A Statistical Study of Evaluation of the Relationship between Students' Involvements in NSS based on Extracurricular Activities and their Achievement in Mathematical Sciences

K.Y. Ingale[1], D. D. Pawar[2]

[1]Assistant Professor in Statistics Yeshwant Mahavidyalaya, Nanded (MS) INDIA.

[2]Associate Professor in Statistics, NES Science College, Nanded (MS) INDIA.

Corresponding Address:

kishor.patilstat@gmail.com, drddpawar@gmail.com

Research Article

Abstract: This study was carried out on the relationship between students' participation in National Service Scheme based on extracurricular activities and their achievement in Mathematical Sciences. The samples used for the research work were selected randomly from four senior colleges affiliated with Swami Ramanand Teerth Marathwada University Nanded (Maharashtra), INDIA. Total of two hundred Mathematical Science students comprising one hundred females and one hundred male students. Three null hypotheses were postulated and tested at (0.05) level of significance to find the relationship between students participation in NSS based extracurricular activities and their achievement in Mathematical Sciences. The instruments used were students' questionnaire and Mathematical Sciences student's achievement test (MSSAT).The data collected were analyzed using simple regression statistical analysis and the results of the findings showed that NSS based extracurricular activities having significant influence on students' achievement in Mathematical Sciences.

Key words: National Service Scheme (NSS), SRTMUN (Swami Ramanand Teerth Marathwada University Nanded), Mathematical Sciences Student's Achievement Test (MSSAT).

Introduction:

NSS based extracurricular activities have long been recognized for contributing many ways to the enhanced college experience as well as to the increased social skills of students. Besides creating a college culture and promoting college spirit, NSS based extracurricular activities have been found to have a relationship with students' academic performance development of responsibility discovering their abilities and interest, self discipline and leadership skills. Although, the programs vary drastically from hunting and home work help to sport and music activities, overall, all programs strive to be fun challenging comforting and share similar goals. These goals include most importantly education, psychosocial development, recreation and career awareness. Program help educate the student by providing them with an environment for proper study or setting aside for their quiet time. The way students choose to spend their free time can affect their college performance. Reading after school is the activity most predictive of higher student achievement (Shumow, 2001). Reading at home is not less likely to do in today's day in age so after college reading program is entirely beneficial. Simon (2001 revealed that regardless of student background and prior achievement, various parenting, volunteering and home learning activities, extracurricular activities influences a student grade.

Involvement in a college extracurricular activity can be an important learning experience for students as clubs, library and debating club; young achiever club, organized essay competition and some other clubs often teach the basic concepts and values of the society as a whole. At the fore front of college reform, enrichment programs are increasing in number in number due to the importance of basic skills development, calls for academic excellence and standardized testing (Coltin,1995).These after college hours were encouraged to be spent improving academic skills. Some research (Petit et al., 1997) found that children who participated in some activities after school were rated by their teacher as having better social skills and fewer behavior problems than children who participated either in no activities or more activities each week.

Goal of NSS based extracurricular activities is to provide student with opportunities to realize their leadership potentials. Leadership is an extremely important quality for people to have in order to succeed. Leadership is learned over time through the involvement with others. NSS based extracurricular activities encourage this by providing for them the chance to begin to understand diverse attitudes skills and talents and how to interact effectively with a diversity of people while working towards common goals. Further, NSS based

extracurricular can provide a student with a personal; sense of belonging and integration with the college, causing feeling of accomplishment consequently there exists a relationship students' NSS based extracurricular activities and his sense of accomplishment in a Mathematical Sciences class. All of these activities appear to have some sort of effect on students' academic performance however, the issue of whether they benefit or hinder he students' achievement in Mathematical Sciences is unknown and that is the purpose of this research.

The development of NSS based extracurricular activities was slow in the beginning with many seeing it simply as a fad that would pass and quickly fade out of style. One of the early philosophers behind extracurricular activities was that they should wherever at all possible "grow out of curricular activities and return to curricular activities to enrich them". Eventually people including educators began to see the benefits of extracurricular activities but it took a while to incur them to it. In fact before 1900 educators where skeptical of participation in extracurricular activities believing that student should focus solely on narrowly defined academic outcomes. Dean and Bear early experts on extracurricular activities said, "Extracurricular activities supplement and extend those contacts found in the more formal part of the program of the school day (Millard, 1930). It was not until recently that "Educational practitioners and researchers have taken a more positive arguing that extracurricular activities may have positive effects on life skills and may also benefit academic accomplishment" (Marsh and Kleitman, 2002).It is obvious that NSS based extracurricular activities have an impact on academic performance and education.

Statement of the problem:

Over the years the costs and effect of extracurricular activities have generated many studies and numerous debates in their relation to academic performance. Parents and school Personnel alike have had controversies on whether a great deal of time and money should be devoted to these activities especially in this time of tight budget. They believed that students should focus solely on a narrowly defined traditional in class instruction that impact academic achievement .Educationists are interested in the relationship between academic achievement and participation in extracurricular activities implying that these activities do have some sort of influence on how students perform academically. Whether or not there is a relationship between students involvement in NSS based extracurricular activities and students performance in Mathematical Sciences is yet to be undertaken empirically.

Review of Literature:

NSS based extracurricular activities are activities performed by students that fall outside the realm of the normal curriculum of the college .it also known as enrichment programs, they are courses offered by educational facilities to help promote skills and high level of thinking for students. National service Scheme explains how a variety of skills and talents help to strengthen an individual so it is important for students to be exposed to a variety of different activities to explore their interest and capabilities.NSS based Extracurricular activities such as sports, drama music, scouting, dance and various clubs are an important part of the educational experience of many students. Most studies find those students who involve in NSS based activities are more successful academically than those who do not; it is not clear whether this is because the brighter more energetic students are also the ones who involve more in NSS based extracurricular activities, or whether the activities themselves boost students' academic performance.

Main Objective of NSS based extracurricular activities is to provide student with opportunities to realize their leadership potential. Leadership is an extremely important quality for people to have in order to succeed. Leadership is learned over time through the involvement with others. Extracurricular activities encourage this by providing for them the chance to begin to understand diverse attitude skills and talents and how to interact effectively with a diversity of people while working toward a common goal (NSS Manual 2008-09).Furthermore, extracurricular activities provide a student with a personal sense of belonging and integration with the college causing feeling of accomplishment, self worth and high self esteem in adolescent, especially from activities that lead to publicity from their participation. By providing a collective outlet where developing adolescent can focus, creates a safe and healthy means of spending after college hours. Extracurricular activities also play a role in reducing drug and alcohol use and irresponsible sexual activities in student would be on their own after college. It's not only a matter of keeping the student busy the self esteem and sense of purpose that children can get from serious involvement in NSS based extracurricular activities may help raise them a reason to say no to risky behaviors.

Generally, the college based activities are important because they take place in the college

setting therefore are guided by staff playing a major role in the effect of academic achievement on the students. Pierce et al. (1999) have found that classroom teachers reported that students had fewer behavior problems when staffs were more positive with the children in thereafter school activities. According to the type of school based activities the student participates in usually determines how much better they will do in that subject area in school. Reading after school is the activity most predictive of higher students' achievement. Reading at home is a lot less like for children to do in today's day on age so after school activities are extremely beneficial. By far, high school students represent the largest group whose extracurricular activities are studied intimately and this research has tended to focus on athletic participation. Sillier and Quirk (1999) looked at high school students extracurricular involvement and academic performance. Specifically they studied 123 high school students who participated in interscholastic soccer during the first quarter of the school year and were not involved in any other major extracurricular activity during the second quarter. The result indicated that during the soccer (the first quarter), soccer players had higher GPAS that out of season the second quarter. Attendance was also better in season but this fatter finding was not statistically significant.

In a more recent study Broh (2002) also looked at the relationship between athletics and students outcomes. She analyzed data on students from the National Educational Longitudinal study of 1988 (NELS – 88) including the first and second follow ups. Result of her analysis showed that participating interscholastic sport was related to improved mathematical graders, English and Mathematics test scores, even after controlling for the selection of higher performing students. Participation
in interscholastic sports was also related to increased self esteem, a more internalized locus of control, spending more time on home work and increased contact among parents, students and teachers.

Some researchers have looked beyond athletics to other extracurricular activities. March (1999) conducted one of the first large-scale studies on extracurricular activities using the High School and beyond data base, including the first and second follow-up (National centre for Education statistics). He examined the relationship between total number of extra circular activities and a variety of outcomes variables in a weighted sample of more than 4000 students. Controlling for background variables and sophomore outcomes, March reported that in seines year extracurricular activities was positively associated with social self concept, academic self concept taking advanced courses, time spent on homework, post secondary education aspiration, GPA, parental involvement and lower absenteeism for students across a variety of backgrounds. Marsh noted that the relationship with academic and social self concepts but argued that participation in extracurricular activities was important because it can lead to "increased commitment to school and school values which lead indirectly to increased academic success".

Broh (2002) also reported that the differential effects of extracurricular activities were not limited to interscholastic and intramural sports. She found that participation in music groups was positively related to both Math and English grades and Math test scores participation in student council was positively related to both sets of grades and participation in year book. Rombokas (1995) investigated the relationship between students' involvement in extracurricular activities and their academic performance. She opined that students who involved in extracurricular activities received higher grades than those not involved in activities. She studied this topic because high school budgets are meager and administrations of these schools want to spend the money efficiently. Consequently, funding for extracurricular may be decreased examined the correlation between extracurricular activities and academic performance.

The scopes of her investigation included high school students and the relationship between their involvement in activities and their academic performance. Some collegiate level studies were used since the benefits of extracurricular activities in high school and college are the same. She performed a study of college aged students who were involved in extracurricular activities on high school to discover if there was in fact a correlation between involvement in activities and academic achievement. She concluded after questioning two hundred and ninety two (292) college students that "participation in extracurricular activities enhances both the intellectual and social development of students" through her own research she discovered that athletes attain higher grade point averages than those students not in activities. In addition, Rombokas found that a national surrey performed by Durbin in 1999 showed that participants in extracurricular activities in high school received better grades when they were not participating in activities.

Objective of the Study:

The purpose of this study is to determine the extent of the relationship between students involvement in

NSS based extra-curricular activities and their achievement in Mathematical Sciences.

Limitations of the Study: Several limitations to this study existed. The sample population consisted only students of senior college affiliated by Swami Ramanand Terrth Marathwada University Nanded (Maharashtra) INDIA enrolled at colleges in Nanded city in the academic year 2011-12.Although the findings for this study pertain mainly to the students of college in Nanded city a general trend may be observed and conclusions drawn

Methodology:

Research hypothesis: The following hypotheses were postulated to guide the investigation.

(1) H_{01}: NSS based extracurricular activities have no affect on student's achievement Mathematical Sciences.

(2) H_{02}: Students achievement in Mathematical Sciences is not influenced by their involvement in NSS based extracurricular activities.

(3) H_{03}: Students' achievement in Mathematical Sciences is not influenced by their involvement in social activities.

Methods:

The study adopted a simple survey design and was directed at the population of senior colleges of Mathematical Sciences students in Swami Ramanand Terrth Marathwada University Nanded (Maharashtra) INDIA .The sample selection was limited to senior college Mathematical Sciences student. Fifty students from each college were randomly selected from four selected senior colleges .The number of female students selected equals the male to eliminate or Minimize gender biases in the responses. In all, two hundred students formed the study sample.

Instrument

The instruments used were questionnaires and Mathematical Sciences student achievement test (MSSAT). The questionnaire consists of three sections (A, B, and C). Section A was designed to elicit information on the bio-data of the students. Section B includes question on the NSS based extracurricular activities that students involved in the college, their favorite type of NSS based extracurricular activities and maximum time spent each week on NSS based extracurricular activities. Section C was provided with 5 responses each borrowing the idea of Likert (1932) to give room for freedom of expression of the respondents. The number of respondents' giving each type of response were counted and scored. The five responses used are: Strongly agree (SA), Agree (A), Undecided (U), Disagreed (D), and strongly disagreed (SD).

Finally, the second instrument administered to the students, which is the Mathematical Sciences student Achievement Test (MSSAT), was designed to collect information about the performance of students in Mathematical Sciences. It comprised 3 questions according to the syllabus of the respective classes. Each question carried a total mark of ten (10) thus the overall mark was 30.

Data analysis:

The data analysis and results are presented with special reference to the research hypotheses.

Table1 (Simple regression analysis of involvement in NSS based extracurricular activities on student's achievement in Mathematical Sciences.)

Entered Variables		SS	DF	R	R- square	MS	F	Sig(0.05)
Involvement in NSS based extracurricular activities	Regression	387.649	1	0.319	0.102	387.649	22.269	0.000
	Residual	3411.891	196					
	Total	3799.540	197					

Interpretation of Table1: Shows the multiple regressions analysis of students' involvement in NSS based extracurricular activities on their achievement in Mathematical Sciences. From the aforementioned table1, it is easy to see that there exists an effect of students' involvement in NSS based extracurricular activities on their achievement in Mathematical Sciences. This implies that students' involvement in NSS based extracurricular activities determines to a greater extent academic performance in Mathematical Sciences. The relationship is very high, positive and significance at 10% level of significance. Hence the null hypothesis is duly rejected. Further, it is necessary to find out if students' participation in class influences their academic performance in Mathematical Sciences or not.

Table2 (Simple regression analysis of the influence of student's participation in NSS based extracurricular activities on their achievement in Mathematical Sciences.)

Entered Variables		SS	DF	R	R- square	MS	F	Sig(0.05)
Student involvement in NSS based extracurricular Activities	Regression	14.468	1	0.174	0.030	114.468	16.088	0.000
	Residual	3685.072	196			18.801		
	Total	3799.540	197					

Interpretation of Table2: reveals clearly that students' participation in NSS based extracurricular activities influences their achievement in Mathematical Sciences. The implication of this finding is that participation in specific extracurricular activities plays a significant role in booting students' achievement in Mathematical Sciences. The relationship is high, positive and significant at 3% level of significance. Hence, the null hypothesis is thereby rejected. Furthermore, we establish if students' involvement in social activities influences their academic performance in Mathematical Sciences or not.

Table3 (Simple regression analysis of involvement in social activities on student's achievement in Mathematical Sciences)

Entered Variables		SS	DF	R	R- square	MS	F	Sig(0.05)
Student involvement in NSS based extracurricular Activities	Regression	18.964	1	18.964	0.398	0.158	47.870	0.000
	Residual	3780.577	196	19.289				
	Total	3799.540	197					

Interpretation of Table3: reveals clearly that there exists a significant relationship between involvement in social activities and student's achievement in Mathematical Sciences. The implication of this finding is that involvement in social activities plays a significant role in improving students' achievement in Mathematical Sciences. The relationship is high, positive and significant at 1% level of significance. Hence, the null hypothesis is rejected.

Discussion and Conclusion:

The result of the analysis of data shows that students' participation in NSS based extracurricular activities influences their achievement in Mathematical Sciences and this of course shows that generally students non participation in any of these activities account for the students' poor achievement. This finding corroborate with the views of Marsh and Kleitiman (2002) that students who participate in extracurricular activities did better academically than students who did not participate. Extracurricular activities serve a large purpose in the academic, social, physical and cognitive development of students which is required in learning Mathematical Sciences so every child should have the opportunity to participate in at least one activity that suits his or her personal interest.

The hypothesis two in this study sought to test the significant effect of students' participation NSS based extracurricular activities incur great influence on their achievement in Mathematical Sciences. The result also corroborates Broh (2002) report that participation in some activities others diminishes academic achievement. Marsh and Kleitman (2002) cited that extracurricular activities have proven to be beneficial in building and strengthening academic achievement, even if the activities are not obviously related to academic subjects. Not only does an extracurricular activity enhance students' achievement in Mathematical Sciences but also the type of activity the child participates in. These activities however, should be well supervised, timed properly and directed toward improving their development and should involve some mental and physical ability which is required in achievement in Mathematical Sciences.

Students need to be aware of the NSS based extracurricular activities available to them and the effect that each specific activity has on their academic performance. Not every student will benefit from or be impaired in the same manner that studies revealed concerning extracurricular activities. Parents need to give their children some freedom in determining which activities to participate in but still need to monitor how their children spend their time. Parents have a large role in the academic development of their children and one way of fostering strong academic performance is by encouraging their young children to become involved in some of the activities which promote academic performance. This could influence their activity of choices later on in life and may set the foundation for a life of academic success and progress.

The research result obtained from the data analysis indicated that students' involvement in social activities influences their achievement in Mathematical Sciences. This is supported by the view of Eccles and Barber (1999) that students who participated in social activities and school involvement reported liking school more over the years studied, which is consistent with Marshs' (1999) hypothesis about the effect of social activities on students commitment to school. Although, social aspects of a student's life do not directly affect his or her grade point average they do affect the overall well-being of the student.

This study has shown that students' participation in NSS based extracurricular activities is an important factor to students' achievement in Mathematical Sciences. However, there are implications of the study for students and teachers and the society as a whole. The students would perform better if extracurricular activities are encouraged in college as it would improve Mathematical Sciences students reading habit and thinking abilities. As it is often said "All work and no play make jack a dull boy", extracurricular activities would make the students more active in class and build up their skills which are important factors in achievement in Mathematical Sciences. This study will also help teachers spend more time with the student, having a personal relationship with each student, knowing their strengths and their weakness and building up on them thereby improving the Mathematical sciences teachers' quality in terms of teaching effectiveness.

Mathematical Sciences teachers need to undergo further training to update their skills in teaching effectively. During training, importance of extracurricular activities to the students should be highly emphasized. College administrators should create necessary time during college hours for extracurricular activities and ensure that it is done effectively. Government should provide adequate infrastructure and enabling environment for extracurricular activities.

From the findings and discussions it was drawn that there is a significant relationship between students involvement in NSS based extracurricular activities and their achievement in Mathematical Sciences. Hence, administration of college to continue their NSS based extracurricular activities since it clearly benefits the students' academic achievement in Mathematical Sciences. College should encourage students to participate in NSS based extracurricular activities since they benefit the students in so many ways. Also the college should educate the coaches and group sponsors on the influence that NSS based extracurricular activities have on students' live. Activities are not solely about what the score is, how many wins or losses are attained or what place is won at a competition. They provide and instruct students lessons that will last them a lifetime.

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