Journal of Elementary Education
Volume 27, No. 2, pp. 147-162

Effect of Examination on Curriculum at Elementary Level in Punjab: A Mixed Methods Study

Sajid Masood[*], Abdul Hameed[**], Ijaz Ahmad Tatlah[***]

Abstract

The Examination conducted by the Punjab Examination Commission (PEC) at grade VIII is considered high-stakes as both intended and unintended consequences are associated with result of the examination. A mixed methods study using explanatory sequential design was conducted to investigate effects of the examination conducted by the PEC on curriculum at grade VIII. Survey data were collected from 521 elementary school teachers teaching in seven districts of the Punjab selected through simple random sampling. To ensure a maximum variation for purposive sampling, the qualitative participants were selected from among those who participated in the survey. Quantitative results revealed no significant differences in the perceptions of teachers regarding the effect of the examination on curriculum. Teachers irrespective of gender, school location and type, perceived that the examination has changed the curriculum in grade VIII. Qualitative analysis of data collected through interviews yielded theme "Examination controls the Curriculum." It was further emerged that curriculum in grade VIII was dictated by the helping books which were used extensively by the teachers. Additional findings indicated that old examination papers were extensively used by the teachers to prepare students for subsequent examinations and thus became the curriculum, the examination fostered selective study in classes to specifically prepare for the examination and the curriculum was reduced to objective type items only. Furthermore subjects not tested in the examination were ignored more as compared to tested subjects. One of the objectives of the PEC was to improve curriculum and in the light of this study it remains rhetoric. The findings of the study have posed several challenges for curriculum, examination and educational authorities in the Punjab.

Keywords: Examination reforms, high-stakes, curriculum narrowing, disequilibrium in content

* Assistant Professor, Department of Education, University of Management & Technology, Lahore, Pakistan. Email: sajid@umt.edu.pk
** Professor & Dean, School of Social Sciences & Humanities, University of Management & Technology, Lahore, Pakistan
*** Assistant Professor, University of Education, Lahore, Pakistan

Introduction

Tests and examinations have been a longstanding focus of all stakeholders at various levels of education. They become an indispensible tool in guiding day-to-day decision making in classroom: to communicate learning goals and evaluating progress towards their attainment, to select, place and promote students, to identify best practices and grey areas, and to monitor and assess the effectiveness of educational system (Foucault, 1979; Haertel, 2013). In Punjab province assessment of students' learning at Grade VIII is the responsibility of the Punjab Examination Commission (PEC). In 2016 about one million students, both from public and private schools, appeared in the Grade VIII examination (PEC, 2016). The PEC conducts the examination in February, issues result gazette reflecting cumulative score of each student in last week of March and also publishes the results online through its website (www.pec.edu.pk). The examination conducted by the PEC in Grade VIII is high stakes in nature (Mahmood, 2013; Matters & Toon, 2012). Rashid, Awan, Muzaffar and Butt (2011) also identified that the examination conducted by the PEC at grade VIII is considered very high stakes due to use of its results for financial rewards to schools and teachers. A test becomes 'high-stakes' when the result leads to serious consequences for at least one key stakeholder (Stobart & Eggen, 2012), consequences like, grade promotion for students, teachers accountability and effects on school repute (Johnson, Johnson, Farenga, & Ness, 2008). Au (2008) further elaborated that consequences like sanctions and rewards are associated with the results of high-stakes tests. Proponents and opponents of the high-stakes examination use different arguments to strengthen their claims (Amrein & Berliner, 2002). All such arguments are based on what has been billed as good intentions, however, what actually happens, according to various reports tends to refute these arguments (Jones & Eagley, 2004; Pedulla, Abrams, Madaus, Russell, Ramous, & Miao, 2003; Quezada-Hafflinger & Hippel, 2017). When results of high-stake tests are being used to evaluate school performance and impose sanctions then unintended consequences emerge and have been shown to affect curriculum in either of the following ways.

Narrowing Curriculum

Curriculum defines and focuses on what knowledge is valued; to promote a reasonable, logical, and connected progression of concepts and skills (Valli, Croninger, Chambliss, Graeber, & Buese, 2008) and this is one of the area broadly affected by the high-stakes examination. Curriculum narrowing generally, or to obtain better score by reducing it specifically is an immoral, unlawful, and troubling way to accommodate to the pressures of high-stakes examination (Berliner, 2011). Narrowing of the curriculum is reported in most of the studies addressing the effects of high-stakes examination (Berliner, 2011;

Bersola, 2002; Bryant, 2010; Goodland, 1979; Johnson, 2004; Jones & Eagley, 2004; Kukucka, 2012; Mesler, 2008; Moses & Nanna, 2007; Pavia, 2012; Pedulla, Abrams, Madaus, Russell, Ramous, & Miao, 2003; Quezada-Hafflinger & Hippel, 2017; Schulz, 2005). According to recent research, high-stakes examination either reduces the quality and quantity of curriculum (Madaus & Clarke, 2001), and thus intensifies narrowing of curriculum in schools (Anagnostopoulos 2005), or it restricts the range of skills and competencies to be learnt by students as found by research conducted in Australia (Polesel, Rice, & Dulfer, 2013). Narrowing of curriculum results in fragmented and disjointed content and ultimately, this practice tends to lead to students obtaining superficial exposure to tested material but minimal to no exposure in areas that are not tested (Nowak, 2009). Narrowing of curriculum takes other forms like narrowing the content (Au, 2007), focus on certain content at the expense of others (Clarke, Shore, Rhoades, Abrams, Miao, & Li, 2003), narrowing the focus and supplanting some of the values embedded in the curriculum (Valli et al., 2008), narrowing materials and methods that support and promote testing skills and information tested on the examination, and too much pressure and unhealthy focus on testing versus the overall curriculum (Bryant, 2010).

Tested Versus Untested Subjects

The curriculum is dictated by what appears or tends to appear in the examination (Jones, Jones, & Hargrove, 2003; Quezada-Hafflinger & Hippel, 2017). Initially, the PEC included subjects like English, Urdu, Mathematics, Science, Islamiyat, Social Studies, Arabic / Computer and Drawing in examination but later on excluded Social Studies, Arabic / Computer and Drawing This exclusion of certain subjects from the examination has limited students' exposure to non tested curriculum, which clouds the meaning of the test scores (Hamilton, Stecher, & Klein, 2002).

Tested and not tested subjects have further narrowed the curriculum in a number of ways as teachers allocate more time to teach subjects appearing in the examination and thus less to devote to other subjects (Klein, Hamilton, McCaffrey, & Stecher, 2000). Teachers spend so much time on the tested subjects of reading and mathematics that there is little or no time left for the non-tested field of social studies (Silberman, 2003). Similar was the finding by Renter, Scott, Kober, Chudowsky, Joftus, and Zabala (2006) in their nationwide survey conducted in the USA where about 71% of the districts allocated more time to Mathematics and Reading by excluding social studies or physical education as a direct response to high-stakes test. In his study, McMurrer (2007) identified a 43% increase in time for tested subjects like English & Maths, 32% reduction in time for non-tested subjects like social studies, arts, physical education and even recess. Zastrow (2004) surveyed 1000 school principals and found that 25% of them reported decreased

time for the arts due to high stakes test. More severe situations occur where non-tested subjects are excluded from school curricula (Marchant & Paulson, 2005; Nichols & Berliner, 2008). Another reported effect of high-stakes examination is exclusion of some topics from subjects tested in the examination having very rare chances to appear on the examination (Barnes, 2005; Yeh, 2005). These findings were reinforced in a study conducted by Diamond (2007) revealing that high-stakes testing influences teachers for selection of instructional content by focusing on specific issues within subject. Research has also shown that another effect of high-stakes examination is the tendency of teachers to speedily cover the content (Diamond, 2007) and thus not teach the curriculum in-depth (Cathcart, 2008).

Teaching to the Test

Teaching to the test is identified by a number of researchers as another effect of the high-stakes examination. Consequences associated with the result of the examination are both for teachers and school principals. A number of studies have shown that result of examination persuade teachers teach to the test (Firestone, Mayrowetz & Fairman, 1998; Madaus & Clarke, 2001; Sullivan, 2006). One of these consequences is reward or sanction contingent upon the result of the examination: thus, teachers perceive that such assessment and demands to teach the concepts on these assessments has created an undesirable culture of teaching to the test (Johnson, 2004). This effect is the powerful result that schools have changed their curricula of tested subjects to put more emphasis on the content and skills covered on the exam (Mc Murrer, 2007). Moreover, test taking skills and content taking precedence over other curricula (White, Sturtevant, & Dunlap 2003) have resulted in teachers spending more time on test preparation through use of practice tests (Diamond, 2007). When examinations are high in stakes then old examination papers tend to decide what to teach and what not to teach. Teachers prepare their students accordingly, thus, old examination papers tend to define the current content (Madaus & Clarke, 2001, p, 54). Von der Embse, Schoemann, Kilgus, Wicoff, and Bowler (2017) concluded in their study that teachers use counterproductive teaching practices including teaching to the test if test result is used to evaluate their performance.

With this background of research from a broad world view, coupled with strong application of standardized testing in the Punjab, a firm foundation emerged to conduct a study in the Punjab to investigate the consequences of high stakes testing as perceived by the teachers.

Objectives of the Study

The study was designed to investigate perceptions of teachers with regard to effects of examination on curriculum at the elementary level.

Research Questions

The study explored the answers of the following questions:

1. Quantitative research question. What are teachers' perceived effects of examination conducted by PEC on curriculum in grade VIII?
2. Qualitative research question. What influences on curriculum do teachers perceive while teaching to grade VIII for PEC examination?

Method of Study

This was a mixed methods study used explanatory sequential design in which qualitative part followed the quantitative part. A survey approach was used to elicit responses that might be reported quantitatively. Survey data were collected from 521 elementary school teachers. Interviews from 28 teachers who took part in survey were analyzed qualitatively.

Sample of the Study

521 teachers, male & female, rural & urban, having different experience of teaching and age, who taught in grade VIII were randomly selected from 7 districts of the Punjab. Maximum variation sampling strategy of the purposive sampling was used to select 28 participants for interviews.

Instruments

Instruments were developed for both phases of the study. The survey, comprised of 21 statements focused on the Effects of Examination on Curriculum (EEOC) was pilot tested prior to data collection. Reliability of the tool was .706 and validated by a panel of experts. The interview protocol was composed of semi-structured questions developed to probe for areas surfaced during quantitative analysis. The purpose of qualitative part of the study was to further investigate aspects of the survey findings that called for deeper understanding. In-depth interviews sought to investigate teachers' perceptions.

Quantitative Results

Table 1

One-sample t-test comparing EEOC score and test value

Scale	*N*	*Mean*	*SD*	*t*	*df*	Sig.2-tailed)	Test Value	Mean Diff
EEOC	521	75.22	9.18	30.37	520	.000*	63	12.22

*$p<.05$.

One-sample *t*-test shows (Table 1) that sample mean *M*= 75.22, *SD*=9.18 was significantly higher from 63, *t* (520) =30.37, *p*=.000. The sample mean is higher than the cut point suggesting that respondents may have felt compelled to compromise the standard curriculum in grade VIII because of examination conducted by the PEC. The cut point was middle point calculated by keeping in view number of items of the scale EEOC.

Table 2

Independent Sample t-test Comparing Scale on the Basis of Demographic Variables

Demographic Variables		*M*	*SD*	*t*	*p*
Gender	Male (n=250)	74.53	9.80	-1.64	.100
	Female (n=271)	75.85	8.54		
Subjects in Exam.	Tested (n=473)	75.37	9.18	1.13	.257
	Untested (n=48)	73.79	9.15		
School Location	Rural (n=378)	75.50	9.20	1.14	.253
	Urban (n=143)	74.47	9.13		
School Type	Public (n=453)	75.23	9.4	.076	.939
	Private (n=68)	75.16	6.8		

An independent sample *t*-test was conducted to compare the means of groups by demographic variables on the EEOC scale. According to the table 2, the *t*-test was not significant in the case of male and female teachers, subjects tested and untested in the examination, school location and school type. The teachers appeared to perceive similar effects of examination on curriculum irrespective of their gender, subjects tested or untested in examination, school location and type.

Table 3

ANOVA Comparison of EEOC Scale on the Basis of Years of Teaching in Class VIII, Total teaching experience, Age, and Geographical Location

Independent Variables		*M*	*SD*	*F*	*p*
Years of teaching in grade VIII	<5 years (*n*=230)	75.10	8.4	.544	.704
	6-10 years (*n*=102)	75.64	8.6		
	11-15 years (*n*=87)	75.98	9.31		
	16- 20 years (*n*=69)	74.86	11.15		
	>20 years (*n*=33)	73.45	11.15		
Total teaching experience	<5 years (*n*=133)	76.75	8.1	1.96	.099
	6-10 years (*n*=120)	74.55	8.4		
	11-15 years (*n*=65)	76.23	6.6		
	16- 20 years (*n*=86)	74.86	9.9		
	>20 years (*n*=177)	73.87	11.2		
Age in Years	<25 years (*n*=108)	75.90	9.1	.375	.827
	26-34 years (*n*=141)	75.12	7.8		
	35-41 years (*n*=97)	74.51	9.3		
	42-48 years (*n*=117)	75.54	9.9		
	>49 years (*n*=58)	74.72	10.5		
Geographic Location	District 1 (*n*=58)	76.81	9.9	8.320	.000*
	District 2 (*n*=94)	75.14	9.7		
	District 3 (*n*=75)	80.42	5.87		
	District 4 (*n*=82)	71.35	8.05		
	District 5 (*n*=177)	72.62	9.1		
	District 6 (*n*=78)	74.62	8.9		
	District 7 (*n*=72)	75.91	9.4		

*p<.05.

A one-way analysis of variance was conducted to explore if there were differences among teachers' years of experience in Grade VIII, total teaching experience, age, and geographical location and mean score on EEOC Scale. Teachers were divided into five groups according to their teaching experience in grade VIII and total teaching experience (<5, 6-10, 11-15, 16-20, and more than 20 years). Teachers were divided into five groups keeping in view their age (< 25 years, 26-34 years, 35-41 years, 42-48 years, and >49 years). Teacher data were also divided among seven districts according to the location of their schools. There was no significant difference found in the means of years of teaching in Grade VIII, total teaching experience, age and EEOC scale. The data suggested that teachers perceived similar effects of examination on curriculum independent to their teaching experience in grade VIII, total teaching experience, and age. A one-way ANOVA was run to determine whether EEOC scale score significantly differ among the seven Tehsils of the Punjab. These ANOVA results, means and standard deviations were

presented in table 3. ANOVA results indicated that the scale score was shown to significantly differ across all seven Tehsils, F (4,516) = 8.320, p = .000. A post-hoc comparison revealed that teachers in schools located in Tehsil of District 3 appeared perceive greater effect of examination on curriculum as compared to teachers' perceptions serving in Tehsils of other districts.

Qualitative Results

The qualitative research questions contained in the post-survey interviews sought to understand expanded aspects of the participants' perceptions particularly with regard to potential influences of the PEC examination on curriculum in Grade VIII. The following themes emerged in response to the questions.

Helping Books Dictate Curriculum

The participants were asked if they had anything to add to the existing curriculum being taught at Grade VIII to better prepare their students for the examination. Most of the interview participants (25/28) have identified that they use helping books to prepare their students for the examination. One teacher commented "I add helping books in syllabus," (Teacher 3) another added "I use helping books to help my students pass the examination" (Teacher 6). Teachers mentioned that they use helping books in addition to textbooks because helping books contain readymade multiple choice questions (MCQs), "I teach textbook and then get help from helping book" (Teacher 15 & 17). In addition to helping books teachers identified extensive use of model papers, old examination papers, and teacher guides.

Old Exam Papers Became the Curriculum

Teachers were further probed to share if they use anything else to prepare their students for examination. Most of them (20/28) responded that they reduce the curriculum by focusing exclusively on what appeared in past examinations by using question papers of old examinations. These old exam papers served to guide teachers as identified by the respondents, "I get guidance from past papers and conduct test from them" (Teacher 1). Another teacher supported it as "previous papers (old exam paper) guide us what to teach" (Teacher 5). Teachers use old papers to determine what to teach and what not to teach and it is evident from their responses, "I see old papers to determine which question and chapter are important and then focus only on them," (Teacher 9) another teacher further commented "I see previous papers and determine which is important and put more focus on it" (Teacher 22). Teachers got help from old papers to identify pattern and select content as per pattern. Old examination papers appeared as a very important document which was controlling what to teach and what not to teach as evident from another response "I cover only those topics which are being repeated in previous examinations" (Teacher 27).

Selective Study

Most of the teachers (24/28) have identified another way of reducing the curriculum by considering mismatch between curricular expectations and abilities of students. Some of the participants (10/28) have indicated that they reduce curriculum because if they cover all then students will not be able to retain all and fail in the examination, "We have to reduce something as if cover all then students forget others" (Teacher 2). Teachers from rural areas (14/28) were more concerned about it. According to them "the syllabus is exceeding students understanding and thus unable to cover whole syllabus" (Teacher 11) and that "syllabus is more as compared to age of the students and thus they are unable to pick the syllabus and ultimately fail in the exam," (Teacher 17) and because of slow picking speed of students teachers do selective study in class. Students are unable to understand English thus unable to complete whole curriculum. Another teacher from rural elementary school commented that "in our area students remain absent during times when harvest seasons are around, moreover, girls students involvement in household chores impacts their academic activities" (Teacher 15). A female urban school teacher expressed her experiences as "I reduce for dull students but not for good students as dull cannot write and got confused during examination therefore only important topics for them so that they pass the examination" (Teacher 28). Selective studies thus resulted in narrowing of curriculum for students who are either slow learners and thus unable to fulfill curricular expectations or those requiring enrichment. It is evident from responses of the teachers that selective study was practiced to help student pass the examination.

Reduced to Objective Types & Key Points

Another way of reducing the quantity and quality of the syllabus was to limit it to text like definitions. Public school teachers shared practices as "I focus more on definitions and those words which are bold in textbook and on key points and as a teacher I know which are important from examination point of view" (Teacher 14). Another supplemented this "I ask students to write definition and example and draw diagram" (Teacher 12). A female urban school teacher further added that "text in bold is important as MCQs and short answers are usually set from it" (Teacher 20). Exclusive focus on objective type questions (MCQs and Short Answer) was also identified as contributing in reduction of syllabus. A teacher highlighted it as "I follow examiner's mind set and ask students to focus more on solving MCQs. Focusing on MCQs is capping writing power of students as attempting MCQs helps them to pass the exam. Students are not able to exercise writing or attempt subjective type questions. Student tick alternatives without having understanding" (Teacher 24). It is evident that objective type test items and key points are more focused in classroom and thus a shift from writing to reading and learning short question answers was emerging. Another reason might be that by attempting objective type questions student pass the examination and it is what most of the teachers wanted.

Content in Disequilibrium

The teachers who participated in the interviews were asked to share their perceptions of how they see an effect of examination on untested subjects. Many teachers (20/28), irrespective of school type and location, were of the view that the examination conducted by the PEC has disturbed equilibrium in curriculum. The disequilibrium is caused by putting more attention on tested subjects as compared to untested ones. Most of the interviewees, irrespective of school location and type, shared that these subjects were ignored as these are no more tested by the PEC. "Once these are no more on list of tested subjects teachers of other tested subjects started taking advantage of time assigned to these not tested subjects". Another teacher indicated this as "Subjects untested in exam did not remain in our priority, why to teach if no examination of social studies, and computer science. It is beneficial for teachers as we get more time for preparation of subjects tested in the examination" (Teacher 1). Another teacher admitted that he has purposefully opted to teach social studies along with English and Mathematics and the purpose was to utilize time allocated for social studies teaching English and Maths (Teacher 3). An urban public school teacher shared that "we don't focus on these subjects being not tested in the PEC examination" (Teacher 4). Another teacher explained that "Sometimes we use class time fixed for these subjects to teach tested subjects" (Teacher 18). An urban lady teacher acknowledged "I am not focusing on those subjects because of no examination" (Teacher 21). The untested subjects were compromised because they don't appear in the examination.

Discussion

Most of the findings of this research related to the effects of examination on curriculum are in line with findings of other research studies. The theme emerged in qualitative phase of the study "examination controls the curriculum" is in congruence with other studies identified narrowing of curriculum as an effect of high-stakes examination (Berliner, 2011; Bersola, 2002; Bryant, 2010; Goodland, 1979; Johnson, 2004; Jones & Eagley, 2004; Kukucka, 2012; Mesler, 2008; Moses & Nanna, 2007; Pavia, 2012; Pedulla, et al; Quezada-Hafflinger & Hippel, 2017; Schulz, 2005). High-stakes examination reduces the quality and quantity of curriculum (Madaus & Clarke, 2001) and thus intensifies narrowing of curriculum in schools (Anagnostopoulos 2005). High-stakes examination acts like steering driving teachers, curriculum decisions in middle grades (Faulkner & Cook, 2006). Cruz (2007) in his study came up with conclusion that high-stakes examination determines the curriculum.

A sub-theme emerged in this research was that "old examination papers become the curriculum" because teachers extensively teach what appeared in previous papers. These papers determine what to teach in the classroom. This finding was consistent with findings from the studies conducted by Bersola (2002) and Schulz (2005), who identified that teachers conduct reviews of standardized tests to identify important content. Cruz (2007) arrived at a similar conclusion that teachers spend more time to teach test related topics and leave out important concepts. Selective study was emerged as another sub-theme in this study. Selective study is a way of narrowing the content (Au, 2007) by focusing on certain content (Clarke, Shore, Rhoades, Abrams, Miao, & Li, 2003).

"Content in disequilibrium" was another sub-theme emerged in this study because teachers focused more on subject appeared in the examination as compared to untested ones. This finding is similar to finding of study by Jones, Jones, & Hargrove (2003) who concluded that curriculum is limited to the subjects included in the examination. Diamond (2007) contented that tested subjects are focused more as compared to untested one. Data from classroom observation of teachers revealed that the teachers in observed classes addressed only tested subjects (Santiago, 2009). Thus "examination controls the curriculum" not only reinforced the findings of the earlier studies identified narrowing of curriculum as a consequence of the examination high in stakes. Moreover, this study came up with a new finding that is exclusive focus of teachers on content useful for preparation of objective type test items at the expense of other curriculum content important for developing higher order thinking skills required to attempt subjective part of the paper.

Conclusions

Effects of the examination conducted by the PEC were evident on curriculum at grade VIII. Both male & female teachers perceived similar effects on curriculum and teachers serving in Tehsil of District 3 perceived more effects as compared to teachers served in other districts. It can be concluded that the examination has controlled the curriculum at grade VIII as many of the teachers used helping books, old examination papers, conducted selective study, exclusively focused on objective type questions and content tested in the examination at the expense of untested ones. Curriculum enrichment is not evident rather examination has adversely affected it by restricting to what appears in test. There is a need to further study the nature of consequences and pressures associated with the result of examination conducted by the PEC at grade VIII which persuade teachers to compromise curriculum.

References

Amrein, A.L. & Berliner, D.C. (2002). High-stakes testing, uncertainty, and student learning. *Education Policy Analysis Archives, 10*(18). Retrieved from http://epaa.asu.edu/ epaa/ v10n18

Anagnostopoulos, D. (2005). Testing, tests, and classroom texts. *Journal of Curriculum Studies, 37*(1), 35-63.

Au, W. (2007). High-stakes testing and curricular control: A qualitative meta-synthesis. *Educational Researcher, 36* (5), 258–267.

Au, W. W. (2008). Devising inequality: A Bernsteinian analysis of high-stakes testing and social reproduction in education. *British Journal of Sociology of Education, 29* (6), 639-651.

Barnes, M. (2005). The Discriminatory effects of high-stakes testing in Georgia: Exploring causes and solutions. *Education Law and Policy Forum, Volume 1*. Education Law Consortium, The University of Georgia, Athens, GA. Retrieved from http://www.educationlawconsortium.org/forum/2005/papers/barnes.pdf.

Berliner, D. (2011). Rational responses to high stakes testing: The case of curriculum narrowing and the harm that follows. *Cambridge Journal of Education, 41*(3), 287-302.

Bersola, S. H. (2002). *The influence of high stakes standardized tests on school curricula* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3067832)

Bryant, A. J. (2010). *Perception of high stakes testing by national board certified teachers* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3407615)

Cathcart, S. E. (2008). *A study of the Pennsylvania system of school assessment and its effect on instruction and curriculum of middle school language arts teachers* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3326598)

Clarke, M., Shore, A., Rhoades, K., Abrams, L., Miao, J., & Li, J. (2003) Perceived effects of state-mandated testing programs on teaching and learning: Findings from interviews with educators in low-, medium-, and high-stakes states. Chestnut-Hill: National Board on Educational Testing and Public Policy, Boston College.

Cruz, A. (2007). T*he impact of the state accountability system on the perception and practices of elementary school teacher in South Texas* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3332685)

Diamond, J. B. (2007). Where the rubber meets the road: Rethinking the connection between high-stakes testing policy and classroom instruction. *Sociology of Education, 80*(4), 285-313.

Faulkner, S. A., & Cook, C. M. (2006). Testing vs. teaching: The perceived impact of assessment demands on middle grades instructional practices. *Research in Middle Level Education Online, 29*(7), 1-22.

Firestone, W. A., Mayrowetz, D., & Fairman, J. (1998). Performance-based assessment and instructional change: The effects of testing in Maine and Maryland. *Educational Evaluation and Policy Analysis, 20*(2), 95-113.

Foucault, M. (1979). *Discipline and punish: The birth of the prison.* New York: Vintage Books.

Goodland, J. I. (1979). *What are schools for?* Bloomington, IN: Phi Delta Kappa Educational Foundation.

Haertel, E. (2013). How is testing supposed to improve schooling? *Measurement: Interdisciplinary Research and Perspectives, 11*(1), 1-18.

Hamilton, L., Stecher, B.M., & Klein, S.P. (2002). *Making sense of test-based accountability in education*. Santa Monica, Cali: Rand Corporation.

Johnson, D. D., Johnson, B., Farenga, S., & Ness, D. (2008). *Stop high stakes testing: An appeal to America's conscience*. Lanham, MD: Rowman & Littlefield.

Johnson, H.L. (2004). *Consequences of high stakes testing: Critical perspectives of teachers and students* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3143277)

Jones, B. D., & Egley, R. J. (2004). Voices from the frontlines: Teachers' perceptions of high-stakes testing. *Education Policy Analysis Archives, 12*(39). Available from http://epaa.asu.edu/epaa/v12n39/

Jones, M. G., Jones, B. D., & Hargrove, T. Y. (2003). *The unintended consequences of high-stakes testing*. Lanham, MD: Rowman & Littlefield.

Klein, S. P., Hamilton, L. S., McCaffrey, D. F., & Stecher, B. M. (2000). What do test scores in Texas tell us? *Education Policy Analysis Archives, 8*, 49.

Kukucka, S. (2012). *An examination of teachers' perceptions of high-stakes testing* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3498071)

Madaus, G. & Clarke, M. (2001). The adverse impact of high stakes testing on minority students: Evidence from one hundred years of test data. In G. Orfield & M.L. Kornhaber (Eds.). *Raising standards or raising barriers? Inequality and high stakes testing in public education* (pp. 85-106). New York: Century Foundation.

Mahmood, N. (2013). *Institutional review of Punjab examination commission (pec) and Punjab education assessment system (peas)*. Cambridge: Cambridge Education.

Marchant, G. J., & Paulson, S.E. (2005). The relationship of high school graduation exams to graduation rates and SAT scores. *Education Policy Analysis Archives, 13*(6). Retrieved from http://epaa.asu.edu/epaa/v13n6/

Matters, G., & Toon, K. S. (2012). *Capacity review of the Punjab examination commission (PEC) and the Punjab education assessment system (PEAS)*. Australian Council for Educational Research: Cambridge Education

McMurrer, J. (2007). *Instructional time in elementary school subjects. A closer look at changes for specific subjects*. Washington, DC: Center on Education Policy.

Mesler, A. (2008*). High Stakes and Higher Impacts: The Effects of High-Stakes Testing on School and Classroom Operations*. Retrieved from http://uwp.duke.edu/ uploads/assets/Mesler_09.pdf.

Moses, M. S., & Nanna, M.J. (2007). The Testing Culture and the Persistence of High Stakes Testing Reforms. *Education and Culture, 23*(1), 55-72.

Nowak, M.E. (2009). *Perceptions of stake holders regarding the implementation of high stakes testing policies* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (UMI No. 3361930)

Nichols, S. L., & Berliner, D.C. (2008). Testing the joy out of learning. *Educational Leadership, 65*(6), 14-18.

Pavia, A. (2012). *Elementary teachers' perceptions of the effects of high stakes testing* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3511213)

Punjab Examination Commission (PEC). (2016). *Report on grade 5 and grade 8 examination 2016.* Lahore: Punjab Examination Commission.

Pedulla, J. K., Abrams, L. J., Madaus, G. F., Russell, M. K., Ramous, M. A., & Miao, J. (2003). Perceived effects of state-mandated testing on teaching and learning: Findings from a national survey of teachers. Chestnut Hill, MA: National board on educational testing and public policy, Boston College.

Polesel, J., Rice, S., & Dulfer, D. (2014). The impact of high-stakes testing on curriculum and pedagogy: a teacher perspective from Australia, *Journal of Education Policy 29*(5), 640-657

Quezada-Hofflinger, A., & von Hippel, P. T. (2017). The Response to High Stakes Testing in Chile, 2005-2013: Legitimate and Illegitimate Ways to Raise Test Scores. Retrieved from http://www.ssrn.com/abstract=2906552

Rashid, A., Awan, A., Muzaffar, I., & Butt, S. (2011). *Improving education through large-scale testing? A study on primary and elementary level exam in Punjab*. Lahore: Society for Advancement of Education.

Renter, D. S., Scott, C., Kober, N., Chudowsky, N., Joftus, S. and Zabala, D. (2006). *From the capital to the classroom: year 4 of the No Child Left Behind Act*. Washington, D.C.: Centre on Education Policy.

Santiago, J. (2009). *New York City teachers' practices, beliefs and values about high stakes tests* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3353666)

Schulz, B. C. (2005). *Teachers' perspectives of how high stakes testing influences instructional decisions and professionalism.* PhD dissertation, University of Georgia.

Silberman, T. (2003). Tests put civics, science, behind. *Raleigh News &Observer*. Retrieved from http:/ /www.newsobserver. corn/ news/ ne/ story /2986154p-2735923c.html.

Stobart, G. & Eggen, T. (2012). High-stakes testing – value, fairness and consequences. *Assessment in Education: Principles, Policy & Practice, 19*(1), 1-6.

Sullivan, G. P. (2006). *The impact of high stakes testing on curriculum, teaching and learning* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3233232)

Valli, L., Croninger, R.G., Chambliss, M.J., Graeber, A.O., and Buese, D. (2008). *Test driven: High stakes accountability in elementary schools*. New York: Teacher college Columbia University.

Von der Embse, N. P., Schoemann, A. M., Kilgus, S. P., Wicoff, M., & Bowler, M. (2017). The influence of test-based accountability policies on teacher stress and instructional practices: a moderated mediation model. *Educational Psychology*, *37*(3), 312-331.

Von Zastrow, C. (2004). *Academic atrophy: The condition of the liberal arts in America's public schools*. Washington, DC: Council for Basic Education.

White, C. S., Sturtevant, E.G., & Dunlap, K.L. (2003). Pre-service and beginning teachers' perceptions of the influence of high stakes tests on their literacy-related instructional beliefs and decisions. *Reading Research and Instruction*, *42*(2), 39-62.

Yeh, S. S. (2005). Limiting the unintended consequences of high-stakes testing. *Education Policy Analysis Archives, 13*(43).