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STUDENT PERSPECTIVES ON JASP AS A LEARNING TOOL IN ENGLISH EDUCATIONAL STATISTICS

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Abstract

This study aimed to explore students' views on using JASP (Jeffreys's Amazing Statistics Program) as a learning tool in an educational statistics course within the English Education Program. Using a quantitative approach, the study gathered data that allowed for statistical insights into students' understanding and experiences with the tool. Questionnaires were distributed to 23 students selected through convinience sampling. The results showed that many students felt JASP supported their grasp of statistical concepts, helped them better interpret data, and reduced the likelihood of errors in their analyses. However, some students expressed a need for more guidance and practice to fully benefit from the tool. Overall, while JASP showed promise in enhancing statistical learning, its effective use would benefit from structured support to help students make the most of it in their studies.

Keywords: *JASP, Student Perspectives, Statistical Data Analysis, Statistical Software Tools, English Education Program.*

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A. INTRODUCTION

In the Dynamic environment, technology has important role in English Language Teaching (ELT) and has changed on this 21st century (Al-khresheh, 2024). Technology assist enhancement of skills in reading, those are including listening, reading, speaking, and writing (Bui, 2022). This makes it possible to provide timely and appropriate feedback. English teachers use statistical methods for their practicality in identifying field issues such as managerial, social, and psychological challenges and, when applied effectively, these methods yield real data for research, helping to choose the right approach by combining analytical skills with experiential insights and opinions for a more practical, quotable study (Rahmati et al., 2021).

The application of JASP (Jeffreys's Amazing Statistics Program) (Kovari, 2018) in various research domains has emerged as a significant advancement in the field of statistical analysis, particularly within Cognitive Info communication. JASP (Kovari, 2018) provides a user-friendly interface that facilitates both classical and Bayesian statistical methods, making it an invaluable tool for researchers seeking to analyze data efficiently and effectively. The basic functionalities of JASP (Kovari, 2018) through an eye-tracking research analysis, showcasing its capacity to present results in a clear and comprehensible manner (Kovari, 2018). This simplicity is crucial for researchers who may not have extensive statistical training but require robust analytical capabilities.

In the realm of public finance, the application of JASP (Kovari, 2018) extends to the analysis of real property tax collection (Fuentes & Salapa, 2023). Their study employs a documentary-descriptive research method to examine tax delinquency in Sta. Josefa, Agusan del Sur, utilizing secondary data sources. By employing JASP (Kovari, 2018), the researchers effectively illustrate the impact of government intervention on tax collection efficiency. Their findings underscore the importance of such interventions in mitigating tax delinquency, thereby providing practical insights for policymakers and tax administrators.

Bayesian methodologies, particularly in the context of meta-analysis, represent another area where JASP (Kovari, 2018) proves beneficial. Discuss the advantages of Bayesian model-averaged meta-analysis over traditional methods, emphasizing its ability to quantify evidence and adapt as new studies emerge (Berkhout et al., 2024) . Their tutorial not only introduces the foundational concepts of Bayesian analysis but also demonstrates its application through a meta-analysis on language development in children using JASP (Kovari, 2018). This approach allows researchers to draw more nuanced inferences from the data, enhancing the overall robustness of their findings.

To support the analysis of statistical data, helper tool like SPSS (Statistical Package for the Social Sciences) often used by many researchers in wide range, for

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instance, SPSS software used to solve math problems and use it to understand how the students learn (Fiandini et al., 2024). Previous research that was also used SPSS to do math problems by comparing two groups of students who were taught using different methods (Afifah et al., 2022). The other research applied SPSS with another different software like Jamovi and R to do math problems to compare different things, for example how they learn languages informally using technology (Han & Liu, 2024).

Moreover, the application of confirmatory factor analysis (CFA) within JASP (Kovari, 2018) addresses a critical need in the evaluation of measurement instruments. (Rogers, 2023) highlights the challenges faced when conducting CFA, particularly in contexts where items are assessed on an ordinal scale. By providing guidelines and a tutorial example using JASP (Kovari, 2018) and lavaan, the article contributes to a clearer understanding of how to navigate these complexities.

However, there are few research that use JASP (Kovari, 2018), which can also aid in statistical data processing. Former research by (Faulkenberry et al., 2020) only focus on applying JASP (Kovari, 2018) for Bayesian inference analysis in numerical cognition. Additionally, other studies by van den (van den Bergh et al., 2023) have examined the contrasts between frequentist and Bayesian methods for analyzing repeated-measures ANOVA and highlighted potential inconsistencies between them. These previous studies have only delved into the application of Bayesian statistics in numerical cognition research. To address this gap, this article will focus on exploring the effectiveness of alternative statistical tools, such as JASP, which have the potential to assist in statistical data creation in the context of teaching and English language studies.

B. RESEARCH METHOD

This study use a quantitative method to evaluate students' understanding and perception of using JASP in an educational statistics course. he reason the quantitative method was used is primarily because the data collected can be measured, quantified and analyzed statistically which helped identify any patters or relationships within in. In this process, JASP was used as a data analysis tool to assist students in practically understanding statistical concepts. The questionnaire was used to collect data that revealed details on how many students were actively involved in using the software in their learning process and the difficulties encountered during this period.

1. Participants

The participants in this study were English for Foreign Language (EFL) Students. A total of 23 students were selected as participants through convinience sampling. The participants were enrolled in an educational statistics course using JASP as a learning tool, included 20 females and 3 males, with an age range of 19 to 22 years.

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2. Data Collection Procedure

Data collection was conducted over a period of one week. The researchers also distributed questionnaires after obtaining consent from the respondents. The researchers ensured that the participants were clearly informed about the purpose and scope of the study.

3. Research Instrument

The main instruments for data collection in this article are questionnaires. The researchers used a questionnaire adapted from a previous study(Mensah & Zhao, 2024). The questionnaire used a google form for data collection, designed to assess students' understanding and perception of JASP.

C. RESULTS AND DISCUSSION

1. RESULT

Performance Expectancy

From Table 1, it was shown that students generally agreed that JASP enhanced their knowledge of statistical analysis (Mean = 3.652), helped them better understand statistical data (Mean = 3.783), and was useful for reducing errors in analysis (Mean = 3.913). All items had a minimum score of 2 and a maximum of 5, with moderate variability (Std. Dev. between 0.848 and 0.902).

Table 1. Performance expectancy

Statement	M	SD	Min	Max
1. The use of the JASP application will increase my knowledge of statistical analysis.	3.652	0.885	2.000	5.000
2. The JASP application has the ability to help me understand	3.783	0.902	2.000	5.000

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statical data better.				
3. I think the JASP application is useful and effective in reducing the risk of analysis errors in my research.	3.913	0.848	2.000	5.000

Facilitating Conditions

In Table 2, it was shown that students felt confident in using JASP due to internet access (Mean = 4.261) and believed they could seek help from lecturers or peers (Mean = 3.652). However, their reported ability to use JASP was slightly lower (Mean = 3.174), indicating that some may have needed additional support. The variability in self-reported ability was higher (Std. Dev. = 1.114).

Table 2. Facilitating conditions

Statement	M	SD	Min	Max
4. I can use the JASP application because I have internet access.	4.261	0.915	2.000	5.000
5. I can get help from lecturers or friends to use the JASP application.	3.652	1.027	2.000	5.000
6. I have the ability to use	3.174	1.114	1.000	5.000

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the JASP application.	

Effort Expectancy

From table 3, the ease of learning to use JASP (Mean = 3.478) and the simplicity of the application (Mean = 3.304) were generally agreed upon, with students' confidence in their skills being slightly lower (Mean = 3.130). These values suggested that while students found JASP relatively easy to use, some may have still faced challenges.

Table 3. Effort expectancy

Statement	M	SD	Min	Max
7. I will find it easy to learn how to use the JASP application.	3.478	0.898	2.000	5.000
8. The JASP application will be simple to use and easy to understand.	3.304	0.926	2.000	5.000
9. I can easily learn how to use the JASP application because I have the necessary skills	3.130	0.968	2.000	5.000

Social Influence

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From table 4, students felt that figures they respected in academic settings recommended the use of JASP (Mean = 3.826), and trusted individuals also supported its use (Mean = 3.739). However, the influence from family and friends was lower (Mean = 3.130), reflecting that the adoption of JASP was more driven by academic peers.

Table 4. Social influence

Statement	M	SD	Min	Max
10. People I respect in the academic field suggest that I use the JASP application.	3.826	0.984	1.000	5.000
11. People I trust recommend that I use the JASP application for data analysis.	3.739	0.810	2.000	5.000
12. My family and friends believe that I should use the JASP application in my research	3.130	1.014	1.000	5.000

Self-efficacy in Using JASP

Table 5 showed the confidence in using JASP without guidance was moderate (Mean = 3.391), slightly increasing when initial help was provided (Mean = 3.826). Students also felt capable of using JASP even if it was their first time (Mean = 3.435), indicating that they were generally confident but may have still needed initial guidance.

Table 5. Self-efficacy in using JASP

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Statement	M	SD	Min	Max
13. I feel confident using the JASP application even if no one shows me how to use it.	3.391	0.839	2.000	5.000
14. I can use the JASP application even if I have never used it before.	3.435	0.945	2.000	5.000
15. If someone helps me get started, I can use the JASP application.	3.826	0.887	2.000	5.000

Concerns about Security and Privacy

From table 6, concerns about privacy were evident, with moderate agreement on worries regarding the privacy of personal information (Mean = 3.043) and security settings (Mean = 4.043). The lowest concern was related to potential threats to privacy and security when using JASP (Mean = 2.870), indicating that students did not feel overly at risk but remained cautious.

Table 6. Concerns about security and privacy

Statement	M	SD	Min	Max
16. I am concerned about the privacy of my personal information	3.043	1.261	1.000	5.000

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when using the JASP application.				
17. I care about the security settings of the JASP application.	4.043	0.878	2.000	5.000
18. I feel that my privacy and security may be at risk when using the JASP application.	2.870	**1.359**	1.000	5.000

Acceptance of JASP in Research

From table 7, students showed moderate acceptance of JASP for their research (Mean = 3.739) and planned to continue using it in the future (Mean = 3.348). However, consistent use of JASP was lower (Mean = 3.130), indicating that while students were open to adopting JASP, it may not yet have been fully integrated into their research routines.

Table. 7 Acceptance of JASP in research

Statement	M	SD	Min	Max
19. I will accept the use of the JASP application in my research.	3.739	0.810	2.000	5.000
20. I always use the JASP application for data analysis	3.130	1.014	1.000	5.000

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21. In the future, I plan to continue using the JASP application in my research.	3.348	0.885	1.000	5.000

2. DISCUSSION

The findings of this study reveal a generally positive perception of JASP (Kovari, 2018) among EFL students, particularly regarding its usefulness in enhancing understanding of statistical analysis and reducing potential errors. Other study demonstrated JASP's (Kovari, 2018) effectiveness in cognitive research through its clear and accessible data presentation, especially valuable for users with minimal statistical background (Kovari, 2018). Similarly, another previous study found JASP (Kovari, 2018) useful in the realm of public finance for analyzing tax data, though they, like this study, noted that users may require additional support to fully leverage its capabilities (Fuentes & Salapa, 2023).

In terms of statistical methodology, JASP's (Kovari, 2018) adaptable to Bayesian and frequentist analyses in a tutorial that helped users navigate complex statistical data, which is similar to the support students indicated they needed in this study (Berkhout et al., 2024). The results of the present research also showed moderate concerns about privacy, emphasized secure data management in JASP's (Kovari, 2018) Bayesian model (Berkhout et al., 2024).

While this study shows a willingness among students to continue using JASP in future research, the consistency of its use remains moderate. This trend echoes on JASP's (Kovari, 2018) academic application in Bayesian analysis, where regular use depended significantly on training and ease of access to resources (Faulkenberry et al., 2020). The current findings support the need for structured training to boost confidence and deepen students' engagement with JASP (Kovari, 2018), reflecting a similar gap in the recommendations for confirmatory factor analysis practices (Rogers, 2023). Thus, the positive perceptions combined with the need for additional guidance highlight the potential of JASP (Kovari, 2018) as a powerful tool in statistical learning, contingent on improved support and training structures.

D. CONCLUSION AND SUGGESTION

CONCLUSION

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In conclusion, this study shows a positive view among English department students towards the use of JASP statistical software. JASP is considered to improve skills in statistical analysis in an easy and understandable way, especially in the research aspect of statistical analysis. Despite the positive outlook, this study also found some areas that need attention such as confidence levels and training or support that can improve skills in using JASP as a research tool. In this way, gaps can be addressed, ensuring that JASP can be used and is likely to be easier to use as a tool for statistical analysis in the future. JASP becomes an integral part and analysis tool that can support high quality research results among English department students.

SUGGESTION

Structured training programs could be used in future studies to evaluate if they raise students' confidence and proficiency levels in utilizing JASP efficiently. Increasing the sample size and include students from a range of academic backgrounds could provide more comprehensive understanding of JASP's cross-disciplinary applicability. Its relative usability, utility, and efficacy as an instructional tool might be assessed with the aid of a comparison analysis with other statistical programs, such SPSS or R. Understanding students' experiences and difficulties with JASP could potentially be improved by incorporating qualitative techniques like focus groups and interviews. Finally, a more thorough examination of privacy and security issues may allay any concern students may have about the software.

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