education).

According to the results of analysis, prospective teachers' attitude to teaching profession points are the highest in science and the lowest in social sciences (department). Points of prospective teachers studying social sciences education are significantly lower than the ones' studying science education. This finding would show that department is an effective factor on prospective teachers' attitude to teaching profession. Table 5 includes the data of prospective teachers' thinking styles.

Table 5. *Prospective Teachers' Thinking Styles, Arithmetic Mean and Standard Deviation Value*

Factors	Sub-Dimensions	*n*	($\bar{x}$)	*Sd*
Functions:	Legislative	222	5.70	0.79
	Executive	222	5.22	0.94
	Judicial	222	5.17	0.93
Forms	Monarchic	222	4.58	0.88
	Hierarchic	222	5.44	0.94
	Oligarchic	222	3.99	1.00
	Anarchic	222	4.41	0.94
Levels	Global	222	4.49	0.99
	Local	222	4.32	1.04
Scopes	Internal	222	4.72	1.09

Table 5 (Cont). *Prospective Teachers' Thinking Styles, Arithmetic Mean and Standard Deviation Value*

Factors	Sub-Dimensions	*n*	($\bar{x}$)	*Sd*
	External	222	4.55	1.14
Leanings	Liberal	222	5.10	1.05
	Conservative	222	4.00	1.20

When we analyze Table 5, we see that the most preferred thinking style is Legislative ($\overline{X}$ = 5,70).Hierarchic ($\overline{X}$ = 5,44), Executive ($\overline{X}$ = 5,22), Judicial ($\overline{X}$ = 5,17), Liberal ($\overline{X}$ = 5,10) are the following ones consecutively. The lowest thinking style is Monarchic ($\overline{X}$ = 3.99) and conservative thinking style ($\overline{X}$ = 4.00) is higher than it. Table 6 contains the data of the comparison of thinking styles according to the gender variable.

Table 6. *T-Test Results of the Prospective Teachers' Thinking Styles According to Gender Variable*

Sub-Dimensions	Gender	*n*	($\bar{x}$)	*Sd*	*p*
Legislative	Male	69	5.78	0.77	,262
	Female	153	5.65	082	
Executive	Male	69	5.08	0.91	,122
	Female	153	5.29	0.95	
Judicial	Male	69	5.24	0.91	,415
	Female	153	5.13	0.95	
Monarchic	Male	69	4.57	0.97	,889
	Female	153	4.59	0.85	
Hierarchic	Male	69	5.25	0.96	,045*
	Female	153	5.52	0.92	
Oligarchic	Male	69	4.17	1.05	,066
	Female	153	3.90	0.95	
Anarchic	Male	69	4.58	0.94	,062
	Female	153	4.33	0.93	
Global	Male	69	4.55	1.02	,361
	Female	153	4.45	0.99	
Local	Male	69	4.42	1.08	,284
	Female	153	4.27	1.02	
Internal	Male	69	4.96	1.01	,024*
	Female	153	4.61	1.06	
External	Male	69	4.55	1.12	,989
	Female	153	4.56	1.15	
Liberal	Male	69	5.2	0.82	,305
	Female	153	5.08	1.13	
Conservative	Male	69	5.20	1.30	,047*
	Female	153	3.81	1.14	

When we analyze Table 6, we see that hierarchic thinking style is significantly higher among the women and internal and conservative thinking style points are significantly higher among the men. There is not a significant difference in other thinking styles according to gender variable. Table 7 contains One-way analysis of variance (ANOVA) results of the comparison of prospective teachers' thinking styles according to department variable.

Table 7. *T-Test Results of the Prospective Teachers' Thinking Styles According to Gender Variable*

Sub-Dimensions	Department	n	($\bar{x}$)	sd	p	Difference
Legislative	Science Education (1)	74	5.66	0.92		
	Elementary Education (2)	78	5.61	0.76	,680	
	Social Sciences Education (3)	70	5.82	0.90	,253	
	Total	222	5.70	0.74		
Executive	Science Education (1)	74	5.45	0.91		
	Elementary Education (2)	78	5.10	0.78	,026	2-1
	Social Sciences Education (3)	70	5.11	1.08	,040	3-1
	Total	222	5.23	0.93		
Judicial	Science Education (1)	74	5.15	0.88	,088	
	Elementary Education (2)	78	4.96	0.84	,003	2-3
	Social Sciences Education (3)	70	5.41	1.02		
	Total	222	5.16	0.93		
Monarchic	Science Education (1)	74	4.73	0.78		
	Elementary Education (2)	78	4.53	0.82	,158	
	Social Sciences Education (3)	70	4.48	0.84	,083	
	Total	222	4.57	0.88		
Hierarchic	Science Education (1)	74	5.65	0.95		
	Elementary Education (2)	78	5.30	0.83	,024	2-1
	Social Sciences Education (3)	70	5.37	1.08	,074	
	Total	222	5.44	0.92		
Oligarchic	Science Education (1)	74	3.81	0.95	,003	1-3
	Elementary Education (2)	78	3.86	0.89	,006	2-3
	Social Sciences Education (3)	70	4.31	1.04		
	Total	222	3.99	1.01		
Anarchic	Science Education (1)	74	4.30	0.96	,015	1-3
	Elementary Education (2)	78	4.26	0.82	,006	2-3
	Social Sciences Education (3)	70	4.68	0.94		
	Total	222	4.40	0.93		
Global	Science Education (1)	74	4.50	1.03		
	Elementary Education (2)	78	4.39	0.85	,477	
	Social Sciences Education (3)	70	4.58	1.09	,630	
	Total	222	4.49	0.99		
Local	Science Education (1)	74	4.23	1.07	,055	
	Elementary Education (2)	78	4.15	0.96	,013	3-2
	Social Sciences Education (3)	70	4.58	1.05		
	Total	222	4.31	1.04		
Internal	Science Education (1)	74	4.61	1.01	,013	1-3
	Elementary Education (2)	78	4.52	1.02	,002	2-3
	Social Sciences Education (3)	70	5.06	1.11		
	Total	222	4.85	1.09		
External	Science Education (1)	74	4.56	1.20		
	Elementary Education (2)	78	4.50	0.98	,738	
	Social Sciences Education (3)	70	4.62	1.03	,845	

Table 7 (Cont). *T-Test Results of the Prospective Teachers' Thinking Styles According to Gender Variable*

Sub-Dimensions	Department	*n*	($\bar{x}$)	*sd*	*p*	*Difference*
	Total	222	4.55	1.11		
Liberal	Science Education (1)	74	5.20	0.98	,030	2-1
	Elementary Education (2)	78	4.83	1.09		
	Social Sciences Education (3)	70	5.28	1.01	009	2-3
	Total	222	5.10	1.05		
Conservative	Science Education (1)	74	3.73	1.11		
	Elementary Education (2)	78	3.96	0.98	,213	
	Social Sciences Education (3)	70	4.22	094	,017*	3-1
	Total	222	3.96	0.89		

When we analyze Table 7, we see that there is a significant difference in "executive", "judicial", "hierarchic", "monarchic", "anarchic", "global", "local", "internal", "liberal" and "conservative" thinking styles according to the program they study. There is a significant difference in "hierarchic" and "liberal" thinking styles between social sciences in favor of social sciences. There is a significant difference in ''executive'' thinking style between science and others in favor of science. There is a significant difference in "monarchic", "anarchic" and "internal" thinking styles between social sciences and others in favor of social sciences. "Executive", "monarchic" and "hierarchic" thinking styles' points are highest among prospective science teachers. In addition, "legislative", "judicial", "monarchic", "anarchic", "global", "local", "internal", "external", "liberal" and "conservative" thinking styles' points are highest among prospective social studies teachers. Table 8 includes correlation calculations of relationship between prospective teachers' thinking styles and their attitude to teaching profession.

Table 8. *The Relationship between Prospective Teachers' Thinking Styles and their Attitude to Teaching Profession*

Factors	Love	Value	Coherence	Total
Legislative	,025	,105	,054	,050
Executive	,159*	,176**	,156*	,175**
Judicial	,037	,107	,092	,066
Monarchic	,162*	,074	,045	,135*
Hierarchic	,186**	,155*	,176**	,192**
Oligarchic	-,010	,004	-,016	-,009
Anarchic	,011	,016	,009	,012
Global	,240**	,104	,117	,205**
Local	-,068	,004	,029	-,039
Internal	-,059	-,048	-,067	-,062
External	,069	,035	,093	,071
Liberal	,068	,115	,130	,095
Conservative	-,011	-,081	-,086	-,039

There is a statistically significant relationship between prospective teachers' attitude to teaching profession points and "executive" (r = .175, p < .01), "monarchic" (r = .135, p < .05), "hierarchic" (r = .192, p < .01) and "global" (r = .205, p < .05) thinking styles. When we analyze the relationship between sub-dimensions, we see that relationships are positive except "monarchic", "internal" and "conservative" thinking styles. According to these findings, we may say that there is a statistically significant relationship between thinking styles and prospective teachers' attitude to teaching profession.

Conclusions and Discussions

This study aims to show thinking styles of prospective teachers and the relationship between these thinking styles and prospective teachers' attitudes to teaching profession. According to this, it has been tried to express whether students of the research show significant difference due to their gender and department.

According to research, prospective teachers (fourth grade, last year of education) educated in Dumlupınar University Primary School Education show positive attitudes to teaching profession. Other researches support this finding (Doğan and Çoban, 2009; Terzi and Tezci, 2007; Oral, 2004). This finding can be explained by their intentional choice, their love for teaching, their paying attention to teaching and their belief that they are going to be successful.

Female students' attitude to teaching is more positive than male students' in all aspects and results of other researchers are similar to this (Aydın ve Sağlam, 2012; Çapri and Çelikkaleli, 2008; Özbek, Kahyaoğlu and Özgen, 2007; Bozdoğan, Aydın and Yıldırım, 2007; Terzi and Tezci, 2007; Öztürk, Doğan and Koç, 2005; Saracaloğlu, Serin, Bozkurt and Serin, 2004). This would be an outcome of their perceptions. There is a general idea among the people that women are more suitable for teaching. It is also suitable for women because of work and life conditions. The reason of higher average point of women related to teaching would be this ideal image accepted for women; this belief of society would support women's positive attitude to teaching and their positive behaviors.

Attitude of fourth grade science teaching prospective teachers is more positive than class and social studies teaching prospective teachers. Attitudes of science teaching prospective teachers are not significant with primary school teaching prospective teachers while it is significant with social studies teaching prospective teachers. Attitude points in the studies of Özbek, Kahyaoğlu and Özden (2007); Terzi and Tezci (2007) show that points of social studies teaching prospective teachers are higher than others. There is not a significant difference between social studies teaching prospective teachers and science teaching prospective teachers in the study of Bozdoğan, Aydın and Yıldırım (2007). This would be the result of differences of universities, departments and instructors.

Most preferred thinking styles are legislative, hierarchic and executive. Legislative thinking style is innovative and ideogenetic. Students that adopt this style like to find solutions by themselves. Hierarchic thinking style means paying attention to many goals at the same moment related to different duties and areas. Those who adopt this style would do many things at the same moment by paying attention to their importance and by grading them. Owing to their being aware of more necessary things, they are more inclined to organize events and problems (Duru, 2004). Executive thinking style is related to carrying out a duty and a practice. Instead of obeying the existing mindsets, preferring structured problems and building a structure by themselves; they can be defined as individuals that like to practise available structures and methods. Individuals that have this style may be said to have practicing structure (Akbulut, 2006; Innerst, 1998). These individuals try to do their best in a subject and abstain from the works that need independent working (Buluş, 2005; Grigorenko ve Sternberg, 1997; Sternberg, 1997). Prospective teachers prefer oligarchic and conservative thinking styles less than others. Oligarchic thinking style means to do many things at the same moment without grading them. They like to do something quickly but they have problems in ordering. Conservative thinking style is traditionalist, realist and prefers the experienced. People of this style like to work according to experienced methods and they like to follow traditions. According to these findings, prospective teachers prefer

legislative; hierarchic and executive thinking styles more than others and oligarchic and conservative thinking styles less than others. According to Oflar (2010)'s research on teachers, primary school teachers prefer legislative more and conservative thinking style less. This finding supports the present study.

According to genders, hierarchic thinking style is significantly high among the women and internal and conservative thinking style is significantly high among the men. According to Yıldızlar (2010)'s study, men are internal and more conservative. According to Buluş (2005)'s study, men are more internal and conservative. According to Başol and Türkoğlu (2009), men are more conservative. However, according to Grigorenko and Sternberg (1997); and Zhang (1999) there is not a significant difference according to gender. These differences would be the outcome of a sub-cultural features and attitudes of students.

Executive, monarchic and hierarchic thinking style points of science teachers are higher than others. Legislative, judiciary, monarchic, anarchic, global, local, internal, external, liberal and conservative thinking style points of social studies teachers are higher. According to Sünbül (2004)'s study, there is one significant difference based on some of prospective teachers' departments. Saracaloğlu et al (2008) could find a difference in a sub-dimension not in anything else. Doğanay, Akbulut-Taş and Erden (2007) show us that there is a significant difference according to their department. As a result, it can be said that prospective teachers' thinking styles change according to their departments.

There is a significant relationship between the total attitude point of prospective teachers to teaching and executive, monarchic, hierarchic and global thinking styles. If we analyze the relations between sub-dimensions, we see that relations are positive among thinking styles except monarchic, internal and external thinking styles. These findings show that there is a significant relationship between thinking styles and total attitude point of prospective teachers to teaching profession. Prospective teachers' having these thinking styles and their high attitude to teaching profession show the value, love and attention they pay to teaching. In addition, we may say that this would positively affect their relationships with their students (in classroom), their methods and their technics.

Suggestions

Prospective teachers in the faculties of education should be educated about thinking style leanings, and about the things that influence thinking styles. In addition, they should be educated about weak and strong points of these thinking styles.

Curriculum of education faculties and their programs should include activities, projects and programs that would help students to have different thinking styles.

In order to make prospective teachers' attitude to teaching better and to increase their professional consciousness, social and economic conditions of teaching should be enhanced.

This research was carried out in science teaching, primary school teaching and social studies teaching departments. Prospective teachers' thinking styles and their attitude to teaching profession could be compared in different sample groups.

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References

Aydın, R. & Sağlam, G. (2012). Öğretmen adaylarının öğretmenlik mesleğine yönelik tutumlarının belirlenmesi (Mehmet Akif Ersoy Üniversitesi örneği). *Türk Eğitim Bilimleri Dergisi, 10*(2), 257-294.

Bozdoğan, A. E., Aydın, D. & Yıldırım, K. (2007). Öğretmen adaylarının öğretmenlik mesleğine ilişkin tutumları. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD) 8*(2), 83-97.

Buluş, M. (2000). *Öğretmen adaylarında yükleme karmaşıklığı, düşünme stilleri ve bilişsel tutarlılık tercihinin bazı psikososyal özellikler ve akademik başarı çerçevesinde incelenmesi*. İzmir: Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü, Yayımlanmamış Doktora Tezi.

Buluş, M. (2005). İlköğretim bölümü öğrencilerinin düşünme stilleri profili açısından incelenmesi. *Ege Eğitim Dergisi, 1(*6), 1-24.

Çapri, B. & Çelikkaleli, Ö. (2008). Öğretmen adaylarının öğretmenliğe ilişkin tutum ve mesleki yeterlik inançlarının cinsiyet, program ve fakültelerine göre incelenmesi. *İnönü Üniversitesi Eğitim Fakültesi Dergisi, 9*(15), 33-53.

Çetin, Ş. (2006). Öğretmenlik mesleği tutum ölçeğinin geliştirilmesi (geçerlik ve güvenirlik çalışması). *Gazi Üniversitesi Endüstriyel Sanatlar Eğitim Fakültesi Dergisi,* 18, 28-37.

Çubukçu, Z. (2004). Öğretmen adaylarının düşünme stillerinin belirlenmesi. *Trakya Üniversitesi Sosyal Bilimler Dergisi, 5*(2), 87-106.

Demirel, Ö. (2005). *Eğitim sözlüğü*. Ankara: Pegem Akedemi.

Doğan, T. & Çoban, A. E. (2009). Eğitim fakültesi öğrencilerinin öğretmenlik mesleğine yönelik tutumları ile kaygı düzeyleri arasındaki ilişkinin incelenmesi. *Eğitim ve Bilim Dergisi, 34*(153), 157-168.

Doğanay, A., Akbulut-Taş, M. & Erden, Ş. (2007). Üniversite öğrencilerinin bir güncel tartışmalı konu bağlamında eleştirel düşünme becerilerinin değerlendirilmesi. *Kuram ve Uygulamada Eğitim Yönetimi,* 52, 511-546.

Duru, E. (2002). *Öğretmen adaylarında kişi-durum yaklaşımı bağlamında yardım etme davranışı eğilimi empati ve düşünme stilleri ilişkisi ve bu değişkenlerin bazı psikososyal değişkenler açısından incelenmesi*. İzmir: Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü,Yayımlanmamış Doktora Tezi.

Duru, E. (2004). Düşünme stilleri: Kavramsal ve kuramsal çerçeve. *Eğitim Araştırmaları,* 14, 171-186.

Emir, S. (2013). Öğretmenlerin düşünme stillerinin eleştirel düşünme eğilimlerini yordama gücü (İstanbul-Fatih Örneği). *Kuram ve Uygulamada Eğitim Bilimleri. 13*(1), 325-347.

Fer, S. (2005). Düşünme stilleri envanterinin geçerlik ve güvenirlik çalışması (Validity and reliability study of the thinking styles inventory). *Kuram ve Uygulamada Eğitim Bilimleri (Educational Sciences Theory & Practice), 5*(2), 433-461.

Gay, L. R., Mills, G. E. & Airasian, P. (2006). *Educational research: Competencies for analysis and application* (8th. ed.). Upper Saddle River, NJ: Prentice Hall.

İnceoğlu, M. (2004). *Tutum, algı, iletişim*. Ankara: Elips Kitap Kesit Tanıtım. Ltd. Şti.

Kaptan, S. (1998). *Bilimsel araştırma ve istatistik teknikleri*. Ankara: Tekışık Web Ofset Tesisleri.

Karasar, N. (2011). *Bilimsel araştırma yöntemi* (22. Baskı). Ankara: Nobel Yayın Dağıtım

Oral, B. (2004). Eğitim fakültesi öğrencilerinin öğretmenlik mesleğine ilişkin tutumları. *Eğitim Araştırmaları,* 15, 88-98.

Özbek, R, Kahyaoğlu, M. & Özgen, N. (2007). Öğretmen adaylarının öğretmenlik mesleğine yönelik görüşlerinin değerlendirilmesi. *Sosyal Bilimler Dergisi, IX*(2), 221-232.

Özden, Y. (2003). *Öğrenme ve öğretme.* Ankara: PegemA Yayıncılık.

Öztürk B., Doğan, O. & Koç, G. (2005). Eğitim fakültesi öğrencileri ile fen-edebiyat fakültesi mezunlarının öğretmenlik mesleğine yönelik algılarının karşılaştırılması (Gazi Üniversitesi örneği). *Türk Eğitim Bilimleri Dergisi,3*(1),1-19.

Saban, A. (2005), Öğrenme, öğretme süreci. Ankara: Nobel Yayın Dağıtım.

Saracaloğlu, A. S., Serin, O., Bozkurt, N. & Serin, U. (2004). Öğretmen adaylarının mesleğe yönelik tutumlarını etkileyen faktörler. *Çağdaş Eğitim, 29*(311), 16-27.

Saracaloğlu, S., Yenice, N. & Karasakaloğlu, N. (2008), Eğitim fakültesi öğrencilerinin düşünme stillerinin çeşitli değişkenler açısından karşılaştırılması. *Uluslararası Sosyal Araştırmalar Dergisi*, 1/5, 732-751.

Sternberg, Robert J. (1997). *Thinking styles*. New York: Cambridge University Press.

Sternberg, R. J., Grigorenko, E. L., & Zhang, Li-F. (2008). Styles of learning and thinking matter in instruction and assessment. *Perspectives on Psychological Science,* 36, 486-506.

Sünbül, A. M. (2004). Düşünme stilleri ölçeğinin geçerlik ve güvenirliği. *Eğitim ve Bilim Dergisi*, 132, 25-42.

Terzi, A. R. & Tezci, E. (2007). Necatibey eğitim fakültesi öğrencilerinin öğretmenlik mesleğine ilişkin tutumları. *Kuram ve Uygulamada Eğitim Yönetimi,* 52, 593-614.

Üstüner, M. (2006). Öğretmenlik mesleğine yönelik tutum ölçeğinin geçerlik ve güvenirlik çalışması. *Kuram ve Uygulamada Eğitim Yönetimi,* 45,109-127.

Zabukovec, Z., & Kobal-Grum, D. (2004). Relationship between student thinking styles and social skills. *Psychology Science,* 46, 156-166.

Zhang, L. F. (1999). Further cross-cultural validation of the mental self-goverment. *The Journal of Psychology*, 133, 165-181.

Zhang, L. F. & Sternberg, R. J. (2005). A threefold model of intellectual styles. *Educational Psychology Review, 17*(1), 1-53.

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