THE PLACE OF STATISTICS IN THE SCHOOL SYSTEM: CASE STUDY OF A MELANESIAN ISLAND

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In order to determine the significance given to Statistics Education in the country, this paper examines the weighting given to Statistics in the Mathematics component of the school curriculum and the public examination and the teaching strategies employed by a group of sample mathematics teachers.

Grade 7 to 10 Mathematics curriculum gives the topics under five major headings as Number, Algebra, Measurement, Geometry and Statistics in that order with a list of sub topics under each with the shortest list under Statistics. As no teaching time is given, the tendency for the teachers is to give more time to those with longer list which increases the probability of Statistics to be pushed to the corner. In Grade 11, the teaching time for each of the topics is specified where Statistics has 2 out of 32 weeks or 6.25% of teaching time. In Grade 12, the situation is better where 6 out of 28 weeks or 21% of time is allotted for Statistics. But the damage done in five years from grades 7 to 11 cannot be undone in one year.

Analysis of Grade 10 public examination mathematics papers for 1987 to 1996 reflects the curriculum trend where the number of questions in Statistics range between 2 and 4 out of a total of 50. As all the questions carry equal marks, a student can get a good grade without knowing any Statistics. However, there is one encouraging fact that instead of mere recall, the questions test the ability to understand and use the concepts learnt.

A sample of lessons observed reveal teachers' non mastery of content and teacher domination of lessons. Selected interactions that either increase or reduce student active participation of a group of teachers in terms of proportion of time on each is summarised in Table I.

Table 1 Proportion of Selected Classroom Interactions

	1	2	3	4	
Teacher No	Le, Ct, Dr	El,Em,Pb,Cu	Rq,Rd	Hq	Ratio 1:2
1	20	6.6	15.1	0	3.0
2	12.9	3.7	15.1	0	3.5
3	12.4	4.9	7.8	0	2.5
4	17	3.2	23.2	0	5.3
5	16.1	1.8	12.8	0	8.9
6	12.8	2.6	7.8	0	4.9
7	14.6	5.1	6.1	0	2.9
8	11.6	1.9	10.3	0	6.1

Note: Le- Lecture, Ct- Chalk/talk, Dr- Directive.
El-Explains with examples from life, Em- Explains with materials, Pb-Probe
Cu-Cues
Rq- Memory questions, Rd- Redirects questions from one to another
Hq- High level or thinking questions

Columns with various categories are numbered 1 to 5 and are referred so in the paper. More of teacher behaviours in (1) means less chance for students to be actively involved in the lesson while more of (2) is encouraging to the students. For the sample teachers, the ratio of (1) to (2) ranges from 3 to 9 which implies that lessons in general made students to be receivers rather than contributors, which does not provide the chance to develop critical thinking and problem solving abilities in the students. Thinking questions, as shown in (4), were never asked which again leads to rote learning. Redirecting questions from one to another in (5) shows that when a student gives an incomplete, incorrect or no answer to a question, the teacher calls on another, who is probably capable of answering, which demoralises all especially slow learners.

Conclusion and Recommendation

In Grades 7 to 11, Statistics forms only a small proportion of Mathematics curriculum which gives the impression to teachers and learners that it is not very important which is also reflected in the public examination. Teachers do not have adequate training, in terms of content mastery and interesting teaching strategies.

Curriculum planners should be educated about the need to increase the weighting of Statistics in the school curriculum through solid examples and provision should be made for on going in service training of teachers. As the situation in other countries may not be much different, there is need for investigation on wider level and based on the reports, ISI and similar bodies, should influence curriculum decisions on a more global level.

REFERENCES

Chacko, I (1997) Monotonous mathematics lessons at the primary level: The beginning of an end, In proceedings of the 21st conference on Psychology of Mathematics Education (Ed Erkki Pehkonen) 1, 226.University of Helsinki, Helsinki.

Riddiough, R & McColl, J.H. (1998) How long is a piece of string? Teaching Statistics 20, 13-16.

RE'SUME'

C'et article permet de constater la valeur donne'e a` l'e'tude des statistiques dans le system scolaire, en e'valuant le temps consacre' a` cette e'tude dans le programme scolaire et dans les examens publics a' la fin du niveau secondaire, et aussi de voir la me'thode d'enseignement utilise'e par les enseignants pour inculquer cette science. Le resultat prouve qu'au niveau aux autres e'le'ments de mathae'matiques est bas (6.25%) et se refle`te dans les examens public ( 4 a` 8 %). Les instituteurs n'ont pas la maitrise de ce sujet et leurs lec,ons pratiques (avec exemples) n'invitant pas la participation des e'le`ves ne les interessent pas. Nous recommendons que institutions comme le ISI e'tudient la situation dans d'autre pays et, enrichis de cette information, s'efforcent de reme'dier a` la situation.