

Under Utilization of Statistical Concepts by Students: Strategy Deficiency and Missed Targets

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1. Background & rationale

During a discussion with final year secondary school students, their ignorance about use of statistical concepts was revealed which made it necessary to obtain empirical evidence, which led to this study.

Use of real world problems relevant to the learners, in the teaching of Statistics and Mathematics at various levels of education is nothing new (Chadipadelis, 1998; Verschaffel, 1997). All the same, it is worth noting that in most cases, these approaches are used in developed parts of the world where computers, statistical packages and other resources are readily available. In developing countries, often teachers need upgrading in terms of content and pedagogy and even basic resources like textbooks are hard to come by. Where this study is conducted, at the secondary school level, Statistics forms a small part of the mathematics curriculum, which is taught by teachers who are ill prepared and teaching is done using transmission model which makes learning uninteresting (Chacko, 1999).

2. Procedure

i. Sample

The sample is from the final year of secondary school made up of 78 Science (S) and 47 Arts (A) students. The modal age of the sample is 16 with in the range of 14 to 17 years.

ii. Instrument and data collection

A test in Statistics containing 16 items on content and one on attitude was used to gather data. Of the sixteen items, four were on procedural problems like computation of measures of central tendency, six on application with one correct answer, three on application with more than one or no answer and three on evaluation. After trial testing and modification, the test was administered to the 125 as a single group.

iii. Results

Students' performance and attitudes are analyzed using frequencies and percentages, which is presented in tables 1 and 2.

Table 1. Percentage correct responses in procedural (P) and application (A) items

Item	1P	2P	3P	4P	7A	8A	10 A	13 A	14 A	15 A	Tot
S f	45	29	26	61	44	45	54	62	61	38	78
%	58	37	33	78	56	58	69	80	78	49	
A f	20	10	8	22	25	20	17	25	23	15	47

%	43	21	17	47	53	43	36	53	49	32	
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Regular procedural and application items that did not involve the use of calculators are mostly answered well, especially by science students. For instance, item 3 was to compute mean and most did not have calculators hence the response is poor but most of the other items have higher percentage of correct responses.

Table 2. Percentage correct responses in evaluative (E) and other items

Item->	5E	6E	9E	11	12	16	17a	17b	17c	Total
S f	0	0	29	9	8	6	39	12	27	78
%	0	0	37	12	10	8	50	15	35	
A f	0	1	2	7	7	2	23	7	17	47
%	0	2	4	15	15	4	49	15	36	

The general trend shows the inability of the students to apply the concepts learned in novel situations. Item 5 had two possible answers, but as students are used to one correct answer for every problem, they were unable to answer correctly.

In item 8 they were asked to identify the diagram that will display the given data best and item 9 asked to give the reason for selecting the particular diagram, which majority failed to do. Attitude wise, almost 50% of the group are positively inclined.

Although there are constraints, teachers should make use of the data from the class as well as from other sources like the media, which would make learning relevant, interesting and meaningful. All this call for inservice training of teachers which is one of the ways to upgrade their content knowledge and pedagogy.

REFERENCES

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RESUME

Le but de cette recherche a été de recueillir des preuves empiriques de la capacité des écoliers de l'école secondaire à appliquer les concepts de la statistique dans des situations réelles de la vie. Les données ont montré qu'ils sont capables de résoudre des problèmes routiniers en classe mais l'application de ces concepts dans le monde réel pose des difficultés. Le manque de stratégie est identifié comme une des causes de ce problème et cela nécessite d'organiser des stages pédagogiques des professeurs pour améliorer leur connaissance et leur savoir-faire pédagogique.