



JEAR: the CERD Educational Journal

ISSN 2957-8051(Online) |ISSN2413-5992(Print)
1(7) 2023

Journal homepage: Journal.pce.edu.bt



Exploring the Effectiveness of Various Strategies to Deal with Overcrowded Classrooms (Class IV & V): An Action Research Case Study at Phuentsholing Primary School

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<http://doi.org/10.17102/jear.7.2.188> | Accepted September 2023 | Published November 2023

Abstract

Phuentsholing Primary School is in one of the biggest commercial hubs of Bhutan with an increasing number of students enrolling every year. The school has 1598 students this year. On this account, most of the classes are overcrowded with a maximum of 39 students in a class. The classrooms are faced with numerous challenges due to overcrowding and the required elements of classrooms are not met resulting in the drawback of learning progress. So, this action research was designed to investigate the effectiveness of various strategies implemented in the two highest overcrowded classrooms (Class IV E & V F) of Phuentsholing Primary School (N = 78). Therefore, using a mixed method approach, baseline and post-intervention data were collected using various tools such as class tests, interviews, surveys, teaching observation, and documentation. Based on the findings of the baseline data, we implemented specific intervention strategies such as Team Teaching, Seat Rotation, and Peer Tutoring within the time duration of three weeks. On completion of the intervention period, post-intervention data were collected and analyzed using thematic coding for qualitative data and descriptive statistics using SPSS software for quantitative data. A comparative analysis of the baseline and post-intervention data were conducted to see if there has been any improvement in the students' learning and performance. The study conclusively revealed that the intervention underscored the efficacy of diverse strategies in an overcrowded classroom.

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Keywords: Overcrowded Classroom, Seat Rotation, Team Teaching, Peer Tutoring, Teaching-Learning

Introduction

Phuentsholing Primary School was established in 1962 owing to the needs of the people living in the area. Phuentsholing, Bhutan's commercial center, has experienced rapid growth, leading to an increased demand for education. The school serves students from diverse backgrounds, including the business community, armed forces personnel, and children from neighbouring villages, resulting in a significant rise in the student population. As an interim measure, the school implemented a shift system in 2002, which continued until July 2013 when the new school at Damdara (Sonamgang MSS) was completed. However, the pressure of student enrollment could not be solved, and the issue of overcrowding persists. Recently, as per the directives from the Ministry of Education (MoE, 2022), Phuentsholing Thromde Management had carried out the structural changes of schools into two levels each (Primary and Secondary Schools). This further increased the number of students in the school and especially in Phuentsholing Primary being in the vicinity of a reachable area.

Persistent overcrowding resulted in cramped classrooms and a less-than-ideal learning atmosphere. The quality of the school environment significantly influences students' learning experiences, encompassing both the physical and mental aspects. An effective learning environment involves not only the structural aspects, such as space and equipment, but also the overall atmosphere that nurtures both the physical and mental well-being of students. Hutchinson (2003, as cited in Sylvestre, 2020) considers the following parameters for an operative educational setting: classroom, room temperature, seating comfort, background noise, visual distractions, tutorials, seminars, motivation, and conferences as environmental factors that can affect learners' concentration. According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2018), the teacher-student ratio of a school is determined by the number of students divided by the number of teachers, and it is generally considered to have fewer students per teacher. However, in Phuentsholing Primary School, with 1584 students and 67 teachers, the ratio of teacher to student must be 1:23.641, but due to the differences in number of students in each class, there are 37 to 39 students per teacher in key stage II (classes IV to VI).

As the teacher-to-student ratio has a great difference, the classes are overcrowded. Hachem (2019) stated that overcrowding affects individualized focus time for each student, increasing several discipline issues, struggling students remain behind and personal connections between teacher and students remain narrow. Hence, the scenario of Phuentsholing Primary School ascertains the prevalence of overcrowding, a group of teachers decided to assess the situation, investigate its implications, and explore the potential corrective measures to enhance the performance of students. Subsequently, the study intends to help the students cope with the condition of overcrowding while also assisting themselves and their peers in acquiring knowledge and focusing on learning achievement by using a variety of methods. On this account, this action research implemented various strategies to enhance the performance of the students in an overcrowded classroom. The strategies include Team Teaching, Seat Rotation, and Peer Tutoring.

Objective of the Study

1. Identify specific strategies preferred by the students and teachers in an overcrowded classroom.
2. Examine the effectiveness of the strategies in enhancing the performance of the students in an overcrowded classroom.

Research Question

1. What are some of the strategies preferred by the students and teachers in an overcrowded classroom?
2. What are the effective strategies for enhancing the performance of the students in an overcrowded classroom?

Literature Review

According to Osai et al. (2021), overcrowded classrooms deal with the size of the classroom, where the enrollment of the students is more than the school is designed to accommodate. When classrooms lack space, it curtails active student participation and personalized teaching, increasing teacher workloads. Students' needs for engagement, safety, and individualized support are compromised, impacting learning and socialization. (Onwu & Stoffels, 2005).

There are many negative consequences associated with large or overcrowded classrooms. As stated by Levin and Nolan (2000), some of the discipline problems faced by teachers in overcrowded classrooms are bullying, inattention, throwing objects, teasing and the use of vulgar language. According to Norris (2003) teachers in overcrowded classrooms use class time to settle disputes and soothe feelings in the classroom, which takes away time from learning and impacts the lesson. Teachers, therefore, lose their effectiveness and are not as dynamic due to such teaching conditions.

There are various ways associated with overcrowded classrooms, such as teacher support groups (Crute, 2004), interactive learning (Marais, 2016) and collaborative learning where students work in teams to accomplish common goals (Johnson & Christensen, 2010). Likewise, there are some more important ways, which this study also intends to find out and they are through team teaching, peer teaching, and seat rotation (Benbow et al., 2007; Torres & Hudousková, 2016). Anderson and Speck (1998) argue that from team teaching, students gain multiple perspectives because two teachers offer different viewpoints, demonstrating disparate viewpoints are valuable, and executing teachers as models of mutual respect. The interactive nature of team teaching is a potential source of intellectual stimulation and cognitive development for learners as well as faculty (Baeten & Simons, 2014). In addition, with two knowledgeable teachers, feedback can be doubled, and alternative points of view can be discussed (Anderson, 1991).

Literature on peer tutoring notes various benefits to students of varying situations and it has been proven to increase social motivation³, engagement, and classroom achievement (Miller, 2005). It also helps teachers accommodate a classroom of diverse learners to improve academic achievement across ability levels and content areas (Cohen et al., 2011). Nevertheless, many researchers claim seating arrangements to be a cause for the decline of

student performance as attention span, concentration, comprehension, and the retaining of information can be influenced by where the students choose to sit (D'Souza, 2018). The students who sit near the board usually perform better academically with active participation, fewer absences, and can pay more attention to the taught subjects. Empirical findings show that students who choose frontal or central seats are more creative, assertive, aggressive, and competitive. They are also more attentive and externally oriented than students who choose side or back seats (Pederson, 1994).

Methodology

This action research adopted a mixed-method approach in order to examine and address the challenges associated with crowded classrooms and their impact on student performance. A mixed-method approach to inquiry combines both qualitative and quantitative methods in line to enhance the overall strength of the study than either qualitative or quantitative study (Cresswell & Clark, 2007). Hence, this method provided a detailed account of how to collect data, data analysis processes, sampling, and mechanisms to ensure the quality of the data in this study. As the nature of this research required a study of overcrowded classrooms, the participants for population sampling were identified as one section from grade IV and one from V which had the highest student population. Our participants included a total of seventy-eight students with thirty-nine students in each class, and eleven subject teachers altogether. The students are referred to pseudonym ST401, ST402, ST501, ST502... ST415 (ST: student; first numeral (4 or 5): class level; second numeral (01): respondent number), and the teacher participants as TR01, TR02... TR10 are used in the analysis.

The data collection tools included tests, interviews, survey questionnaires, and teaching observations. Each tool complemented the other in enabling a greater understanding of the issue under study. For the test, students were given a set of questions before and after the implementation of the strategies. Interviews were conducted one-on-one with 15 students from classes IV and V respectively. The survey was carried out online, particularly effective in measuring the attitudes, opinions, preferences, and behavior of the participants. The online survey consists of survey questionnaires based on the Likert scale (Strongly Disagree: 1, Disagree: 2, Neutral: 3, Agree: 4, Strongly Agree: 5). For the teaching observations, the checklist consisted of various themes and observations about the student's and teachers' facial expressions, physical reactions, and particularly the way they used the strategies and conducted activities.

Learning and Performance of the Students

To assess proper progress in the learning and performance of students, block tests have been used to monitor the pace. A block test is a test that is administered to the students after a specific portion of the curriculum has been completed to assess and guide the students' performance. The overall performance of the students was examined and analyzed to improve students' ability to study the performance in every subject in an overcrowded classroom.

Table 1 below shows the results of the pre and post-tests. The results indicated that class IV students have shown some improvement in all the subjects with the greatest mean scores in Dzongkha. The result revealed that there is a difference between the mean scores of the pre-test and the post-test marks of all the subjects.

Table 1 Mean mark of Pre-test and Post-test (n= 78, SD = 2.59)

Subject	IV E		VF		Std. Deviation
	Pre-test	Post-test	5.68514	Post-test	
Dzongkha	7.1	15.14	1.47078	11.29	5.69
English	10.6	12.68	3.00520	11.60	1.47
Mathematics	8.7	12.95	1.14551	11.99	3.01
Science	12.5	14.12	1.65463	11.88	1.15
Social Studies	10.2	12.54	9.6	15.29	1.65

Analysis of the Survey Data

The following analysis focused on the mean and standard deviation of survey responses.

Table 2 below shows the mean and standard deviation for all the themes before and after the intervention. The teaching style used to address the crowded classroom did not show any positive impact on students' learning (M = 4.06, SD = 0.50), and the teacher's usage of assessment (M = 3.93, SD = 0.45) saw a decrease in the mean scores. This analysis revealed that the teaching style and the teacher's interaction with students had minimal impact on the students' learning styles. However, the student's perception level of the impact indicated that the crowded classrooms had more of a disagreement (M = 2.7, SD = 0.51). These findings aligned with the findings from the semi-structured interview where the majority of students agreed that an overcrowded classroom is an uncomfortable environment with limited space and loud noises. There are multiple problems faced in overcrowded classrooms. Specifically, ST502 and ST505 highlighted the congested space creates lots of distraction and classmates fight over the space. ST406 and ST407 felt that the class was noisy and disturbing and some of them did not get opportunities to participate in the classroom activities. The result indicated that there was a decrease in the impact on most of the themes like Perception level of Class Size, Teacher Care, Teaching Style, Teaching Strategies and Assessment. However, there was a slight impact on the Perception level of Engagement and Perception level of Impact of Crowded Classroom (M = 3.33, SD = 0.63, M = 2.93, SD = 0.63) with greater deviation in their responses. Thus, the interventions employed, helped the students to learn better despite being in a crowded classroom.

Table 2 Theme-wise Mean and Standard deviation (n= 78)

Themes	Mean		Standard Deviation	
	Pre- Survey	Post Survey	Pre- Survey	Post Survey
Perception level of Class Size	3.04	2.58	.65	.65
Perception level of Engagement	3.27	3.33	.49	.63
Perception level of Impact of Crowded Classroom	2.70	2.93	.51	.63
Teacher Care	3.87	3.6	.69	.86
Teaching Style_ Teaching Strategies	4.06	3.46	.50	.71
Teaching Style_ Assessment	3.93	3.51	.45	.74

Analysis of Semi-Structured Interview and the Observation Data

The interviews with students and teachers were conducted before and after the intervention. Participating students and teachers were informed about the confidentiality of their names with the pseudonyms; TR01, TR02, ST401, ST402 till ST415 and ST501, ST502 till ST515. The participants were given the liberty to speak either in Dzongkha or English depending on their comfortableness. The data gathered were later transcribed and further analyzed using various themes as signified below.

1) Classroom environment

The effective creation and utilization of the classroom environment involved optimizing the size and space of the classroom, coupled with proficient classroom management techniques. Nevertheless, through the lens of the students' and teachers' responses about the distraction, their comfortableness, and the space to move around were considered. However, upon interviewing the teachers, it became evident that the classroom lacked sufficient space for students to move around and engage in classroom tasks, resulting in an environment that was not conducive to learning. Hence, the classes were found not that clean and neat though it was spacious for teaching learning materials (TLMs).

2) Team Teaching

Team teaching was another major intervention strategy for the productive implementation of the learning integration. The teachers were oriented beforehand, and their roles and responsibilities were segregated based on collaboration, engagement, and use of effective teaching strategies as per the needs of students and the curriculum. With the implementation of the intervention, teachers were able to provide timely feedback and monitor students ensuring their active participation. The team-teaching intervention brought a sense of team bonding and a responsible learning habit among the students, and they took an interest in learning. This statement was supported by most of the students stating that among all the

strategies, they mostly enjoyed team teaching and seat rotation as it was effective, and they got the opportunity to help each other. For instance, ST406 said, “During the team teaching I was being monitored well.” Another student (ST409) said that when we have more teachers in the class, we are less distracted by our friends during the lesson. ST403 said, “Among the strategies, team teaching is one of my favourite strategies because I can concentrate on the lesson.”

Additionally, the effectiveness of team teaching was also supported by the teachers, where one of the teachers (TR04) stated “I felt satisfied while implementing the strategies and team teaching was my favourite.” TR06 said that it helped learners pay attention to the lesson and classroom management was not an issue in that class, and another teacher (TR12) said, “The most effective strategy was team teaching as there was a collaboration between teachers and there was efficient control of the class.” In general, TR02 said that the intervention strategies were interesting, and they were efficient in dealing with overcrowded classes while carrying out team teaching.

3) Disturbance

Disturbance is one of the primary distractions in the teaching-learning environment, and they have a significant negative impact on the teaching-learning process in overcrowded classrooms. A set of criteria comprising elements like students playing during class, conversing with classmates, and paying less attention to the teachers were used to raise concerns about disturbance in this regard. Some students even admitted that there were disturbances brought about by others while the class activities were being carried out. For instance, ST410 shared, "especially, the low achievers were disturbing the high achievers during the activities." A similar opinion was shared by another student (ST409) who said, “When we have more teachers in the class, we are less distracted by our friends during the lesson.” ST407 also stated that when teachers were using different strategies, they were all engaged in the lesson. Moreover, TR05 claimed that it was difficult to control students during the teaching-learning process before the intervention was implemented.

However, teaching observations amidst the implementation of the interventions have proven that the classroom environment was controlled, and the students were actively involved in learning. ST401 and ST506 confessed that intervention strategies helped them to concentrate better and even learn more clearly from their peers. TR02 also said, "The interventions were interesting and efficient in dealing with overcrowded classes causing no hindrances while implementing the strategies in the classroom teaching”. It is therefore imperative for the teachers to prioritize the strategies, where there is no other option for overcrowded classrooms. This was supported by most of the participating teachers, and they even suggested:

I would recommend developing a strong classroom culture and discipline for the students so that classroom management would be effective in overcrowded classrooms. (TR02)

Using a microphone would help in controlling the overcrowded classroom. (TR07)

The use of simulation in a student's learning can comprehend the lesson well. (TR07)

4) Seating arrangement

Seating arrangement plays an important role in maintaining an effective learning environment. As a result, the seating arrangement was made in a way that accommodated the proper utilization of various performers through arranging seats in a rotation cycle. As a part of the intervention, students were made to rotate their seats table-wise, twice a week. There was positive feedback from both teachers and students indicating the effectiveness of this intervention. For instance, ST409 claimed, “I liked seat rotation as we got the opportunity to view the board better”. In addition, TR09 exclaimed, “Seat rotation was one of the favourite strategies as the teacher gets to interact with different individuals from the class and there is fairness and equality for the children to enjoy the facilities.”

The findings from the class observation further confirmed the progress made in learning and reducing behavioural difficulties arising from overcrowded classrooms. Before the implementation of the intervention, there were frequent fighting and arguing cases among the students for their space in the class and on the table, but this ceased after the intervention of seat rotation. To facilitate seat rotation, everything in the class especially tables was organized systematically making the classroom spacious. This new observation served as a lesson for the teachers and students to consider every minute detail in the classroom and a little intervention can help for smooth and impactful learning. The new seating arrangement enabled students to view the projector and board well and helped teachers to move around, allowing them to assist students in a better way. The observation report asserted that the rotational seating arrangement made students comfortable with enough space for the teachers to reach out to the students for individual feedback. However, there were a few students who shared that seat rotation in the class was not helping them to learn better. For instance, one student in support of the previous comment ST415 stated, “I felt group rotation was a disadvantage for me as I was placed far away from the board and could not see well during the teaching.”

5) Teacher comfort

The comfort of the teachers was also examined as it has a direct impact on the efficacy of teaching methods and the student’s learning process. Teachers’ confidence in using new interventions was also evaluated for better performance and results. Since teachers act as a stimulus for learning in the daily lives of students, it is equally important to consider their concerns in utilizing those strategies. For the collection of authentic data about teacher’s consolation, observation was made using a detailed observation checklist and semi-structured interviews were conducted with the subject teachers of classes IVE and VF. The majority of the teachers confessed that they were familiar with the strategies to manage the overcrowded classroom. However, despite the better results of the strategies, the lack of sufficient teachers to assist every period in the classroom teaching made it difficult to measure the effectiveness of its implementation. To approve this claim, TgR11 stated, “there wasn’t consistency in team teaching owing to the teacher shortage in the school, otherwise there would have been a huge impact on the students' learning”. They suggested the requirement of sufficient teachers in the schools for the effective implementation of this intervention.

However, peer tutoring and seat rotation became familiar with most of the teachers to utilize it effectively in their everyday lessons. With the use of peer tutoring methods, teachers were less burdened since these allowed teachers to easily monitor and assist the groups with less energy and exhaustion. TR7 assured that the students were learning better with their friends and that the low achievers could comprehend better in peer tutoring. Seat rotation also assists in teachers' comfort as it gives equal opportunity to sit near the teachers and whiteboard for better visibility. This made it easy for the teachers to include and monitor various learners with better concentration. Almost all the subject teachers were satisfied with the peer tutoring and seat rotation and as shared by Tr. 09, seat rotation was one of her favourite strategies as it allowed them to interact with a variety of students and ensured that all students could use the facilities equally and fairly.

6) Assessment

Since assessment serves as the bridge between performance and results besides close guidance for students and teachers, it was closely watched and examined in the research for vivid classification of daily works. Various assessment methods were observed, including the use of a checklist and an observation manual. Not only that, the use of different strategies and appropriateness of methods to assess learning progression was also considered for the collection of authentic data.

Overall, the students found the implemented strategies to be effective and enjoyable. They appreciated the opportunity to help each other and found the lessons to be interactive and efficient. However, some students (ST408, ST513, ST515) had concerns about certain strategies, such as group rotation affecting their ability to see the board, for which they provided some suggestions for improving their learning experience, such as reducing class size or having blended learning.

The research findings suggest that the teachers generally found the intervention strategies to be interactive and interesting, with peer tutoring and team teaching being particularly favoured. The use of peer tutoring was noted to be beneficial for low achievers, while seat rotation was appreciated for promoting fairness and equality among students. However, consistency in team teaching was hindered by teacher shortages. Group activities and role play were recommended for overcrowded classrooms. ST501 and ST506 suggested having extra classes, and class tests could improve learning outcomes. Overall, the findings highlight the importance of implementing effective teaching strategies and addressing challenges such as teacher shortages and overcrowded classrooms to promote student learning.

7) Engagement

The last theme was lensed using engagement intermediaries as the main component in the performance of both teachers and students. In this yardstick, all aspects of engagement were measured such as the opportunity to interact with teachers, peers, materials, and facilities that were available in the classroom. The interaction among individuals, groups, and collective mass was also observed with certain engagement components in mind such as the interaction between teachers and students, between students and students, and between the teaching

materials and the students. The use of effective integration strategies such as technologies was also assessed to collect reliable information for the research.

In the survey questionnaire administered to the students before the intervention the students were answering it mostly within the range of disagree to agree, especially in the areas asking them their opportunity to utilize the time to talk and explore the materials and services of the teacher. It clearly shows that the students might have gotten the chance to use and engage with the facilities in the classroom but not to their full capacity and in abundance, which directly affects the learning capacities of the students. This was further confirmed during the post-intervention interview where one student (ST409) claimed, “I liked seat rotation as we got the opportunity to view the board better”. A teacher (TR04) also spoke in support of the latter, stating “I Felt satisfied while implementing the strategies and team teaching was my favourite. It helped learners pay attention to the lesson and classroom management was not an issue in that class”.

All the analyses on the three interventions have deemed the interventions as purposeful and successful. From team teaching to peer tutoring and seat rotation has provided justice to the students in an overcrowded classroom by providing equal opportunity to enjoy all the resources of the classroom and assisting each other for effective learning. It indicates that the interventions were successful in effectively teaching students in an overcrowded classroom.

Discussion

Various strategies were designed to address the overcrowded classroom which was challenging for the teachers and students. Both the teachers and students grappled with the fact that although many strategies can be used to assess learning and teaching in overcrowded classrooms, there are no definitive strategies. Depending on the situation and environment, teachers and students need to explore the most effective ways to overcome such obstacles. However, the study focused on finding the strategies preferred by both the students and teachers that can be effective and successful in an overcrowded classroom. Following are the discussions of the key findings considering the research objectives. These are further discussed under two following aspects:

- 1) Effectiveness of various teaching strategies
- 2) Students learning performance

1) Effectiveness of Various Teaching Strategies

The study was conducted using three different strategies: 1) team teaching 2) seat rotation and 3) peer tutoring. This was done to address the issue of crowded classrooms and to improve the performance of students' learning. According to Onwu and Stoffels (2005), a crowded classroom poses challenges for teachers such as not enough room for movement around the room, fewer opportunities for all students to actively engage in the learning process, the teaching becomes more personalized, teachers being overworked, and there are

fewer opportunities to meet students' unique needs for self-activity, inquiry, motivation, discipline, safety, and social interaction. In this regard, the use of various strategies that were implemented in this study effectively helped both the teachers and students in an overcrowded classroom. The findings revealed that the use of various strategies can help in monitoring the students and is effective in an overcrowded classroom. The current findings confirm the earlier findings of Benbow et al. (2007) and Crute (2004) that team teaching and peer teaching are useful ways of managing overcrowded classrooms. The students experienced greater involvement and importance in the classroom in this way. It is one method suggested by Bonwell and Eison (1991) as a means of improving learning in big classes.

2) Students' Learning Performance

The student's learning performance includes enthusiasm and engagement of students in a classroom learning setting. The performance and achievement of the students were evaluated and measured using three interventions. The mental setting and academic performance of the students involve intellectual level, personality, motivation, skills, and student-teacher relationship. According to the findings, children preferred team teaching and seat rotation since it was engaging and effective. Baeten and Simons (2014) also support that team teaching is interactive, and both teachers and students benefit from it in terms of cognitive growth and intellectual stimulation. Additionally, the interventions have provided an opportunity for teachers and students to assist one another and facilitated better monitoring, and fewer distractions during the class, all of which have helped students to concentrate on their studies and their environment.

Recommendations

Considering the comprehensive analysis conducted, several key recommendations are made to strengthen and enhance current research practices. It is determined that the strategies used, contribute positively to the teaching and learning process. In light of the findings, team teaching among the three various strategies was the most effective. However, utilizing all these strategies by the teacher in an overcrowded classroom can be beneficial to all the concerned stakeholders in the teaching-learning environment of an overcrowded classroom.

Looking ahead, several strategic pathways can further elevate and help the problems of an overcrowded classroom. First and foremost, it is imperative to invest in the ongoing research and development initiatives on this topic. By dedicating resources to exploring emerging technologies, education trends, and students' preferences, we can proactively adapt our teaching-learning processes to meet evolving demands, ensuring long-term relevance and competitiveness. Importantly, this research can be recommended even in the absence of overcrowded classrooms, subject-specific situations, and the implementation of new education strategies in schools.

Conclusion

Overcrowded classrooms have been considered as one of the most challenging issues at

Phuentsholing Primary School. The lack of or minimal interaction between teachers and students is one of the problems that overcrowded classrooms may cause. However, the teachers need to view overcrowded classrooms from a different perspective and recognize that despite many disadvantages they can also provide many opportunities for the teaching and learning process. Teachers need to enhance their innovative awareness and capabilities for developing effective and interactive activities for dealing with overcrowded classrooms. Overcrowded classrooms should not be an excuse for not finding an appropriate strategy to create effective and interactive activities or to apply solutions for improving the teaching-learning process. The teachers also need cooperation with the students to build active interaction for effective learning which can motivate, engage, and create interest in learning among students in overcrowded classrooms.

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