RESEARCH ARTICLE

MIXED ABILITY GROUPING: MAKING DIFFERENCES COUNT.

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Manuscript Info	*Abstract*
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	Variety is said to be the spice of life and yet educators find it a threat to cater to differences in students' intellectual levels in the classroom. Mixed ability grouping has long since been practiced as a pattern of interaction among students. The present research employed this strategy as a formula for using diversity in learners' abilities as a distinct advantage in the teaching-learning process. It provided a breakthrough in overcoming the traditional belief that individual differences in ability cannot be addressed through co-operative learning activities. This study attempted to compare the effectiveness of two grouping strategies in enhancing the academic achievement of students in different subjects of the curriculum. The sample comprised of 493 students of the secondary section of a private-aided school in Mumbai, affiliated to the S.S.C Board of Education. The research was conducted in two phases. In the first, the students were assigned to groups of five by the teacher based on mixed ability and in the latter, they were permitted to form groups of five based on their own preferences. An achievement test was administered to the subjects in each phase before and after the topic was taught using instructional modules comprising of activities and co-operative learning strategies. Comparison of the pre-test and post-test scores indicated a greater difference in the performance of the students in the mixed ability groups which could be advocated to the possibility that students pooled their resources and understanding in achieving the goal of mastery learning.

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Introduction:-

In the school setting, many classrooms have students with a wide range of learning abilities, but all are geared toward the same goal. They learn and understand concepts in a variety of different ways. Being an effective teacher requires adopting an approach which would appeal to the gifted learners on one hand, while not neglecting the needs of the slow learners on the other. Striking a fair balance between students of differing abilities has come to be the most challenging compromise in the educational arena. It sometimes becomes impossible for a single teacher to cater to mastery learning of each and every concept, more so in schools where the number of students in a classroom is exorbitant. Teachers are often forced to resort to a one-size-fits–all strategy of teaching due to time constraints and vast portion to be covered. Working cooperatively is an important life skill that students can use both inside and outside the classroom to help work effectively with others to solve any problem or task. It is time the student

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fraternity realized that working together toward a common goal can have far reaching benefits. Learning together can help them know that there are sometimes many different methods that can be used to comprehend difficult concepts or retain and recall information and facts. A student who understands a concept can share his or her ideas and strategies with other students. This follows the principle of equity. It would lead to an ideal classroom where all students felt comfortable sharing their ideas and strategies with one another. The interaction within cooperative groups would help each of them feel confident about their own abilities.

Research by Boaler et al (2000) revealed that children in mixed ability mathematics classes outperformed those homogenously grouped by ability. They reviewed a new way of grouping children that also resulted in unusually good behaviour and high levels of respect and responsibility among the young people The study, which analysed the results of different methods of teaching Math in three American high schools, found that an approach that involved students not being divided into ability groups, but being given a shared responsibility for each other's learning, led to a significant improvement in the achievements of high and low achieving students. The approach had further benefits in that it taught students to take responsibility for each other and to regard that responsibility as an important part of life. Many researchers have contraindicated ability based grouping (tracking), wherein students of similar ability are grouped together. Tracking places students in homogeneous achievement level classes for the entire school day. Tracking most often refers to a fixed course of study where students are in self-contained classes labeled as average, above average, or below average. Tracking leads to a violation in equity for students and increases gaps in student achievement among subgroups (Archbald, et. al., 2009). Burns and Mason (1998) suggest that ability grouping may inadvertently create unequal learning opportunities for students. One of the concerns of those who argue against grouping by ability is that placement in the bottom groups has an adverse impact on pupils' self esteem, self-concept and on their attitudes towards school and schoolwork. Gamoran and Berends (1987), reviewing the international literature, suggested that there was a negative impact of ability grouping on the motivation and self-esteem of students in the lower groups. Oakes (1985) suggested that for low track students the self-concept becomes more negative as years go by and these students tend to be critical of their ability. Low achieving students (those without learning disabilities) placed in low-level math classes were observed to typically do worse than students who are not grouped. However, when students are placed into classes beyond their ability level, achievement increases significantly (Fuligni, Eccles, and Barber, 1995). Burris and Welner (2005) supported the positive effects of heterogeneous grouping in their case study of a Long Island school district's de-tracking program. The "tone, activities, and discussions in the heterogeneously grouped classes were academic, focused, and enriched," creating what the authors called a close in the curriculum gap. When students are flexibly grouped based on specific skills, the lowest achievers experience the greatest gains (Slavin, 1987). Small group instruction combined with extra time for struggling students is an effective way to increase student achievement (Battelle for Kids, 2013). These effects are even greater when combined with differentiated instruction and materials in groups of 3-4 students. These effects were greatest in math and science (Lou, Abrami, et. al., 1996). Teachers must also use a variety of assessments to guide instruction, and work under the guiding assumption that each student learns differently and has potential (Hill, 2004). It is the responsibility of the teacher to select meaningful tasks that are relevant and accessible to the students. Finally, and most importantly, teachers must hold high expectations (Meuller and Maher, 2010). It is important that students in cooperative groups have opportunities to solve open-ended problems independently while also being encouraged to work together (Hill, 2004, Lou, Abrami, et. al., 1996). Teachers need to differentiate and allow students opportunities to present multiple perspectives and solutions. Developing a culture of confidence and of equity is the responsibility of each teacher, no matter what the academic abilities of the students. Hooper (2003) found advantages to include an increase in   self-esteem and an improvement in the students' attitude toward school work and their peers. Towns, Kreke, and Fields (2000) identified benefits past the improvement of attitude towards peers, and included an important sense of community within the classroom. Advantages of mixed grouping specific to low-ability students include having the opportunity to socialize and learn from students with average or high abilities and a decreased chance of feeling stigmatized which may help increase their motivation to learn (Saleh and De Jong, 2005; Poole, 2008). Advantages specific to high ability students include: experiencing academic benefits from verbally reinforcing material they understand, avoiding unwanted social stigmas that may be associated with high-ability students, and developing valuable leadership skills (Ballantine and Larres, 2007). Heterogeneous ability groups benefit students by improving their attitudes toward each other and school work, building a sense of community within the classroom, and providing valuable social and academic lessons (Robinson, 2008). Placing low-ability students in heterogeneous ability groups provides them with opportunities to make significant academic gains. These gains can be realized for several reasons, including: improved understanding of the curriculum, improved study habits and learning techniques, increased confidence, and an increased motivation to learn. There are several ways that low-ability students are able to learn from the high

ability students in their group (Obaya, 1999). High-ability students often have, or develop, the capacity to teach material for which they have a strong understanding, to lower-ability students who are struggling. Even the simple clarification of challenging topics, from another student, proves to be beneficial to low-ability students (Lou, Abrami, Spence, Poulsen, Chambers, and d'Apollonia, 1996). The clarification of complicated topics provided by high-ability students has the potential to build confidence in low-ability students (Heath, 1999). The increased confidence in low-ability students, stemming from understanding material through a peer's perspective, provides them with more opportunities for analytical thought. Well-developed questions pertaining to the curriculum provide the need for these explanations and clarifications, and may not be as likely in homogeneous ability groups. Highly functioning groups require an optimum level of conflict in order to inspire thought and give new perspective (Nelson, 2008). Diversity in groups, including groups with diverse abilities, increases the chances of reaching this level of conflict. This type of peer tutoring prevents high-ability students from becoming bored while keeping low-ability students up-to-speed, making for an exemplary student centered classroom. Neihart (2007) found that students perceived mixed-ability groups to offer the greatest number of social and emotional benefits. Motivation's role in student achievement as a result of heterogeneous ability grouping is another aspect of this topic researched and studied by Saleh and De Jong (2005).

The present research attempted to compare the effectiveness of two grouping strategies in enhancing the academic achievement of students in different subjects of the curriculum. It sought to help teachers overcome their apprehensions about achieving mastery learning in a classroom where learners belong to diverse backgrounds and have different learning styles. It endeavored to aid teachers abandon an underlying and flawed assumption about diversity replacing it with a broader understanding. A mixed ability group in the present study refers to a group of five students selected by the teacher and placed together on the basis of their prior test scores in the given subject. A student formed group was comprised of maximum five students formed by the students themselves on the basis of their personal preferences. Achievement in this research is defined as the accomplishment of the student in a given subject in terms of the number of marks scored by him/her in a written test of 15 marks.

Subjects and Methods:-
Subjects:-
The present investigation is an experimental research. The sample comprised of 493 students of the secondary section (standards V to IX) of a private-aided school in Mumbai, affiliated to the S.S.C Board of Education selected by the convenience sampling technique.

Methods:-
The study comprised of two phases. In the first, the students were assigned to groups of five by the teacher based on mixed ability and in the latter they were permitted to form groups of five based on their own preferences. The instructional modules comprised of 4 sessions, each of half hour duration (one teaching period). Each session was based on a topic/concept which students commonly find difficult to understand in the different subjects of the curriculum, namely, English, History, Mathematics and Science. Two sessions were conducted in the first phase of the study and two in the second. An achievement test of 15 marks was administered to each student at the start of each phase on the topics of the two instructional modules (delivered in that phase) to assess their academic proficiency in the same. Then the modules on these same topics were conducted by the trainee for the students using different co-operative learning activities ranging from numbered heads together, think-pair-share, round robin brainstorming to tea party as well as innovative strategies and diverse activities like composing jingles, crosswords, jigsaws, word-searches, role-plays and other presentations. At the end of these two sessions an achievement test of 15 marks and similar difficulty level as the pre-test was conducted based on the concepts taught. The difference in achievement of students resulting from the grouping strategy was assessed using the Pre-test Post-test design.

Statistical Analysis:-
The scores were tabulated and then analyzed using descriptive and inferential analysis. Descriptive analysis dealt with the description of the magnitude of the variables included in the study to show the extent of achievement before and after the administration of the instructional modules in both phases of the study. The values of the same are depicted in Table 1. Inferential statistics was carried out using the Student's t-test to compute the differences in the pre-test and post-test achievement scores for both the grouping strategies. Table 2 shows the data summary of the same. When P value was less than 0.05, the difference was considered statistically significant and highly significant when P-value was less than 0.01 or 0.001.

Results:-
Table 1 shows the magnitude of achievement of the total number of students before and after administration of the instructional modules for both the grouping strategies. The findings indicate that the pre-test magnitude of achievement was moderate, while the post-test value was substantial in both cases. However, the magnitude of total achievement in the mixed ability groups was considerably higher than that of the student formed groups.

Table 2 shows the data summary of the achievement scores for both the grouping strategies.

Table 1:-Magnitude of the Pre-Test and Post-Test Achievement Scores for Both Grouping Strategies

GROUPING STRATEGY	PHASE	MEAN	% MEAN	MAGNITUDE
MIXED ABILITY	PRE-TEST	8.27	55.13	MODERATE
	POST-TEST	12.12	80.8	SUBSTANTIAL
	TOTAL	20.39	67.97	SUBSTANTIAL
STUDENT FORMED	PRE-TEST	7.24	48.27	MODERATE
	POST-TEST	10.63	70.87	SUBSTANTIAL
	TOTAL	17.87	59.57	MODERATE

Table 2:-Data Summary of Achievement Scores for Both Grouping Strategies

Grouping Strategy	Phase	N	Mean	SD	t-ratio	Level of significance
Mixed Ability	Pre-test	493	8.27	3.58	18.78	0.01
	Post-test	493	12.12	2.77		
Student Formed	Pre-test	493	7.24	3.36	15.99	0.01
	Post-test	493	10.63	3.33		

The tabulated values for 't' are as follows (Garett, 1985):

for df = 491,   t at 0.05 level = 1.96

Similarly, for df = 491,   t at 0.01 level = 2.59

Thus, 't' is significant for the achievement scores of both the grouping strategies at the 0.01 level. The null hypothesis is therefore rejected. Further, it must be noted that the t-ratio of the mixed ability group is higher than that of the student formed group.

Discussion:-
An analysis of the results pertaining to the null hypothesis, indicate that there is a significant difference in the pre-test and post-test achievement scores for both the grouping strategies. The higher t-ratio in the mixed ability group as compared to the student formed group can be attributed to the possibility that students in these groups pooled their resources and understanding in achieving the goal of mastery learning. Previous research studies too, have proved that there are many reasons for the beneficial outcomes of mixed ability grouping. Towns, Kreke, and Fields (2000) found that mixed-ability groups enhanced achievement by requiring students to participate and become more active in their learning. In addition to improved academic achievement, this research included benefits such as an increased positive attitude toward the subject area studied, higher self-esteem, greater acceptance of peer's differences, greater retention of material, and "enhanced conceptual development across content areas and in a wide range of educational settings". The students developed a sense of community which was beneficial as they grew closer and learned that each had different strengths and weaknesses. When questions arose in the group, the students learned who would be best suited to answer it. Poole (2008) showed that low-ability students can develop and improve skills from simply observing and interacting with high-ability students. These observations and interactions provide identifiable models of a successful student. Poole's research indicates that having an example of effective study habits and learning techniques could be what the low-ability student needs to reach the next level of academic achievement. The higher achievement of the mixed ability groups in the present study could be credited to the observation that the students were highly motivated toward a common goal of mastery learning of each concept. In this connection, previous studies have concluded that low and high-ability students are more motivated to learn in heterogeneous groups. This motivation in low-ability students stems from the belief that the presence of higher ability peers gives them greater opportunities to improve their own performance (Heath, 1999). The majority of high-ability students gain motivation from helping others and consider it just as valuable as discussing material with peers of equal-ability (Saleh and De Jong 2005; Obaya, 1999).The present research also found that low-ability

students frequently feel more comfortable asking their peers for help with challenging material, than they would asking their instructor.

In conclusion, it can be reiterated that mixed ability grouping holds manifold advantages for both students as well as teachers in the teaching-learning process. However, in the present study, test scores provide only a summative view of student learning. For future research, it would be beneficial to compare, not only student achievement within each grouping strategy, but also the pedagogy and practices of teachers. There exist so many different grouping strategies and variables to student learning, that it is not possible to recommend with absolute certainty, one grouping strategy that works all the time for all students. Nevertheless, mixed ability grouping could evolve as a constructive paradigm to even out the odds in a classroom if used with diligence.

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