INFLUENCE OF CLASS SIZE ON STUDENTS' AND TEACHERS' MOTIVATION DURING INSTRUCTION

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ARTICLE INFO	ABSTRACT
Keywords: Class Size, Students' Initiation, Stimulation, & Teachers' Feedback	This descriptive research investigated influence of class size on the students' and teachers' motivation during the instruction. The study objectives focused the effects of class size on the students' initiation in completing instructional tasks, stimulating them in expressing the ideas freely and in provision of positive feedback to them during the instruction. Three null hypotheses were formulated to observe the significance differences between observed and expected proportion about target objectives. For this purpose, the data were collected from 4th grade students and teachers of 51 government primary schools through observation sheets and questionnaire respectively. Collected data were analysed through mean and chi-square. The major findings indicated that small class size assisted teachers as well as students to exhibit higher level of the motivation and interest during instruction. However, no significant differences noted between the observed and expected proportion about level of initiation, completion of task, rate of stimulation and provision of feedback among students belonging to different level of class size.
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INTRODUCTION

It is generally agreed that formal schooling of the child actually starts in the class room. There are many factors affecting the learning and performance of students in classroom. Among these, class size is considered to be a significant element which affects the learning of the students especially at elementary level (Harfitt, & Tsui, 2015). According to Lewit and Reichardt (2000), the class size means, the number of students who get education in a particular subject from the teacher, for an academic year. But due to the manifold aspects of the classroom it is difficult to depend on single definition of class size. The nature of class rooms is changing continuously in respect of number of students, it may not remain fix as the students may go and come regularly (Reichardt, 2000).

Moreover, due to diverse nature of subjects, different subjects require diverse class sizes. Achilles (2003) described an average class size as, "Average class-size is the sum of all students regularly enrolled in each teacher's class divided by the actual number of regular teachers in those specific classes. If the four second grade rooms have 14, 16, 18, 18 number of students respectively (n=64) the average grade two-class size is 16" (p. 4). If we take this into consideration, we may say that the average class size i.e., 16 in the stated example might be thought of as a normal class size in that particular context; and classes having less and a greater number of students might be termed as small and large classes respectively. Hence, above practice might serve as a reasonable strategy for determining the normal, small and large class sizes in different academic contexts and social settings.

According to Blatchford and Russell (2020) and Parks, Zafonte and Palenque (2017), there is a close relationship between students learning and classroom size. In small class room, students are paid more attention as compared to large class size; as a result, it enhances student's participation level which ultimately affects learning and behaviour of students. Similarly, classes of small sizes have also significant effects on motivation level and spirit of teachers, which ultimately rise the chance of development of an encouraging environment, which may enable students to participate and express themselves in classroom learning activities. Classes of a smaller number of students facilitate teachers to develop more interaction with the pupils which results better communication with students and allow the teacher to better supervise the behaviour and the performance of the students. Small classes also reduce the problems of the management, because every activity of the classroom can be managed easily and teacher may easily interact with their students. Conversely students in the large classes do not have equal opportunity to access most of the activities in the classroom and have less chances of the interactions with their teacher as well their colleagues. Actually, classes of larger number of students affect focus of teacher on student's individual needs and also affect their meaningful instructional interaction of (Blatchford & Russell, 2020; Mathis, 2017).

The effect of class size on students and teachers may be seen from various perspectives, as in case of teacher, his/her teaching strategy, individual attention, organization of the classroom activities, use of audio-visual aids and other management and administration are all may be influenced by class size. Likewise, the active involvement of students, motivational level and interaction among class fellows are all influenced by class size. However, the study has targeted class size in relation to motivation only which is missed in many in existing research. Taking this into consideration the study intended to investigate the effects of class size on students' and teachers' motivational level.

Research Objectives
Each and every research study is always based upon the certain objectives which are aimed to be achieved by following the specific procedures. In this connection, this study has also some leading objectives:
1. To find out the influence of the class size on the students' initiation and completing the task.
2. To determine the influence of class size on stimulating students to express the ideas freely.
3. To investigate effect of class size on offering helpful feedback to students during instruction.

Hypotheses of Study
The following null hypotheses were extracted from literature and thus tested in order to validate the main objectives of this research study. The hypotheses are basically the assumptions about potential relationships among research phenomenon which are aimed to examine for particular purpose.

H01: There is no significant differences between observed and expected proportion about level of initiation and completing the task during the instruction among students belonging to different level of class size.

H02: There is no significant differences between observed and expected proportion about students' rate of stimulation to express the ideas freely during the instruction belonging to different level of class size.

H03: There is no significant differences between observed and expected proportion about the teachers' level of providing positive feedback to students during instruction belonging to different level of class size.

LITERATURE REVIEW

Different factors related with drops in class size like increase in average grade point, development of motivation level and student's ability (Kokkelenberg, Dillon & Christy, 2008). Motivation is the important factors to be considered for each teaching learning activity and according to the Oxford English Dictionary, motivation is name of "a reason or reasons for acting or behaving in particular way" and "a desire or willingness to do something; enthusiasm." It is one of important factors in the field of education. Therefore, the educational experts have shown much interest in motivation development in learning process. By nature, motivation in process of learning is much different from the motivation in another field. According to Margolis and McCabe (2006) motivation level of the students in the learning process greatly affects their achievements in the field of education. Motivation has two types, intrinsic i.e., the drives for doing something from within the body of the students, and extrinsic i.e., thirst of doing something existed instigated from outside environment (Locke & Schattke, 2018). Zaccone and Pedrini, (2019) states that students motivated intrinsically show good academic performance and achievements as compare to those motivated extrinsically through external factors like ensuring provision of good grades, and other attractive prizes. Thus, let us examine and explore the effects of class size on motivation through perspectives of different researchers.

Motivation is considered one of the important factors which may affect the learning of students (Halawah, 2011). The understanding of individual needs is one of pre-requisites for arousing the motivation of the students towards learning. So, in case of large class it is difficult for the teacher to understand the individual needs of the students and hence, he may not be able to motivate the students properly for learning. In case of small-sized classes, teachers are able to easily know the needs of students and motivate them easily (Loukomies, Pnevmatikos, Lavonen, Spyrtou, Byman, Kariotoglou & Juuti, 2013). In small class teacher may use different techniques like classroom discussion, question answering and peer tutoring (Ullah, Tabassum & Kaleem, 2018). Blatchford and Russell (2020) argued that the students in bulky classes pay less attention to the instructional contents and usually persist submissiveness in classroom activities. Further, it becomes difficult for teacher to pay individual attention and involve each and every student in the teaching learning process. This generates a lack of motivation which further affects the learning of students. In this connection Liu, Hau, Liu, Wu, Wang and Zheng (2020) claim that teaching learning experiences in unmotivated environment is much diverse as linked to education in motivated environment. Because in motivated instructional setting, morale and enthusiasm of teacher is high as compare to tense instructional situation where the energies of teacher go down and result in an ineffective teaching.

Likewise, Blatchford and Russell (2020) reported that the individual differences can easily be addressed in small classes which further leads to the selection of the suitable teaching strategies which confirms the arousal of motivation of the students. So, he confirms that the class size has a direct relation with selection of the motivational strategies. Having said that, motivation level of a

learners depends on his teacher's behavior while the behavior of the teacher is immensely affected by class size. In this regard Chang and Taxer (2020) assumes that disturbance created by student distort the overall learning environment in a class. It is because the student misbehaviour at once attracts the teacher's attention which creates a pause in the flow of the teaching learning process. With the aim of proving this theory Lazear (2003) put forwarded a model in which p represented the probability that the student does not disturb the learning environment in the class. According to Lazear (2003), "It is expected that p would be relatively high because even having p =.98 in a class of 25 students results in disruption 40 percent of the time (1-9825=.40)". He further argued that the behaviour of the students is inversely proportional to the number of teachers, n. It means that the worse behaviour of students the greater number of teachers, n, required. This connection between n and p reveals the logic behind the comparatively large and small classes at the college and the elementary school level respectively. Hence, Lazear (2003) says, "If p were .97, learning would occur 40 percent of the time in a class of 30 but only 2.5 percent of the time in a class of the 120".

Moreover, Blatchford and Russell (2020) confirm that the environmental situation in the small classrooms favors productive outcomes of instruction in good ratio and behavior of teacher turns into more caring when he/she teaches in such small classrooms. Moreover, the student-teacher collaboration proceeds into purposeful and responsive direction due to fulfilment of the individual needs of the students. The knowledge gained about the individual needs of the students helps the teacher in managing the classroom activities and understanding the nature and intellectual level of the students. While in large classes the same targets may not be achieved properly. So, in small classes the teacher-student association is high and very active as compared to bulky sized classes. Students in small classes perform active participation in classroom activities and respond with good feedback to the instructional experiences which further affect the behavioral attitude of the teacher. Parks et al. (2017) and Blatchford and Russell (2020) noted that students in bulky classes are inattentive and less participative in the classroom activities and ignore classroom discussion both with teacher and class fellows. Furthermore, the low concentration level is recorded in large classes in contrast to small classes where more participation, involvement and discussion occur and hence the concentration level is also high among the students. It means that the class size also affects students' concentration level and no one could think of motivation when there is no concentration.

Further the study is based on the theoretical model proposed by Preece (1987) who affirms that a teacher adopts his instructional styles according to the nature of class he faces as well as to the level and number of the students he is delivering instruction to them. Like if the students are good looking obedient and cooperative it enhances the level of motivation of the teacher. On the other hand, crowd and noise classroom adversely affect the instructional abilities of teachers (Dockrell & Shield, 2006). A number of other studies have been conducted in the different contexts in which the ratio between the students and the teacher has often been seen as an element that impacts the instruction. However, it is unclear whether improving this ratio is an important factor for the government to consider. Taking this into account, the current study is an attempt to determine whether bringing improvement in the students-teacher ratio positively influences the classroom instruction through the lens of motivation. It should also be noted that each study has targeted a particular culture and a specific context. That is why their generalizations may not suit the context of Pakistan. Hence, this study focused exclusively the context of Pakistan especially the Khyber Pakhtunkhwa.

RESEARCH METHODOLOGY
Since the aim of the study was to accurately describe the problem being investigated by focusing related perspectives through questions like what and how rather than why; therefore, descriptive

research design was followed. In this connection, observation and questionnaires were used for the data collection which are typical and most recommended tools used in the descriptive research studies.

Sample of Study

The population and sample are the important components of the research studies to conduct the study. Fifty-one (51) government primary schools were selected from which 51 teachers (one from each school) were further selected as sample of study. The sampled teachers were then observed during teaching to 4th grade students through participant observation. In this connection, method of purposive sampling was adopted for selection of sample of study in order to select the suitable sample.

Data Collection Tools

Participant observations and questionnaire were used for data collection. Thus, 4th grade students were observed being taught by their teachers. The observation was conducted by the members of the observation team trained by the researcher during pilot study. Similarly, questionnaires were used to collect the data from the respondents those who are target teachers in this study and who taught the primary students. Therefore, the research team explained the questionnaire item where needed.

Data Analysis

Data analysis is an important phase in the research process as it helps in reaching the conclusion thereby finding the answers of research questions. In this connection, during analysis, collected data was described by calculating mean and average mean scores, and inferential statistics i.e., Chi-Square was further applied which are recommended as best tools by using the SPSS version 20, for analysis to analyze the effects of class size and confirm hypotheses of study (Mills & Gay, 2019).

Categorization

The numbers of class rooms were categorized into three categories based on the number of the students. In first Category all those classes were included whose number of students ranged from 8 to 24 students and was named Category-A (Small Class Size), in second category those classes were added whose number ranged from 25 to 40 students and this category was named Category-B (Medium Class Size) while in the third category all those class strengths were included whose number ranged from 41 to 80 and it was named category-C (Large Class Size). In order to conduct the study systematically, the data collected from each category were then tabulated, analysed and compared.

RESULTS OF STUDY

The results of this study have been offered in this section through statistical outcomes about the research questions. All the relevant data collected from the sample participants were analysed and tabulated in the following tables to extract the desired information which thus help in reaching the conclusion of the study from where the judgments have been produces to make the decisions about study.

H_{01}: There is no significant differences between observed and expected proportion about level of initiation and completing a task during instruction among students belonging to different level of class size.

Table 1

Observation and Questionnaire Data about Initiation and Completing Task During Instruction

Data	SN	ASPECTS	SCMS	MCMS	LCMS	Chi-S x^2	P-value
Observation	1	Setting Textbook, Promptly	4.47	2.94	2.52		0.9023
Data	2	Confidently in Initiation	4.88	3.17	3.00	0.2056	
		Average Mean	4.67	3.05	2.76		
Questionnaire	1	Setting Textbook, Promptly	4.52	3.41	3.17		0.9023
Data	2	Confidently in Initiation	3.82	3.70	2.76	0.2056	
		Average Mean	4.17	3.55	2.96		

SCMS: Small Class Mean Scores, MCMS: Medium Class Mean Scores & LCMS: Large Class Mean Scores
df=2   Critical value: 5.99 at 0.05

The tables describe that the average mean scores (Observation Data = 4.67 & Questionnaire Data = 4.17) of the classes having smaller number of students are higher than means scores of medium and large class sizes with respect to all items which indicate that teachers of small classes were at ease to get their students do well nearly in all aspects represented by the items. This shows their confidence in enabling students carry out instructional activity effectively. However, the results for the large classes indicate the opposite phenomenon. Here, the students exhibited low level of confidence in executing instructional tasks. On the other hand, the data for the medium class are not significantly lower than that of the small class sized classes. There, the teachers tried to apply proper instructional strategies but not consistently. Further the lower calculated Chi-Square-value is an indication of the acceptance of null hypothesis So, interpreting the statistical values against the first hypothesis that the lesser calculated values x^2=0.2056 in both tables than critical value 5.99 falls in acceptance region, hence, the null hypothesis may be sustained and thus it can be concluded that there is no significant differences between observed and expected proportion about level of initiation and completing the task during instruction among students belonging to different level of class size. Furthermore, the enhanced P-value, 0.9042 also supports the null hypothesis.

H⁰²: There is no significant differences amid observed and expected proportion about students' rate of stimulation to express ideas freely during instruction belonging to different level of class size.

Table 2

Observation about Students' Rate of Stimulation to Express Ideas Freely During Instruction

Data	SN	ASPECTS	SCMS	MCMS	LCMS	Chi-S x^2	P-value
Observation	3	Expression of Ideas	4.47	2.94	2.52	0.6066	0.7383
Data	4	Positive Expressions	4.88	3.17	3.00		
		Average Mean	4.67	3.05	2.76		
Questionnaire	3	Expression of Ideas	4.47	2.94	2.52	0.6066	0.9042
Data	4	Positive Expressions	4.88	3.17	3.00		
		Average Mean	4.67	3.05	2.76		

SCMS: Small Class Mean Scores, MCMS: Medium Class Mean Scores & LCMS: Large Class Mean Scores
df=2   Critical value: 5.99 at 0.05

The higher average mean scores (Observation Data = 4.67 & Questionnaire Data = 4.67) indicate that teachers find it easy to ensure positive reinforcement and expression of ideas in classes

having smaller number of students. The average mean scores for the medium classes show that as there is no significant difference between the mean scores of medium and large classes, the teachers while teaching in such classes used positive reinforcement only at moderate level. Moreover, the lesser calculated values x^2=0.6066 in both tables than critical value 5.99 fall in the acceptance region, hence, the null hypothesis may be sustained and thus the observed values are accepted in favour of null hypothesis that "There is no significant differences between observed and expected proportion about students' rate of stimulation to express ideas freely during instruction belonging to different level of class size.". Furthermore, the elevated P-value, 0.9042 also supports the null hypothesis.

H$_{03}$: There is no significant differences amid observed and expected proportion about teachers' level of providing positive feedback to students during instruction belonging to different level of class size.

Table 3
Observation about Teachers' Level of Providing Positive Feedback to Student During Instruction

Data	SN	ASPECTS	SCMS	MCMS	LCMS	Chi-S x^2	P-value
Observation	5	Effective Feedback	3.76	3.41	2.76	0.2013	0.9042
Data	6	Stimul: Students to Answer	3.64	2.35	2.52		
		Average Mean	3.7	2.88	2.64		
Questionnaire	5	Effective Feedback	3.76	3.41	2.76	0.2013	0.9042
Data	6	Stimul: Students to Answer	3.64	2.35	2.52		
		Average Mean	3.7	2.88	2.64		

SCMS: Small Class Mean Scores, MCMS: Medium Class Mean Scores & LCMS: Large Class Mean Scores
df=2   Critical value: 5.99   at 0.05

The higher average mean scores 3.67 in both Observation and Questionnaire Data indicate that effective feedback and to stimulates students for question is effective in small classes as compare to medium and large classes however there is no significant difference in the average mean scores of the three types of class sizes was favoured by chi-Square values and hence the null hypothesis was accepted that "There is no significant differences between observed and expected proportion about teachers' level of providing positive feedback to students during instruction belonging to different level of the class size." Furthermore, the enhanced P-value, 0.9042 also supports the null hypothesis.

DISCUSSIONS
This study was aimed to explore the influence of the class size on students' and teachers' motivation during instruction. Three null hypotheses were developed to probe each objective. For this drive, data were collected from 4th grade students in 51 class rooms and 51 primary school teachers through observation sheets and questionnaires respectively. The obtained data were analysed by applying descriptive and inferential statistics and the concluded results are discussed below in light of empirical studies as conducted previously in different as well as similar context with diverse outcomes.

H$_{01}$: Based on both statistical analysis of data obtained from observation and questionnaire the null hypothesis was stood approved that "There is no significant differences between observed and expected proportion about level of initiation and completing a task during instruction among students belonging to different level of class size". The same findings also fell in favor of finding

explored by Shi, (2019) that no significant gap was found in performance at the university level between the small class and large class. The results are similar to some extent to previous studies. Further Blatchford and Russell, (2020); and Muya and Kabunga, (2016), advocated in favor of small class size that enables students to complete their task on time with the satisfaction. Zyngier (2014) further admits that students of the small class size also ensure good results in academic performance.

H_{02}: The second null hypothesis that "There is no significant differences between observed and expected proportion about students' rate of stimulation to express ideas freely during instruction belonging to different level of class size." was also supported by both the statistical interpretations obtained from observational and questionnaire data. Also, Muya and Kabunga, (2016) explored that class size as a single factor is ineffective unless it has been accompanied by other factor like addition of the quality teacher to a small size class may results good outcome. Further, Williams (2011) commented in favor of mean values that small class size is an effective factor in motivation development which are similar to some extent with present situation. Again, Zyngier (2014) believed that smaller class sizes in early years of school can improve confidence level and achievement of students.

H_{03}: The statistical analysis from both the tables led to conclusion to accept third null hypothesis that, "There is no significant differences amid observed and expected proportion about teachers' level of providing positive feedback to students during instruction belonging to different level of class size." In contrary Lei, (2017) found that class size is one of factors to rate and boost teacher, thus, it should be considered for rating performance of teacher. Blatchford and Russell, (2020) noted significant variation with respect to motivation in comparing class size in favor of small class size.

CONCLUSIONS

Considering the findings of the observation sheets and teachers' questionnaires analysed through both descriptive and inferential statistics we may conclude that class size is not very effective in higher level but in the low grade level notable differences observed in favour of small class size in performing classroom tasks. Further motivation (whether of teacher or student) and class size are interrelated and it is class size of 8 to 24 that allows teachers to get their students do homework in time, and motivate students to take active part in the instructional and academic activities. No significant effect noted on rate of stimulation to express ideas freely during instruction by the class size however the teachers were observed to do positive activities because they were at ease and comfort which were provided by the small class size. It also proves that small class size facilitated teachers in establishing healthy learning environment, ensuring student active positive motivation in their teaching however no significant effect recorded due to difference in class size. This leads to better, improved and effective teaching learning process. It was suggested that the authorities may develop a plan to set standard class size to 24 at least at the elementary stage, enhance the motivation level of primary school teachers through positive measures and train them to manage and thus teach effectively in large class sizes so that the desired learning outcomes are properly attained

Recommendations

Since, teachers were found to have higher level of motivation for teaching in classes having 8 to 24 students; it is therefore suggested that steps to be taken to ensure the composition of classes in such a way that the said students-teacher ratio is achieved in schools. Similarly, the teachers didn't exhibit positive reinforcement in large class sizes. As problem of large class sizes and overcrowded classrooms is a general problem in our schools; it is therefore suggested that teachers should be

trained to equip them with such skills which enable them teach in overcrowded the classrooms successfully and with motivation. One of the causes for the overcrowded classrooms and lack of the facilities for determining the availability of small class sizes is that our country spends very low budget in the education sector which is the main reason for the creation of the problem the research has focused so far and shortage of teachers. Therefore, the government is suggested to increase the funds allocated for the education to at least 5% in the first phase. This may certainly decrease, the cost of rationalising teacher-students ratio as well as constructing new class rooms and recruiting new trained teachers and it may thus be a positive step towards redressing target problem.

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