Bioedunis Journal
https://jurnal.uinsyahada.ac.id/index.php/Bioedunisi
Vol. 03 No. 01 Juni 2024
E-ISSN : 2829-7601

The Influence of Gender Differences on Academic Abilities of Biology Education Students in the Animal Structure Practicum

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Abstract

Differences in the academic abilities of each student are one of the factors that influence the high and low test scores of each student, especially in animal structure practical courses. This research aims to determine the effect of gender differences on the academic abilities of biology education students based on the results of mid-semester exams. The population in this study was all students in the third semester of biology education with a sample of 20 male students and 20 female students. The data collection technique in this research uses a study of students' midterm exam documents which are analyzed using average calculations and followed by statistical analysis in the form of normality tests, homogeneity tests, and continued with hypothesis testing. The average score of male students is 46.5, lower than that of female students, which is 66.5 with the asmp normality test. Sig 0.000 < 0.05 where the data is not normally distributed. The homogeneity test results obtained asymp value. Sig 0.978 > 0.05 where the data is homogeneous, and the results of the asmp hypothesis test. Sig (2-tailed) 0.001 < 0.05 where the hypothesis is accepted. Thus, there is a difference in academic abilities between men and women in the animal structure practicum course, the concept of observing animal tissue.

Keywords: *Gender, Animal Tissue, Academic Ability, Animal Structure.*

INTRODUCTION

Practicum is a mandatory activity for biology education students, especially in courses that involve scientific validation processes or other scientific activities as validation of a theory. Practicum activities in biology education serve as a step towards implementing science literacy-based learning, which is a challenge in the 21st-century development era (Atmaja, 2018). Animal structure, as a complex and abstract subject in biological content, necessitates practicum activities in its learning process.

The complexity of animal structure theory, particularly in tissue observation, requires continuous implementation of practical activities that provide better learning experiences and outcomes. Observing animal tissue during practicum aims to train students in observational skills, integrate knowledge with real-world practice to validate learned theories, and serve as scientific proof (Nisa, 2017). Practicum activities are not the sole determinant of learning success, particularly in animal structure courses. This is because practicum outcomes are influenced by each student's academic abilities, including critical thinking skills, higher-order thinking abilities, and problem-solving approaches (Umar, 2020).

Differences in academic abilities among students are influenced by gender differences between males and females. Despite ongoing discussions about gender equality, it does not significantly impact academic abilities in learning processes. Gender differences affect academic performance between males and females. This can be observed in the phenomenon where females consistently achieve higher academic scores compared to males. Physical and psychological differences between males and females, such as physical strength, learning interests and motivations, perseverance, precision, and psychosexual development, contribute to these variations (Ardiansyah, 2023).

RESEARCH METHODS

This study employed a descriptive quantitative method with descriptive analysis and statistical analysis using tests for normality, homogeneity, and hypothesis testing with SPSS version 25 software. The research was conducted on third-semester biology education students at UIN Sunan Gunung Djati Bandung. The population consisted of all third-semester male and female biology education students at UIN Sunan Gunung Djati Bandung, with a sample of 20 male and 20 female third-semester biology education students selected using random sampling techniques.

Data collection for this research involved studying documents of mid-semester exams in animal structure practicum focusing on animal tissue observation, among third-semester biology education students. The data were then analyzed based on the average calculation of mid-semester exam scores and statistical analyses including normality tests, homogeneity tests, and Mann-Whitney U tests to determine the influence of gender differences on students' academic abilities. The hypotheses in this study were as follows: H0: There is no difference in academic abilities between male and female students based on the mid-semester exam scores in Animal Tissue Observation Practicum. H1: There is a difference in academic abilities

between male and female students based on the mid-semester exam scores in Animal Tissue Observation Practicum.

RESULTS AND DISCUSSION

The study on the influence of gender differences on the academic abilities of biology education students in animal structure practicum focusing on animal tissue observation based on the document study of mid-semester exam results in animal tissue observation yielded the following average scores:

Table 1. Average Scores of Mid-Semester Exams for Male and Female Students

Gender	Number of Students	Average Score
Male	20	46.5
Female	20	66.5

The average scores of mid-semester exams for third-semester biology education students showed that male students scored lower, averaging 46.5, compared to female students who scored significantly higher with an average of 66.5 out of a total of 20 students per gender. This substantial difference in average scores in animal tissue observation exams indicates that male students generally have lower academic abilities compared to female students. This finding is consistent with previous research (Kusnia, 2017) suggesting that males tend to have lower academic performance in the fields of science and mathematics.

The significant difference in average scores between males and females further strengthens the assumption that a mother's intelligence or femininity largely influences her offspring. This is supported by the notion that feminine traits, predominantly possessed by females, contribute positively to learning processes due to traits such as diligence, perseverance, attention to detail, and high motivation and interest in learning. The influence of feminine characteristics on academic ability correlates with psychosocial aspects and motivational theories, suggesting that gender stereotypes significantly affect the academic abilities of females, especially those with predominant feminine traits compared to males, who are largely associated with masculine characteristics.

The difference in mid-semester exam results among students in tissue observation, with females achieving the highest average scores, particularly among students considered mature, further substantiates that gender differences influenced by gender characteristics indicate the

dominance of masculine traits in learning processes, especially in courses perceived as masculine. This excludes science courses such as animal structure, which are predominantly associated with feminine traits mostly possessed by females.

Before hypothesis testing, data underwent preliminary tests for normality and homogeneity. Normality tests were conducted to determine whether the data followed a normal distribution using the Shapiro-Wilk test. Decision-making criteria were based on an asymptotic significance (Asymp. Sig.) value > 0.05 indicating normal distribution, and < 0.05 indicating non-normal distribution. The results of the normality test are presented in Table 2 below:

Table 2. Normality Test of Mid-Semester Exam Scores for Male and Female Students

Gender	Shapiro-Wilk Statistic	df	Sig.
Male	0.450	20	0.000
Female	0.389	20	0.000

Based on Table 2, both male and female data did not follow a normal distribution as indicated by asymptotic significance values of 0.000, which are less than 0.05. Next, homogeneity testing was conducted to determine whether the mid-semester exam scores for third-semester biology education students were homogeneous. Using SPSS version 25 software, the results of the homogeneity test are presented in Table 3 below:

Table 3. Homogeneity Test of Mid-Semester Exam Scores for Male and Female Students

Test	Levene Statistic	df1	df2	Sig.
Based on Mean	0.001	1	38	0.978

Based on the data in Table 3 regarding the homogeneity test results, the significance (Sig.) value of 0.978 indicates that the average mid-semester exam scores for male and female third-semester biology education students are homogeneous or equal. This decision is based on a significance value of 0.978 > 0.05, meeting the criteria for homogeneity testing where the data obtained are homogeneous.

Subsequently, hypothesis testing was conducted to determine whether there was a difference in academic abilities between male and female students in the animal structure

practicum as a step in accepting or rejecting data. The results of the hypothesis testing using Mann-Whitney U test are presented in Table 4 below:

Table 4. Mann-Whitney U Test of Mid-Semester Exam Scores for Male and Female Students

	Mann-Whitney U	**Wilcoxon W**	**Z**	**Asymp. Sig. (2-tailed)**
Mid-Semester Exam Scores	81.000	291.000	-3.222	0.001

Based on the Mann-Whitney U hypothesis test with a significance level of 5%, the decision criteria state that if the asymptotic significance (2-tailed) value > 0.05, the hypothesis is rejected, and if < 0.05, the hypothesis is accepted. The Mann-Whitney U test yielded an asymptotic significance (2-tailed) value of 0.001, which is less than 0.05, indicating that the hypothesis is accepted. This indicates that there is a difference in academic abilities between male and female students based on the mid-semester exam scores in Animal Tissue Observation Practicum. Thus, gender differences influence the variation in mid-semester exam results or student learning outcomes in the third semester of biology education, particularly in courses such as animal structure with a concept of tissue observation.

CONCLUSION

Based on the results of data analysis and discussion regarding the gender differences in academic abilities of third-semester biology education students, statistically with a hypothesis testing result of asymptotic significance (2-tailed) 0.001 < 0.05, it is proven that there is a difference in academic abilities between male and female students in the animal structure practicum focusing on tissue observation concepts. This also indicates that gender differences influence variations in student learning outcomes or academic achievements, where females on average achieve higher scores compared to males.

ACKNOWLEDGEMENT

We would like to express our gratitude to all third-semester biology education students of UIN Sunan Gunung Djati who participated in the animal structure practicum throughout the course. Thank you for your cooperation and assistance in conducting this research, which has contributed to its successful completion.

REFERENCES

Ardiansyah, A. d. (2023). Analisis Pengaruh Gender Terhadap Kemampuan Akademik Peserta Didik SMP. *Seminar Nasional Pendidikan dan Matematika* (p. 73). Malang: Universitas Negeri Malang.

Atmaja, T. W. (2018). Kegiatan Praktikum Sebagai Penerapan Literasi Mahasiswa Program Studi Pendidikan Biologi FKIP Universitas Samudra. *Jurnal Jeumpa, 5(2)*, 77.

Kusnia, Y. (2017). Pengaruh Karakteristik Gender dan Motivasi Belajar Terhadap Prestasi Belajar Matematika Siswa Kelas XI IPA 1 di MAN 2 Semarang . *Seminar Nasional Pendidikan Sains dan Teknologi* (p. 378). Semarang : Universitas Muhammadiyah Semarang .

Nisa, U. M. (2017). Metode Praktikum untuk Meningkatkan Pemahaman dan Hasil Belajar Siswa Kelas V MI YPPI 1945 Babat pada Materi Zat Tunggal dan Campuran. *Biology Education Conference. Volume 14, No.1*, p. 63. Proceeding Biology Education.

Umar, U. d. (2020). “Analisis Faktor Penyebab Rendahnya Kemampuan Akademik Siswa Sekolah Dasardi Daerah Pinggiran". *Jurnal Education. FKIP UNMA, vol 8, no 2*, 144-149.