



ACTION RESEARCH ON THE IMPACT OF CLASS SIZE IN TEACHING AND LEARNING IN HIGHER EDUCATION

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ABSTRACT

This paper is an analysis on the impact of class size on teaching and learning in higher education using an existing model of 'Action Research', adopting data from the pre-final year engineering students undergoing the course 'Employability skills' in a private university in India. Many graduate programs these days offer courses on Employability skills which focus on both intrapersonal and interpersonal skills which need to be cultivated over a period of time in a healthy environment. For a number of characteristics considered for our analysis, it looms that large class size has a significant negative impact on teaching and learning Employability skills. For a course comprising modules which has to be inculcated in an individual, a small class size was desired by the students. Additionally, this paper also fixates on the practical difficulties encountered by the students in large classes during group discussion and interview training sessions and also proposes suggestions in dealing with class overcrowding.

Keywords: Action research, class size, overcrowded classes, teaching, learning, higher education, classroom, students, instruction.

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1. INTRODUCTION

It is ideal to understand that we all need to have a set of skills that are not specific to one particular career path. Most employers express high levels of interest in employability skills

as one of the essential skills from graduates. Recently, many graduate programs offer such courses emphasizing on intrapersonal and interpersonal skills which have to be cultivated periodically in a healthy environment. It is essential that the management and the teachers provide the students with adequate resources, time and attention so that every individual masters these skills. Often, some students end up being incompetent to face the interviews due to lack of skills, confidence and encouragement. This probably could be linked to the learning environment of the students. Over the years, in most cases, a huge class size has been a major cause of concern, where the teacher's attention to every individual gets limited. For courses that equip students on employability skills like goal setting, resume writing, group discussions and interview skills it is recommended that every student gets the required substratum, attention and encouragement. On the other hand, teachers too are bound to deliver effective content in a huge class size especially, when they are handling such imperative courses.

2. CLASS SIZE IN TEACHING, LEARNING AND DEVELOPMENT

Teachers, scholars and experts in the education domain, have been investigating the factors concerned with teaching and learning since ages. One of the primary factors that attributes to the gap in teaching and learning is class size. Messineo et al. (2007) states that analysis on the impact of class size on teaching and learning rooted in the twenties. Several investigations have been conducted especially, on undergraduate learners (Glass and Smith, 1979; Edmondson and Mulder, 1924; Hedges and Stock, 1983), majorly in elementary and secondary school levels, though the level of complexity is more at tertiary level (Kerr, 2011). He clearly points out that the investigations are minimal in the postsecondary context.

Subsequently, research on the impact of class size on students' performance has also resulted in controversial opinions, definitions and notions, considering various other factors along with class size. Kerr (2011) illustrates that the definition of class size differs with the course of study, intellect of the students and the nature of the class. He also accounts for the difference in perception of students and professors. He justifies a large class as an introductory class of 500 students or a seminar with fifty. Similarly, some countries claim 25-30 students per teacher as large, whereas other countries consider this normal or even quite small. In tertiary level education context, it is not feasible to understand what accounts for a large class size (Mulryan-Kyne, 2010).

In addition to the class size, factors like teaching competency, resource availability and allocation have also been investigated to relate their impact in students' learning. Blatchford et al. (2002) emphasized that other contextual factors should not be ignored while predominantly focusing on class size. The greatest challenge to teachers, experts and scholars was to furnish sufficient evidence to loop class size and student achievement (Mulryan-Kyne, 2010).

Biggs (1999) states that the practical problems faced by teachers and students deepen with class size, particularly in tertiary level educational institutions with a diverse student population where teachers endure a variety of factors, such as age, background, ability and experience of the students. Anonymity, passivity, poor engagement of students with course content, minimal motivation and low participation levels of students are the consequences of being taught in large classes (Ward and Jenkins, 1992; Carbone and Greenberg, 1998; Biggs, 1999).

Most research on class size also highlights the choice of teaching methodology and innovative ideas. Wanous et al. (2009) point out that large class size is projected as an excuse for not adopting effective and innovative approaches. This ideology is supported by Pedder (2006) who claims that if the teachers working in different contexts come out with innovative

and experiential ideas with students of different behavioral capacities, cognitive skills and personalities, students would transcend better.

3. ACTION RESEARCH

Action research is a proven tool to sculpt the solution for any scenarios or potential problem which demands improvisations (Ferrance, 2000). Due to its comparatively less formal nature and simplicity in execution, it is often considered by teachers as an apparently practical form of research (SalmaniNodoushan, 2009). Ozanne and Saatcioglu(2008) stated that, “Action research seems to highly contrast other methods of research in its epistemological underpinnings”. Winter and Munn-Giddings (2001) demonstrate that, “action research cycle begins with the observer drafting a plan of work to monitor and record the classroom activities (Plan), followed by implementation of the plan (Action), recording observations (Observe), analyzing them individually or collectively, (Reflect) and finally improvising based on the reflected output (Revised Plan)”.

In the book ‘Educational Research’, Pal (2004) has projected the advantages of Action Research:

- It provides timely solutions to many problems and this is a compelling factor
- It can be implemented in every stage as it is a real-time process
- The researchers can utilize the sample, tools and statistical techniques effectively based on their ability.
- Teachers use this method to improvise their decision making skills

Thus, the transition from source inputs to the outcomes is an adaptive process and action research is often proved to be an appropriate approach in the classroom.

4. METHOD

The course ‘Employability Skills’ provided by the Career Development Centre of the institution is identified for our analysis, adopting data from 184 pre-final year students from various branches of engineering comprising five classes with a strength of 60 to 70 students per class. It is a 15 week course, spanning two hours every week for a total of 30 hours per semester.

The Action research process commenced with planning the course modules and briefing the students about the significance of the course in campus placements. The students are trained on precise resume writing techniques, group discussions, interview preparation and personality development. The performance of students in internals is considered as a direct measure of the students’ employability skills inculcated during the span of this course. A revised version of the questionnaire from Hayat (2017) with major focus on class size and assessment – grading patterns, feelings of anonymity and lack of attention in large classes, absenteeism, students-teacher exchange, problems faced by teachers and students in large classes was circulated and the response (N=184) was scrutinized to gain a rich understanding of their notion. The analysis was performed using IBM SPSS 20.

5. RESULTS AND ANALYSIS

This analysis comprises 184 students of which 72.3% (133 students) are male and 27.7% (51 students) are female. They are the pre-final year students from various branches of engineering – Software 30% (56 students), Information technology 25% (46 students), Computer science 19% (34 students), Biotechnology 20% (36 students) and 3% (6 students) each from Aeronautical and Automobile.

Students' preference of class size: A whopping 83.7% (154 students) expressed their preference for smaller classes of less than 40 students and only 16.3% (30 students) preferred large classes with over 40 students. Also, 64.1% (118 students) claimed that their class size is vital for their performance and 22.3% (41 students) are dissatisfied owing to a large class size.

Absenteeism: 50.6% (93) students stated that absenteeism is more in a densely packed class and 28.3% (52) students confessed that they skip classes more in a large class size.

Choice of learning, assessment and grades: 55.4% (102) students claimed that their choice of learning is affected by a large class size. 42.4% (78) students believe that their assessment and evaluation in the employability skills course is affected by a huge class and only 26.1% (48) students feel that standardization of assessments and marking is possible in large classes.

Student-teacher exchange: The overall exchange between teachers and students was appreciated by 50.6% (93) students. Interestingly, 62.5% (115) students claimed that teachers know the students individually by their names and less than half the students are familiar among their teachers.

Overall, 44.4% (82) students reported that they face difficulties (of any kind) in large classes and 58.6% (108) students felt that their teachers experience difficulties while teaching this course in large classes. A striking 70.1% (129 students) felt that they would have more scope to learn and develop employability skills with a smaller class size. The reliability of the questionnaire was calculated using Cronbach's alpha and was found to be 0.731. One way ANOVA was performed at 5% significance levels and the following results were observed.

Considering, the components 'The class size matters to me' ($F^{**}=29.584$, $p=0.000$) and 'I'm satisfied with the current size of my class' ($F^*=4.498$, $p=0.035$), we can conclude that there is a significant difference between preference of class size and the satisfaction levels. There is a significant difference between preference of class size and absenteeism ($F^{**}=22.480$, $p=0.000$)

'My assessment/evaluation is affected by the size of the class' ($F^*=6.857$, $p=0.010$), 'I'll have more scope to perform better in a small class size' ($F^{**}=36.620$, $p=0.000$), 'My choice/method of learning is affected by the class size' ($F^*=6.684$, $p=0.011$), 'I have faced difficulties in large classes' ($F^{**}=16.204$, $p=0.000$) strongly states that there is a significant difference between preference of class size and the performance ability of the students.

Considering 'It matter to me that the teacher knows my name' ($F^*=8.092$, $p=0.005$), 'I think most of my teachers face difficulty in handling a large class size' ($F^{**}=16.573$, $p=0.000$), we can conclude that there is a significant difference between preference of class size and student-teacher connect.

The response was unanimous about the challenges faced by students in large classes. Lack of audibility due to noise, disturbance and distraction, anxiety in students and less student-teacher connect were the major impediments that made the classroom an unpleasant place to learn. On the other hand, students felt that their teachers were not able to reach out to every individual, not able to conduct group discussions and mock interviews promptly and not able to make everyone participate owing to overcrowding.

Table 1 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Does the class size matter to you?	Between Groups	30.286	1	30.286	29.584	.000
	Within Groups	186.317	182	1.024		
	Total	216.603	183			
Are you satisfied with the current size of the employability skills class you are a part of?	Between Groups	6.686	1	6.686	4.498	.035
	Within Groups	270.532	182	1.486		
	Total	277.217	183			
Is your choice/method of learning affected by the class size?	Between Groups	9.275	1	9.275	6.684	.011
	Within Groups	252.551	182	1.388		
	Total	261.826	183			
Do you skip classes more in a large class than in a small class size?	Between Groups	4.953	1	4.953	2.303	.131
	Within Groups	391.460	182	2.151		
	Total	396.413	183			
Do you think absenteeism is more in large classes compared to a class having less strength?	Between Groups	36.785	1	36.785	22.480	.000
	Within Groups	297.823	182	1.636		
	Total	334.609	183			
Is your assessment/evaluation affected by the size of the class?	Between Groups	12.749	1	12.749	6.857	.010
	Within Groups	338.360	182	1.859		
	Total	351.109	183			
Do you think that standardization of assessment and marking is possible in large classes?	Between Groups	3.448	1	3.448	3.407	.067
	Within Groups	184.204	182	1.012		
	Total	187.652	183			
Do you think you'll have more scope to perform better in a small class size?	Between Groups	40.838	1	40.838	36.620	.000
	Within Groups	202.966	182	1.115		
	Total	243.804	183			
How would you evaluate the overall exchanges between students and teachers?	Between Groups	.358	1	.358	.376	.541
	Within Groups	173.642	182	.954		
	Total	174.000	183			
Does it matter that the teacher knows your name?	Between Groups	12.487	1	12.487	8.092	.005
	Within Groups	280.856	182	1.543		
	Total	293.342	183			
How many teachers, you think, know your name?	Between Groups	.519	1	.519	.486	.486
	Within Groups	194.090	182	1.066		
	Total	194.609	183			

		Sum of Squares	df	Mean Square	F	Sig.
Have you ever faced difficulties (of any kind) in large classes?	Between Groups	20.416	1	20.416	16.204	.000
	Within Groups	229.317	182	1.260		
	Total	249.734	183			
Do you think your teacher faces difficulty in handling this course in a large class?	Between Groups	22.774	1	22.774	16.573	.000
	Within Groups	250.095	182	1.374		
	Total	272.870	183			

6. DISCUSSION

The results indicate the pros of small classes and cons of large classes with respect to teaching and learning. Most higher education universities schedule classes in batches of approximately 60 students per class for any discipline, unless the enrollment for that particular course is less. The teachers and students in the department of Career Development Centre of the university who handle the subject Employability skills often have to take up large classes with around 60 students. This study probes the impact of class size in teaching and learning from students' perspectives. Most of the students, though not all, prefer small class size for this course as it has to be learnt experientially. Students need a perfect environment for practicing group discussions, communication and interview skills for over a period of time, for which they find small classes to be effective. This allows the teachers to assess their performance and train them to perfection. Blatchford et al. (2002) reported similar conclusions in their study among English school children. The children were able to learn more and the teachers were able to give more attention and focus to every child.

With respect to attendance, it is always assumed that the students tend to skip classes more in large classes as they are not followed up individually. There is a significant difference between the size of class students prefer and the absenteeism.

Choice of learning, assessment and grading has always been a distress among students and teachers as a part of graduating. Students undergo experiential learning in this course and they often have to undergo group discussion and other group activities where they are reliant on their peers. A large class gives less scope for conducting group activities methodically and the focus of the teacher transits from assessing the performers to maintaining the decorum of the classroom. Also, introverted students who wanted to make use of these sessions for enhancing their skills don't find large classes a positive and encouraging environment. Students strongly felt that due to such non-cooperation among their peers they are not precisely assessed and graded for their performance and standardization of their grades is not possible in large classes.

Student- teacher relationship can prove wonders in a student's academic performance. The student-teacher exchange is essential for students in building up their interest in the course and vice versa. It was interesting to note that students expect their teachers to focus on them and track their performance on a regular basis. Results have clearly indicated that the student-teacher exchange has been favorable for both teachers and students in small class size. Similar results were drawn by Hayat (2017) in his studies on 'English as a Foreign Language' course in the department of English at AbdelhamidIbnBadis University.

Various noteworthy suggestions in dealing with class overcrowding in large classes were stacked by students. The students unanimously insisted in having smaller batch size for a course like employability skills to be handled effectively. This not only facilitates the students with better participation and learning, but also helps in an effective teaching process. On the

contrary, in large classes, a few students also proposed the idea of prior information of the topic to be handled and the need of time management so that every student gets the chance to take part in activities.

7. CONCLUSION

From this study, we may conclude that class size significantly impacts the quality of teaching and learning the course Employability skills. The results clearly indicate that majority students prefer small class size to be compelling. Also, teachers will be able to fixate the performance of individual students and prioritize delivering quality content, instead of controlling the chaos and maintaining discipline in overcrowded classes. It was also interesting to understand that a minority of students felt that class size doesn't impact their learning process. For the Employability skills course, which encompasses interpersonal and intrapersonal development and experiential learning with oodles of classroom activities, a smaller class size is favored by students as well as the teachers.

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