



**15TH NATIONAL
CONVENTION
ON STATISTICS**

03-05 OCTOBER 2022

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Knowledge and Attitude Towards Statistics and Probability of Senior High School Students

Jocell D. Calma

Instructor

Pampanga State Agricultural University

Education Statistics (K-12)

Crowne Plaza Manila Galleria

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Knowledge and Attitude Towards Statistics and Probability of Senior High School Students

Some issues

- Students face a large number of academic difficulties in learning statistics and probability, and this is due to the weakness of their mathematical and statistical background (Kandeel (2019))
- A large proportion of students, even in college, do not understand many of the basic statistical concepts they have studied (Garfield and Ahlgren (1988))
- Statistics courses are often considered difficult because it involves many fundamental concepts and techniques. (Ashaari et al. (2011))
- Students have a negative attitude on the Probability and Statistics subject (Oliveira Junior et al. (2018))

Objectives

1. To describe the attitude of SHS students towards Statistics and Probability;
2. To describe the knowledge of SHS students towards Statistics and Probability;
3. To determine the significant difference among the SHS students on their attitude towards Statistics and Probability when compared in terms of their sex, type of school, and strand;
4. To determine significant difference among the SHS students on their knowledge on Statistics and Probability when compared in terms of their sex, type of school, and strand; and
5. To determine the significant relationship between the attitude and knowledge of SHS students.

Methodology

Research Designs Descriptive-correlational and cross-sectional designs

Instrument Knowledge: 25-point self-made questionnaire
Attitude: 20-item five-point scale questionnaire from Alken (1974)

Respondents Stratified Random Sampling; 397 out of 1534 Grade 12 SHS students (2020-2021) from 9 public and private senior high schools in Magalang, Pampanga

Data Analysis SPSS; graphs, frequencies, means, standard deviation, ANOVA, Pearson correlation



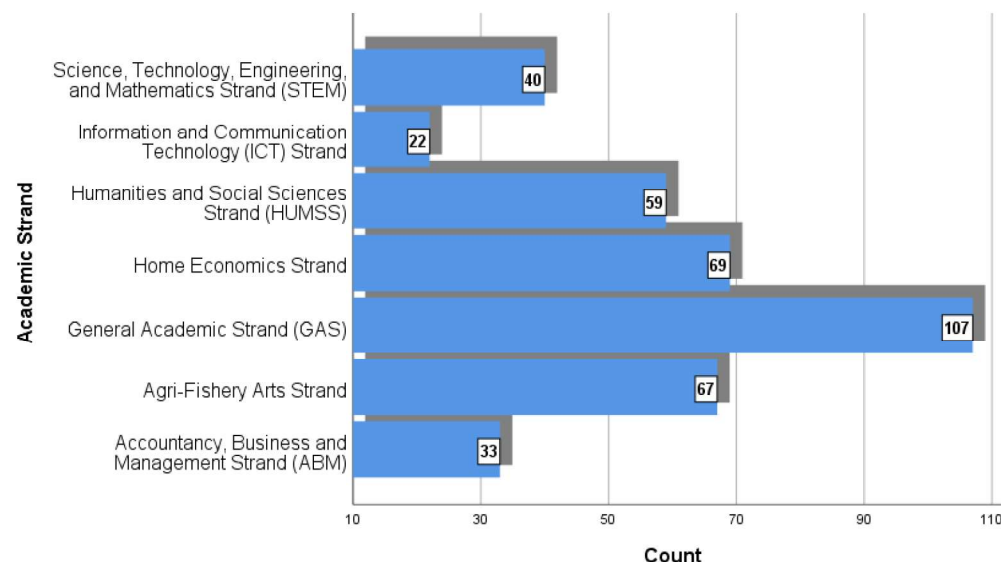
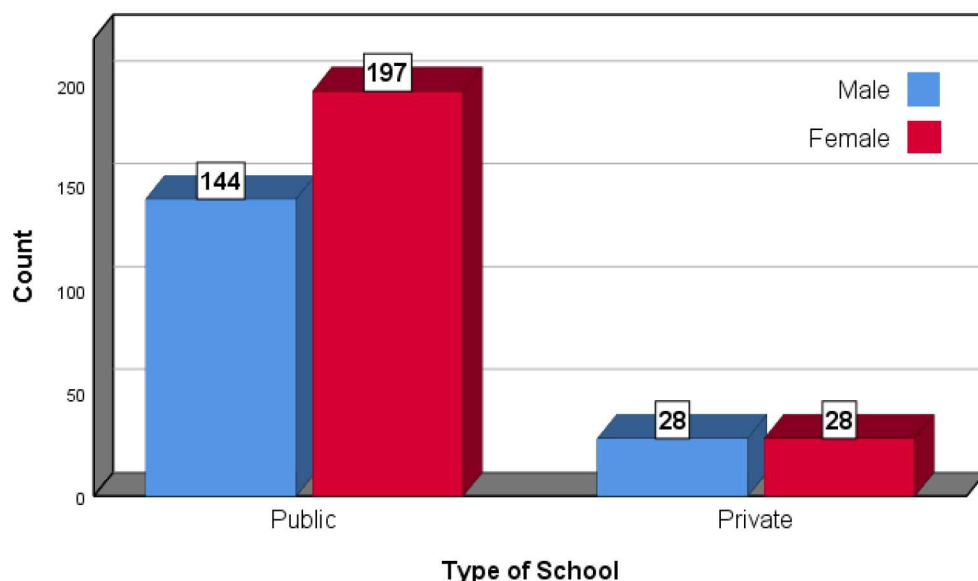
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Results – Profile of Respondents





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Results –

Attitude towards Stat and Prob

Table 1. Attitude of SHS Students Towards Statistics and Probability

Statements	M	VI ^a
1. I am always under a terrible strain in a Statistics and Probability class.	3.36	Undecided
2. I do not like Statistics and Probability, and it scares me to have to take it.	3.00	Undecided
3. Statistics and Probability is very interesting to me, and I enjoy it.	3.75	Agree
4. Statistics and Probability is fascinating and fun.	3.73	Agree
5. Statistics and Probability makes me feel secure, and at the same time it is stimulating.	3.59	Agree
6. My mind goes blank, and I am unable to think clearly when working Statistics and Probability.	3.30	Undecided
7. I feel a sense of insecurity when attempting Statistics and Probability.	3.29	Undecided
8. Statistics and Probability makes me feel uncomfortable, restless, irritable, and impatient.	3.14	Undecided
9. The feeling that I have toward Statistics and Probability is a good feeling.	3.63	Agree
10. Statistics and Probability makes me feel as though as I'm lost in a jungle of numbers and can't find my way out.	3.25	Undecided
11. Statistics and Probability is something which I enjoy a great deal.	3.66	Agree
12. When I hear the word Statistics or Probability, I have a feeling of dislike.	3.10	Undecided
13. I approach Statistics and Probability with a feeling of hesitation, resulting from a fear of not being able to do it.	3.30	Undecided
14. I really like Statistics and Probability.	3.57	Agree
15. Statistics and Probability is a subject in school which I have always enjoyed studying.	3.54	Agree
16. It makes me nervous to even think about having to do a Statistics and Probability problem.	3.49	Agree
17. I have never liked Statistics and Probability, and it is my most dreaded subject.	3.07	Undecided
18. I am happier in a Statistics and Probability class than in any other class.	3.34	Undecided
19. I feel at ease in Statistics and Probability, and I like it very much.	3.45	Agree
20. I feel a definite positive reaction to Statistics and Probability.	3.64	Agree

Note. M – Mean; VI – Verbal Interpretation

^a4.20-5.00 – Strongly Agree; 3.40-4.19 – Agree; 2.60-3.39 – Undecided; 1.80-2.59 – Disagree; 1.00-1.79 – Strongly Disagree



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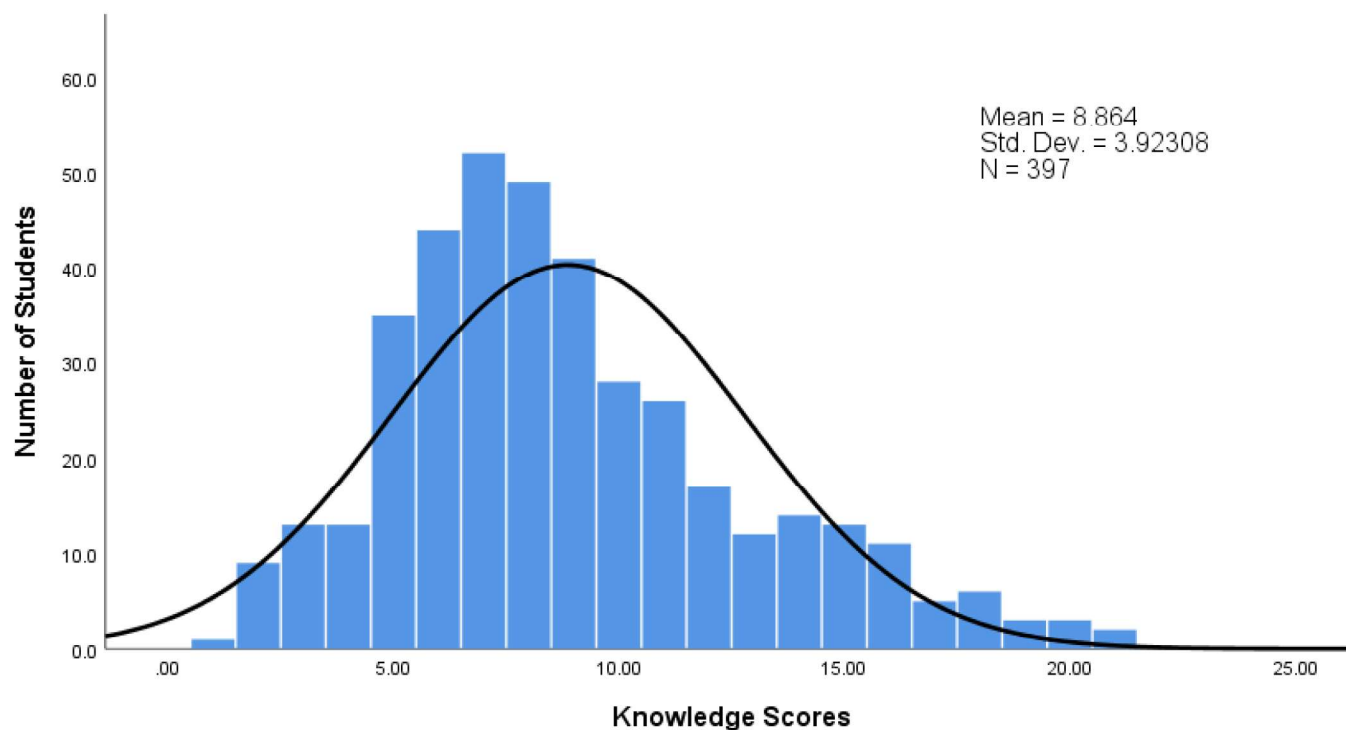
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Results –

Knowledge on Stat and Prob





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Results – Knowledge on Stat and Prob

Table 2. Multiple Comparisons of Category of Knowledge Questions

Category	Mean Percentage Correct	<i>F</i>	<i>p</i>
Fundamentals/Basic	30.48 ^d	11.645	.000**
Random Variables and Probability Distributions	36.78 ^{bc}		
Normal Distribution	33.50 ^{cd}		
Sampling and Sampling Distributions	40.55 ^{ab}		
Estimation of Parameters	42.95 ^a		
Test of Hypothesis	33.38 ^{cd}		

Note. Means with the same superscript are not statistically significant at 5% level of significance

* $p < .05$. ** $p < .01$



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Results – Difference on Attitude

Table 3. Comparison of Students' Attitude towards Statistics and Probability

Variables	<i>n</i>	<i>M</i>	<i>t/F</i>	<i>p</i>
Sex				
Male	172	3.23	1.538	.125
Female	225	3.14		
Type of School				
Public	341	3.12	-4.676	.000**
Private	56	3.58		
Strand				
General Academic Strand (GAS)	107	3.19 ^b	4.738	.000**
Home Economics Strand	69	3.15 ^b		
Information and Communication Technology (ICT) Strand	32	3.03 ^b		
Accountancy, Business and Management Strand (ABM)	33	3.63 ^a		
Science, Technology, Engineering, and Mathematics Strand (STEM)	40	3.02 ^b		
Agri-Fishery Arts Strand	67	3.12 ^b		
Humanities and Social Sciences Strand (HUMSS)	59	3.18 ^b		

Note. Means with the same superscript are not statistically significant at 5% level of significance

p* < .05. *p* < .01



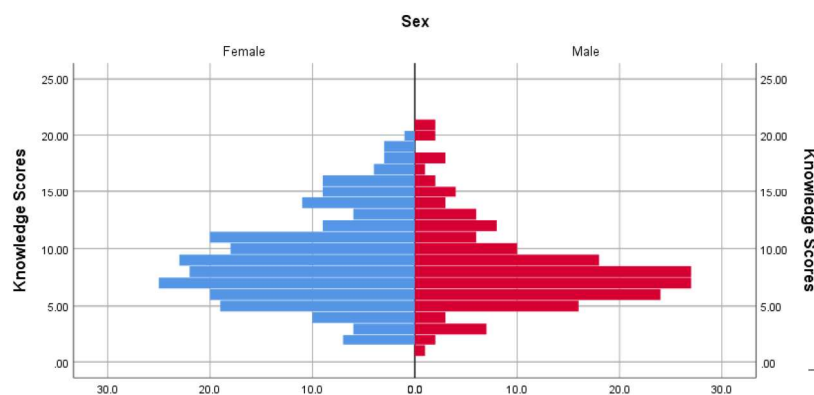
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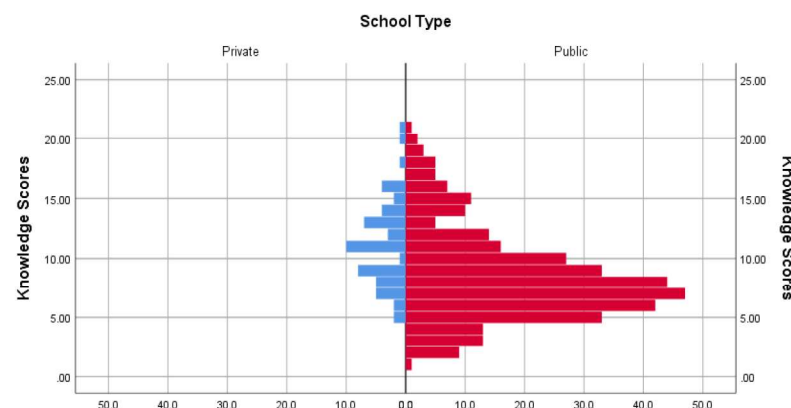
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Results – Difference on Knowledge



$$t(395) = -1.776, p = .077$$



$$t(395) = -4.86, p < .01$$

Table 4. Comparison of Students' Knowledge towards Statistics and Probability

Strand	<i>n</i>	<i>M</i>	<i>F</i>	<i>p</i>
General Academic Strand (GAS)	107	9.08 ^{bc}		
Home Economics Strand	69	7.19 ^c		
Information and Communication Technology (ICT) Strand	32	7.55 ^c		
Accountancy, Business and Management Strand (ABM)	33	10.67 ^b	16.926	.000**
Science, Technology, Engineering, and Mathematics Strand	40	13.05 ^a		
Agri-Fishery Arts Strand	67	7.09 ^c		
Humanities and Social Sciences Strand (HUMSS)	59	9.10 ^{bc}		

Note. Means with the same superscript are not statistically significant at 5% level of significance

* $p < .05$. ** $p < .01$



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Results – Relationship between Knowledge and Attitude

Based on the SPSS results, the study revealed that there is a significant and positive relationship between knowledge and attitude of students towards Statistics and Probability. However, their relationship is only low ($r(395) = 0.174, p < .01$)

Conclusions

- The students have positive attitude towards Statistics and Probability. Students were interested and fascinated with Statistics and Probability, but they felt anxious when they study the said subject.
- The students had unsatisfactory rating in Statistics and Probability most particular on fundamentals/basic topics.
- The attitude of male and female students were comparable. Students in private schools have better attitude than those in the public schools. Students belong in the Accountancy, Business and Management (ABM) Strand had shown having the best attitude when compared to other students belong to other strands.
- Students from private high schools performed better in Statistics and Probability than those from the public high schools, while students belong to Science, Technology, Engineering, and Mathematics Strand (STEM) performed best in Statistics and Probability when compared to those from the other tracks or strands.
- Knowledge in Statistics and Probability was found to be significantly and positively related to attitude towards the said subject.

Full Paper

- <https://research.lpubatangas.edu.ph/wp-content/uploads/2022/09/3-APJEP-2022-38-Calma-et-al..pdf>

or

- <https://bit.ly/APJEP-2022-9-1-18>

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