

## Effect of Examination on Instructional Practices of Elementary School Teachers: A Mixed Methods Study

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### Abstract

Examinations conducted by the Punjab Examination Commission (PEC) at grade VIII are important as intended and unintended consequences are associated with examination results influence the teaching and learning processes in schools. A mixed methods sequential explanatory study was conducted to investigate the effects of the examinations conducted by the PEC on instructional practices of teachers at the elementary level in seven districts of the Punjab. In the quantitative phase survey data was collected from 521 elementary school teachers teaching in seven districts of the Punjab selected through multistage random sampling. The quantitative results were used to select participants for the study's qualitative phase through a maximum variation strategy of purposive sampling. The quantitative phase indicated that female teachers perceived more effects of examinations on their instructional practices. Moreover, teachers belonging to age group 42-48 experienced most of the effects of examination on their instructional practices as compared to teachers belonging to other age groups. Similarly, teachers belonging to district 3 (Okara) experienced more effects of the examination on their instructional practices as compared to teachers serving in other districts. The qualitative data indicated that instruction was driven by the examination. Teacher-centred instructional strategies were dominant. Paper patterns defined the instruction and tests were extensively practiced in class. Teachers used strategies for helping students to attempt MCQs. One of the objectives of the PEC was to improve teaching and learning and in light of the present study it remains hard to achieve. The findings of the study pose several challenges for the examination board, curriculum and educational authorities in the Punjab

**Keywords:** consequences, accountability, instructional practices, practicing test, teacher-centered pedagogy

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### **Introduction**

Tests and examinations have always been received particular attention of all stakeholders at various levels of education. In the Punjab assessment of students' learning at Grade VIII is the responsibility of the Punjab Examination Commission (PEC). Every year more than one million examinees participate in this examination which is mandatory for those enrolled in public schools. Examinations conducted by the PEC in Grade VIII is high stakes in nature (Rashid, Awan, Muzaffar & Butt, 2011; Matters & Toon, 2012; Mahmood, 2013) because its results are used to reward or punish students, schools, principals and teachers. Tests can be labelled 'high-stakes' when the results have serious consequences for at least one key stakeholder (Stobart & Eggen, 2012). These consequences include grade promotion for students, holding principal and teachers accountable and adverse effects on schools' repute (Johnson, Johnson, Farenga, & Ness, 2008). The implementation of high-stakes examinations in many countries has a significant effect on instruction. Consequences associated with the examinations have changed not only what to teach but how to teach as well. In such scenarios when teachers are pressurized for exam results only and teaching to test becomes a norm, teachers focus more on test format and content than on actual learning outcomes. When this occurs, the question format can narrow the type of instructional strategy (Madaus & Clarke, 2001; Santiago, 2009). Examination drives instruction and thus acts as a pedagogic control over teachers' instructional practices (Au, 2009). Consequences stifle teachers' creativity, causing them to teach like robots, hindering them from being creative with their teaching and depriving them of using instructional strategies most suitable to content and students (Jones & Eagley, 2004; Pavia, 2012). Literature has identified several other effects of such examination on instructional practices of teachers and some of them are presented below.

### **Literature Review**

High stakes examinations change the type and amounts of instruction provided to children (White, Sturtevant & Dunlap, 2003). Teachers are aware that their pedagogical practices are changed because of high-stakes examinations and that they are teaching in ways contradictory to best instructional practices (Pedulla, Abrams, Madaus, Russell, Ramous, & Miao, 2003; Van Hover & Heinecke, 2005; Carr, 2012). Such examinations deprive teachers from the opportunity to decide which instructional practices to use or not (Santiago, 2009). Saunders (2017) noted that teachers modify instructions to match assessment

because of pressures associated with high-stakes examinations. Berliner (2011) observed that pressure of assessment caused an increase of teacher centered pedagogies. These were 18% in 1976 as compared to 42% in 2011. Several researchers stated that lectures became the dominant teacher-centered methodology used by teachers to meet the content and form demands of the tests (Au, 2007; Vogler, 2005; Alexander, 2005; Au, 2007; Mc Murrer, 2008; Guerra & Wubbena, 2017). Didactic instructional practices (Diamond, 2007; Smith, Valerie, & Fred, 2001; Pepe, 2007; Cathcart, 2008), drill and practice (Musoleno & White, 2010) and recitation are also identified as preferred strategies of teachers in high-stakes environments (Nicholas & Berliner, 2008; Marchant & Paulson, 2005; Blazer, 2011).

Another effect of high-stakes examinations is that teachers limit instructions not only to the actual test questions or to a particular item format (Mehrens, 1991) but the format of the class tests becomes similar to that of the high-stakes examination (Mathison, 1987; Rhone, 2006; Yeh, 2005; Volante, 2004; Vogler, 2005). Practicing test items in class similar to those found in tests is also reported by a number of researchers (Santiago, 2009; Hamilton, Stecher, & Klein, 2002; Alexander, 2005). Kilickaya (2016) indicated that teaching practices are greatly affected by style, content and pattern of the question papers in these examinations.

Such examinations are persuading teachers to allocate more time to subject items tested in the examinations as compared to those not tested. An increase in instructional time, 37% for Mathematics and 46% for English, is reported by 62% out of the 349 school districts which participated in a national survey conducted in the US (CEP, 2007; Mc Murrer, 2008). A number of other studies identified that more instructional time is allocated to tested subjects or content (Kossakoski, 2000; Pedulla *et al.*, 2003; Sullivan, 2006; Pepe, 2007; Franklin & Geron, 2007; Santiago, 2009; Pavia, 2012). The time added for the teaching of tested subjects has reduced available instructional time for the subjects not included in the examinations. McMurrer (2008) reported a 22-35% decrease in weekly allocated instructional time for subjects like social studies (Schulz, 2005; Franklin & Geron, 2007), science, physical education, art and music to accommodate an increase in time for English language, arts and mathematics. Teachers decrease time usually allocated to content either not included in examinations or to subjects which remained untested (Pedulla *et al.*, 2003; Abrams, 2004, Sullivan, 2006; Pepe, 2007; Santiago, 2009). In Australia a high proportion of school heads and teachers were of the view that National Assessment Plan-Literacy and Numeracy (NAPLAN) has taken more time for its

preparation and resulted in limited or no time for other classroom work (Athanasou, 2010).

Several studies confirmed that in most cases high stakes examinations changed instruction in such a way that it only focuses on teaching to test and related skills. Lane (2001) and Kerr (2002) investigated teachers and found that a majority of them felt pressured to change their instructional methods in order to teach to test. Consequences associated with high stakes examinations are forcing teachers to teach to test and provide test preparation (Jones & Eagley, 2004; Thomas, 2005; Bolah, 2013; Copp, 2016; Kilickaya, 2016, Von der Embse, Schoemann, Kilgus, Wicoff, & Bowler, 2017). The situation becomes worse when the examination dates approach. Most of the classroom time then is spent on test preparation activities and less time on other subjects or engaging lessons (Tuch, 1996; Klein, Hamilton, McCaffrey, & Stecher, 2000; Bersola, 2002; Pedulla *et al.*, 2003; Clarke, Shore, Rhoades, Abrams, Miao, 2003; Schulz, 2005; Buchanan, 2007; Brady, 2008; Cathcart, 2008; Bryant, 2010; Pavia, 2012; Saunders, 2017). Teachers devote either a “great deal” or “somewhat more” of class time to drilling on likely test questions (Kukucka, 2012; Marshall, 2003; Au, 2007; CEP, 2007; Franklin & Geron, 2007). Teachers also focus instruction on teaching test-taking skills (Kukucka, 2002; Alexander, 2005; Schulz, 2005; Franklin & Geron, 2007; Jones & Egle, 2007; Heywood, 2009). More time is spent for reviews (Tuch, 1996) and making it contiguous with test taking strategies (Mathison, 1987). It seems that schools are converted into training centers, training students instead of educating them to become life-long learners (Heywood, 2009). With this background in mind, it seemed desirable to conduct a study in the Punjab to investigate the effect of examinations on instructional practices of teachers in grade VIII.

### **Objective of the Study**

The study was designed to investigate effects of examinations on instructional practices of teachers at elementary level.

### **Research Question**

The study was guided by the following research question:  
What are the perceived effects of the examinations conducted by PEC on instructional practices of teachers in grade VIII?

This question was addressed by using both quantitative and qualitative data being the mixed-methods research.

### Methodology

This was a mixed methods study which used explanatory sequential design in which the qualitative part followed the quantitative part. Sequential explanatory design has two variants: follow-up explanation model and participant selection model. In this research the former method was used. This model is used when the researcher feels need of qualitative data to explain quantitative findings (Creswell & Plano Clark, 2007). A survey was used in the quantitative phase of the study to collect data from 521 elementary school teachers. In the qualitative phase, interviews were conducted with 28 teachers who also took part in the study's initial quantitative phase.

### Study Sample

Seven districts of the Punjab were randomly selected for the study. Multistage sampling technique was used to randomly select one tehsil from each district and then five male and female elementary schools. 521 teachers, male & female, from rural & urban settings, having different teaching experience 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

Two instruments were developed for both phases of the study. A survey comprised of 28 items to investigate the effect of examination on instruction (EEOI) was pilot-tested prior to data collection. The reliability of the tool was .771 and it was validated by a panel of experts. An interview protocol was composed of semi-structured questions related to the study's quantitative findings. The purpose of the qualitative part was to elaborate on the results of the quantitative phase.

### Data Analysis and Results

#### Quantitative Results

Table 1

*One-sample t-test comparing subscale EEOI score and test value*

Subscale	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>t</i>	<i>df</i>	Sig.2-tailed)	Test Value	Mean Diff
EEOI	521	101.06	11.92	32.64	520	.000*	84	17.06

\* $p < .05$ .

The one-sample *t*-test shows that the sample mean of 101.06 (*SD*=11.92) was significantly higher from 84,  $t(520) = 32.64$ ,  $p = .000$ . The sample mean is higher than the test value thus teachers did experience pressures of examinations conducted by the PEC to adapt instruction.

Table 2  
*Independent Sample t-test Comparing Scale on the Basis of Demographic Variables*

Demographic Variables		<i>M</i>	<i>SD</i>	<i>t</i>	<i>P</i>
Gender	Male (n=250)	99.10	11.7	-3.655	.000*
	Female (n=271)	102.87	11.8		
Subjects in Exam.	Tested (n=473)	101.19	11.8	.799	.425
	Untested (n=48)	99.75	12.9		
School Location	Rural (n=378)	101.14	11.3	.253	.800
	Urban (n=143)	100.85	13.2		
School Type	Public (n=453)	101.21	12.3	.721	.471
	Private (n=68)	100.09	9.0		

\* $p < .05$ .

An independent sample *t*-test was conducted to compare the means of groups of demographic variables on the EEOI scale. According to Table 2, the *t*-test was significant in case of gender: female teachers experienced more effect of examinations on instruction as compared to their male counterparts. In the case of remaining demographic variables, the *t*-test was not significant thus indicating that teachers perceived similar effects of examination on instructional practices irrespective of the subjects tested or untested in examination, school location and type.

Table 3  
ANOVA Comparison of EEOI Scale on the Basis of Years of Teaching in Class VIII, Total teaching experience, Age, and Geographical Location

Independent Variables		<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
Years of teaching in grade VIII	<5 years ( <i>n</i> =230)	100.10	12.3	2.32	.056
	6-10 years ( <i>n</i> =102)	101.49	9.6		
	11-15 years ( <i>n</i> =87)	103.60	11.30		
	16- 20 years ( <i>n</i> =69)	102.16	12.1		
	>20 years ( <i>n</i> =33)	97.42	15.4		
Total teaching experience	<5 years ( <i>n</i> =133)	102.45	9.4	2.224	.065
	6-10 years ( <i>n</i> =120)	98.81	13.64		
	11-15 years ( <i>n</i> =65)	100.97	7.7		
	16- 20 years ( <i>n</i> =86)	103.03	12.14		
	>20 years ( <i>n</i> =177)	100.39	13.8		
Age in Years	<25 years ( <i>n</i> =108)	100.37	12.6	2.471	.044*
	26-34 years ( <i>n</i> =141)	99.43	12.0		
	35-41 years ( <i>n</i> =97)	101.08	10.5		
	42-48 years ( <i>n</i> =117)	101.08	10.5		
	>49 years ( <i>n</i> =58)	100.55	13.9		
Geographic Location	District 1 ( <i>n</i> =58)	99.52	12.2	2.744	.012*
	District 2 ( <i>n</i> =94)	102.7	10.0		
	District 3 ( <i>n</i> =75)	104.1	9.3		
	District 4 ( <i>n</i> =82)	97.71	11.1		
	District 5 ( <i>n</i> =177)	99.27	16.4		
	District 6 ( <i>n</i> =78)	101.6	10.9		
	District 7 ( <i>n</i> =72)	101.5	12.6		

\* $p < .05$ .

ANOVA and subsequent Post-Hoc comparisons revealed that teachers aged 42 to 48 experienced more examination effects on their instructional practices as compared to teachers belonged to other age groups. Similarly, teachers belonging to district 3 (Okara) experienced more effects of examinations on their instructional practices as compared to teachers serving in other districts.

### Qualitative Results

The qualitative research question asked the participants to share influences of PEC examination on their instructional practices in Grade VIII. That examination drives instruction emerged as a major theme along with the following sub-themes.

**Teacher-centered Instruction**

Teachers were asked to share the methods they use in their classes to prepare students for the examination. More than half of the teachers, regardless of the school's geographic location and type, mentioned that they used the lecture method to prepare their students for the examination. Telling and explanation were among the strategies used. A teacher shared this: "I use the lecture method in classroom, involve my students, inform weak points and in this way the PEC examination has definitely changed my teaching methodology" (Teacher 8). Another teacher shared her strategies: "My focus remains on preparing students for attempting MCQs. I use helping books having prepared questions and ask students to learn these questions and their answers. When they memorize I assess them orally and sometimes in written. So I focus on repetition so that my students get twenty marks of MCQs so that they come near to passing marks. So I focus more on memorization" (Teacher 11).

**Instruction Defined by Paper Pattern**

The second major strategy as identified by six teachers was teaching their students as per the paper pattern by using old examination papers as examples. Most of the teachers consulted model papers, books and old examination papers to identify the examination pattern and then taught their students accordingly. A rural male public-school teacher mentioned the following: "Firstly I see the paper pattern; I consult old papers to see what is appearing on the examination. According to that pattern I teach and prepare my students" (Teacher 5). Another rural public-school teacher further elaborated it as follows: "I consult model papers written by different publishers. Old papers, paper pattern and model papers determine my teaching methods. I focus on current issues important from the examination point of view" (Teacher 22). A female private school teacher stated that she adjusts her instructions according to what appears in the examination. Another female teacher highlighted the importance of paper pattern and old examination papers by commenting that the "paper pattern decides what went on in your class" (Teacher 12).

**Test Attempting Strategies: Objective and Subjective**

Almost all teachers, irrespective of school location and type, shared that they taught different methods in their classes to solve multiple choice questions. These methods range from memorization to guessing correct answer by focusing on logical association of alternatives with stem. Some teachers, regardless of school location and type, mentioned that they ask students to read, underline or highlight important points from where MCQs can come: "There is no fixed method in it,

teach them thoroughly, underline important things from where MCQs can come” (Teacher 9). Teachers from rural public schools stated that they teach students how to select the correct answer in MCQs. One of them said: “We teach them how to tick MCQs, one student answers all MCQs correctly and other who does not know answers of all just gets full marks only because of guessing” (Teacher 6). Some of the teachers, irrespective of school location and type, mentioned that they practice single MCQ in different ways i.e. by changing its stem and using different alternatives (Teacher 7). Interviewees, irrespective of school location and type, shared that they ask students to write a definition, an example of the concept and an explanation keeping in view marks assigned to such questions. They also focus on memorization of definitions, examples and explanations (Teacher 13, 14, 16, 20). A teacher shared this method: “Teaching and asking for practice and memorization” (Teacher 16). A few teachers shared their views about preparations for the subjective part which was contrary to what others were doing. According to them there is no need to teach the subjective part as attempting the objective part is enough to pass in paper (Teacher 2, 21, 26). One teacher commented: “If we don’t touch the subjective part in PEC examination even then students can easily pass the examination by attempting MCQs and short answers”

#### **Practicing Tests**

When asked about the practicing of test items in their classes all of the teachers, irrespective of school location and type, responded positively. One teacher shared his experiences: “I conduct too many tests so that students become use to of it and upon receiving exam paper say that oh I have already done like it” (Teacher 2). Another female teacher from a public school shared her experiences of class teaching: “I spent more time on teaching students how to attempt paper. I give them test similar to those of the PEC examination so that they remain confident during examination” (Teacher 11). Similarly, many teachers, independent of their school’s geographical location and type, noted that most of their class time was consumed with student repetition and memorization along with practicing of tests. Test preparation was identified as one activity taking most of their instructional time.

#### **Qualitative Findings**

Most teachers indicated that they used the lecture method, memorization and practice for preparing their students for the examination. Teachers also decide about their teaching strategy after seeing the paper pattern, old examination papers and model papers. Almost all teachers were of the view that they prepared their students to attempt the objective

type part of the examination by using the following strategies: underlining / highlighting text, teaching how to guess, practicing, screening and elimination based on guessing, clarifying concepts, and even using their common sense. The teachers have also identified extensive use of practice tests in their classes for preparing students for the examination.

### **Discussion**

‘Examination drives instruction’ was the theme which emerged from the current study. This theme is in congruence with findings of various studies undertaken by a number of researchers on effects on instruction. According to Au (2009) examination drives instruction and thus acts as a pedagogic control mechanism over teachers’ practices. Davis (2011) concluded his study with the finding that teachers’ instructional practices are affected by a need to prepare students for high stakes examination. Bolah (2013) further added that instructional quality is declined as all the teachers are motivated by the need to maintain scores on high stakes tests. Teacher-centered instruction was a sub-theme which emerged in this study as many of the interviewees used instructional practices clustered around this sub-theme. Similar findings are evident in related literature. Lecture is dominant among teacher-centred methodologies used by teachers to meet the content and form demands of the tests (Au, 2007; Vogler, 2005; Alexander, 2005; Au, 2007). Didactic instructional practices (Diamond, 2007; Smith, Valerie, & Fred, 2001; Pepe, 2007; Cathcart, 2008), lecture, drill and practice (Musoleno & White, 2010) and recitation are also identified as preferred strategies of teachers in high-stakes environment (Nicholas & Berliner, 2008; Marchant & Paulson, 2005; Blazer, 2011).

Instruction defined by paper pattern was another sub-theme which emerged in this study. Teachers were used to consult the paper pattern available in old examination papers, model papers and other resources, to then decide not only what to teach but also how to teach. Thus paper pattern emerged as a source to identify instructional practice. This was not discussed in relevant literature but some congruence with findings of other studies can be established. According to these studies the choice of instructional delivery and material is completely dependent on test preparation. Therefore, teachers do not use current events, student projects (Brady, 2008) creative projects (Blazer, 2011) and cooperative work (Blazer, 2011; Brady, 2008; Pavia, 2012) because this is not tested and this delivery format is not used (Vogler, 2005). Critical thinking, collaboration, and differentiation of instruction and curriculum (Pavia, 2012) are not being used in the classroom when teaching students to be proficient in high-stakes tests (Cathcart, 2008). The literature consulted during this

study was so far not very clear about consulting the paper pattern to identify instructional strategies.

'Test attempting strategies' emerged as another sub-theme in this research. Teachers replaced instructional practices with these strategies. This finding is consistent with similar findings in different studies. High-stakes examinations limit focus of instructional practices to test preparation activities thus narrowing instruction (Santiago, 2009). The situation worsens when the examination approaches. Most of the classroom time is spent on test preparation activities and less time to other subjects or lessons (Tuch, 1996; Klein, Hamilton, McCaffrey, & Stecher, 2000; Bersola, 2002; Pedulla, *et al.*, 2003; Clarke et al., 2003; Schulz, 2005; Buchanan, 2007; Brady, 2008; Cathcart, 2008; Bryant, 2010; Pavia, 2012). In this study teachers focused more on preparing students for attempting MCQs as compared to subjective questions. This is contrary to findings of earlier studies. 'Practice test' emerged as another sub-theme in this study. Teachers have devoted most of the class-time on practicing tests for the preparation of the examination. This sub-theme was in congruence with findings of several studies. Teachers conduct practicing tests with items similar to those found in actual tests (Santiago, 2009; Hamilton, Stecher, & Klein, 2002; Alexander, 2005).

### **Conclusion**

This study not only reinforced findings of earlier studies about effects of high-stakes examination on instructional practices conducted in different contexts but also came up with new findings, namely that the paper pattern emerged as a source to identify instructional practices and that there is often exclusive focus on preparation of multiple-choice questions to help students pass the examination. The examination conducted by the PEC for grade VIII does thus not only narrow instruction but also stifle creativity among students which would not happen if a broad range of instructional strategies was to be used in the classroom. There is a need to minimize consequences associated with results of examinations so that teachers use a spectrum of instructional strategies to improve learning of the students. This study welcomes further investigation to identify ways to minimize unintended consequences of the examination in order to get intended benefits from such reforms.

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**Citation of this Article:**

Masood, S., & Hameed, A. (2019). Effect of examination on instructional practices of elementary school teachers: A mixed methods study. *Pakistan Journal of Education, 36*(2), 23-41.  
DOI: 10.30971/pje.v36i2.353.g181  
To link this article: <http://dx.doi.org/10.30971/pje.v36i2.353>