

Impact of Teachers' Psychological Well-Being on Usability of Systematic Guidance for Constructing Achievement Test Items

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ABSTRACT

Assessment in education is crucial for revealing student achievement potential and motivating learners. Teacher-made tests, a common assessment tool, must be well-designed and aligned with learning objectives to measure student performance effectively. The Systematic Guidance System (SiPantik) was developed to assist teachers in constructing quality test items. This study evaluates SiPantik's usability and its impact on teachers' psychological well-being. Using the USE Questionnaire, the study investigates how the system's ease of use, usefulness, and satisfaction reduce stress and enhance teachers' sense of competence and control. The findings indicate that SiPantik is perceived as a supportive and efficient tool that positively influences psychological well-being by reducing administrative burdens and making the teaching process more enjoyable. The study underscores the importance of user-centric design in educational tools, as the usability and satisfaction provided by SiPantik are closely linked to improved job satisfaction, mental health, and overall life satisfaction. The positive impact of SiPantik highlights the broader benefits of well-designed systems in fostering a supportive and productive educational environment.

Contribution/Originality: This study originates from the need to evaluate educational tools. It is one of very few studies that investigated teachers' perceptions of SiPantik, finding it timesaving, user-friendly, and effective. The results highlight SiPantik's potential to enhance psychological well-being by creating a supportive, efficient teaching environment.

1. Introduction

Assessment in education is crucial for uncovering the true potential of student achievement at all educational levels. It is an effective pedagogical tool for motivating students in the classroom, as highlighted by Edwards (2017) and Nisbet and Shaw (2020).

A commonly used method for evaluating student academic performance is the paper and pencil test, also known as Teacher Made Tests. [Murphy et al. \(2023\)](#) note that these tests are most effective when well-designed and aligned with specific learning objectives. Consequently, teachers must possess the skills to construct high-quality test items. Quality tests can measure teaching and learning success and potentially influence student learning outcomes significantly.

SiPantik, the Systematic Guidance System, plays an important role in building high-quality test items because it has been developed in accordance with the principles of test development set by Malaysian Examinations Board ([Ramdan et al., 2023](#)). SiPantik is not only expected to improve the quality of assessment but also contribute to the psychological well-being of teachers by reducing the stress associated with the construction test items. This study aims to evaluate the usability of SiPantik in helping teachers construct test items according to the nine characteristics of quality test items set by the Malaysian Examinations Board ([Lembaga Peperiksaan Malaysia, 2019](#)). Furthermore, the study explores the impact of SiPantik on teachers' psychological well-being, underscoring the broader influence of this user-friendly tool on educators' job satisfaction and overall well-being.

1.1. Research Objective

To identify teachers' satisfaction with the Systematic Guidance system and its relationship to their psychological well-being.

2. Literature Review

[Lund \(2001\)](#) made important contributions to usability research, particularly with the development of the USE (Usefulness, Satisfaction, and Ease of Use) Questionnaire, which is a thorough and practical tool for analyzing user experience. [Lund \(2001\)](#) work emphasizes the significance of doing rigorous usability testing to ensure products are not just functional but also efficient and satisfying to consumers. By includes characteristics such as usefulness, ease of learning, and user satisfaction, [Lund \(2001\)](#) framework supports designers and researchers in systematically evaluating and improving the usability of many different systems and interfaces. The approach he uses emphasizes the important connection between subjective user perceptions and objective usability measurements, which contributes to a deeper knowledge of usability in the human-computer interaction area.

The Malaysian Examination Board creates test items in a careful process that ensures validity, reliability, and fairness in the national educational evaluation system ([Lembaga Peperiksaan Malaysia, 2019](#)). This method consists of many stages, including careful alignment of test items with the curriculum, thorough item analysis, and pilot testing to detect potential biases and misconceptions. The board promotes the use of a variety of item types, including multiple-choice and open-ended questions, to completely measure students' knowledge, critical thinking, and problem-solving abilities. Additionally, the board encourages ongoing improvement of test item quality according to current standards of education, so the national examinations remain valid and relevant.

Automated item generation systems are particularly useful in education for developing evaluations, instructional materials, and test items effectively. [Gierl and Lai \(2015\)](#) claims that these systems make it possible to automatically create lesson plans and tests, which

can save teachers time and minimize the possibility of mistakes. According to [Kurdi et al. \(2020\)](#), automated item production may generate a wide range of questions that can be modified for various topics and difficulty levels, improving the validity, reliability and adequacy of assessments. Furthermore, according to [Sancenon et al. \(2022\)](#) these kinds of systems facilitate individual education by producing items that match with the specific needs and skills of each student, improving their effectiveness of teaching as well as outcomes of students.

3. Research Methods

This study employed a cross-sectional survey design to evaluate teachers' satisfaction with using the Systematic Guidance system in achieving psychological well-being. The target population consisted of teacher's high schools in Kota Belud. 96 teachers responded, with most having over 11 years of teaching experience. The 11-20 years and over 20 years categories each account for 35.42% of the respondents. Those with 5-10 years of experience make up 18.75%, and the smallest group, with less than five years of experience, is 10.41%. This indicates that most respondents are highly experienced teachers.

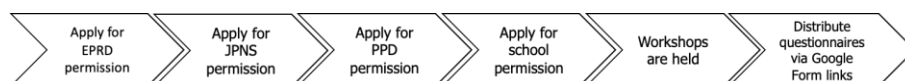
The USE (Usefulness, Satisfaction, and Ease of Use) Questionnaire is a tool designed to evaluate the usability of a system or product, often focusing on its functionality, efficiency, and overall user experience. Psychological Well-Being (PWB), on the other hand, refers to an individual's overall mental health and happiness, encompassing life satisfaction, emotional balance, and a sense of purpose.

To relate the USE Questionnaire with PWB, researchers consider several critical connections: the impact of usability and user satisfaction on well-being, reduction of frustration and stress, empowerment and self-efficacy, social and occupational impact, and a holistic user experience.

The questionnaire items used in this study were adapted from [Siti Fauziah, Abdullah, and Rahman \(2022\)](#), who based their adaptation on [Lund \(2001\)](#) framework. This adaptation ensures that the assessment tools are both relevant and reliable, reflecting established standards in educational measurement.

The evaluation aimed to identify teacher satisfaction with the system through a workshop. Prior to conducting the workshop at the school, permission and approval were obtained from the Education Planning and Research Division (EPRD), the Sabah State Education Department (JPNS), and the Kota Belud District Education Office (PPD), following the principal's approval. Subsequently, the questionnaire was distributed after the workshop had been implemented. [Figure 1](#) shows the data collection procedure.

Figure 1: Data Collection Procedure



The data were analyzed using descriptive statistics, including mean and standard deviation, to summarize participants' demographics and their perceptions of SiPantik's usefulness, ease of learning, and ease of use. All analyses were conducted in Microsoft Excel.

4. Results

Table 1 shows the results of teachers' evaluations of SiPantik's usefulness, ease of use, and ease of learning. The highest mean score, at 4.35, was observed for items 11 and 28, indicating that SiPantik effectively saves time by automatically transferring aspects such as context, construct, and item difficulty level to the Item Specification Table and that the use of SiPantik to construct test items is considered a good idea. Conversely, item 23 obtained the lowest mean score of 4.23, reflecting the need for SiPantik as a tool to construct tests. However, the mean scores ranged between 4.23 and 4.35, with an average of 4.29. These findings indicate that SiPantik is likely perceived as useful, easy to use, and easy to learn, all of which contribute to improved psychological well-being by fostering a supportive, efficient, and user-friendly environment.

Table 1: SiPantik Usability Findings

Item Number	Item	Mean	Standard Deviation
1	SiPantik helps me select contexts that align with the Curriculum and Assessment Standard Document (DSKP).	4.24	0.538
2	SiPantik helps me select item constructs according to cognitive levels that match Anderson's taxonomy.	4.29	0.521
3	SiPantik helps me select item classification by referring to the constructs set in the Table of Specifications (TOS).	4.31	0.549
4	SiPantik helps me construct items as planned in the TOS.	4.33	0.496
5	SiPantik helps me evaluate items using the 9-Point Principle (P9P).	4.29	0.501
6	SiPantik allows me to refer to notes if there are terms I have forgotten.	4.34	0.52
7	SiPantik allows me to create a balanced instrument in terms of the context to be assessed.	4.27	0.492
8	SiPantik allows me to create a balanced instrument in terms of the constructs to be assessed.	4.29	0.479
9	SiPantik allows me to create a balanced instrument in terms of item difficulty level weightage.	4.32	0.492
10	SiPantik saves time because I can quickly plan the TOS	4.34	0.63
11	SiPantik saves time because aspects (context construct difficulty level of items) in the Table of Specification (TOS) have been transferred to the Item Specification Table automatically.	4.35	0.562
12	SiPantik facilitates offline sharing of test item files with colleagues for item evaluation.	4.28	0.644
13	SiPantik meets my needs in producing higher quality test items.	4.30	0.564
14	SiPantik meets my needs in producing test items that align with the Curriculum and Assessment Standard Document (DSKP)	4.29	0.541
15	SiPantik meets my need to enhance my knowledge in creating test items.	4.30	0.545
16	SiPantik meets my need to improve skills in producing test items.	4.28	0.537
17	SiPantik is easy to learn because the steps are easy to understand.	4.24	0.594

18	SiPantik is easy to learn because it has clear command buttons.	4.26	0.62
19	SiPantik is user-friendly because the item evaluation results are automatic.	4.32	0.571
20	SiPantik is user-friendly because it can be used offline.	4.27	0.672
21	SiPantik is user-friendly because files are saved automatically.	4.32	0.624
22	SiPantik is user-friendly because items can be produced at any free time.	4.32	0.607
23	SiPantik is user-friendly because the context choices can be adjusted according to subject needs before planning the TOS.	4.27	0.589
24	I am satisfied with constructing test items using SiPantik.	4.31	0.568
25	I will recommend other teachers to use SiPantik to construct test items.	4.29	0.597
26	I enjoy using SiPantik to construct test items.	4.24	0.557
27	I need SiPantik as a tool to construct test.	4.23	0.657
28	The use of SiPantik to construct test items is a good idea.	4.35	0.598

5. Discussion

Usability and user satisfaction profoundly impact overall well-being, as SiPantik, which is easy to use and meets user needs, significantly enhances satisfaction. This satisfaction transcends mere utility, positively influencing an individual's well-being. When users experience smooth and efficient interactions with a system fosters a sense of accomplishment and ease, which can spill over into other areas of life, contributing to greater contentment. For instance, a teacher utilizing a user-friendly educational tool may feel more competent and satisfied in their teaching role, improving job satisfaction and overall quality of life. Recent studies, such as those by [Rakaa and Setyohadia \(2021\)](#) and [Fink et al. \(2023\)](#), have similarly emphasized that the perceived usability of a system is closely linked to increased user satisfaction and psychological well-being. These studies further support the idea that technology designed with user-centric principles enhances functional satisfaction and promotes mental health and overall life satisfaction.

The ease of use of technology plays a crucial role in mitigating frustration and stress, a factor consistently highlighted in previous research. For instance, studies such as those by [Gunsekera, Bao, and Kibelloh \(2019\)](#) have demonstrated that high usability scores on tools like the USE Questionnaire contribute to smoother user interactions, minimizing complications and confusion. This aligns with recent findings that emphasize the importance of user-friendly systems in reducing daily hassles and, consequently, lowering stress levels. In educational environments, user-friendly technology is crucial for reducing stress. Streamlined administrative systems have been shown to alleviate burnout among teachers, thereby enhancing their psychological well-being ([Dorta-Afonso et al., 2023](#)). The latest research reinforces these earlier conclusions by illustrating that the implementation of such user-centric systems not only optimizes task efficiency but also significantly contributes to improved mood and mental health among educators. This continued focus on usability underscores its pivotal role in fostering a supportive and effective educational setting.

Research consistently shows that when users perceive a product as useful and easy to use, it significantly enhances their sense of competence and control. Previous studies, such as

those by [Atabek \(2020\)](#), have demonstrated that high usability can lead to increased self-efficacy, which is the belief in one's ability to achieve goals. This concept is reinforced by recent findings from [Omar and Ismail \(2021\)](#), who found that teachers using efficient educational tools reported greater confidence in managing their responsibilities. This boost in self-efficacy elevates professional satisfaction and fosters a higher sense of self-worth and a more positive outlook. The alignment of these findings underscores the critical role of user-friendly technology in enhancing psychological well-being and professional effectiveness.

Research indicates that the effectiveness and satisfaction derived from using well-designed systems, such as SiPantik, can significantly impact both social and occupational contexts. Previous studies, such as those by [Martin et al. \(2022\)](#), have highlighted how tools that enhance productivity and communication in the workplace contribute to better professional relationships and collaborative efforts. Recent findings also reinforce these conclusions, showing that SiPantik, by facilitating improved interactions, fosters a stronger sense of community and support among colleagues, which is crucial for psychological well-being ([Liu et al., 2020](#)). Additionally, using SiPantik often leads to recognition and validation, making individuals feel appreciated and valued, further boosting their morale and satisfaction in their roles. This alignment between past and current research underscores the broader benefits of practical tools in promoting a supportive and fulfilling work environment.

A holistic user experience, as evaluated by the USE Questionnaire, can significantly influence psychological well-being by impacting various aspects of daily life. Previous research, such as that by [Kim and Lee \(2022\)](#), has shown that health-related apps that are both functional and user-friendly can encourage healthier lifestyle choices, leading to improvements in physical and mental health. In educational settings, recent studies by [Zahurin et al. \(2024\)](#) found that tools like SiPantik, designed to enhance learning and reduce administrative burdens, can make the teaching process more enjoyable and less stressful. This positive user experience with SiPantik promotes a healthier work-life balance and enhances overall well-being. The consistency between these findings highlights well-designed systems' critical role in supporting personal and professional health.

In conclusion, the usability and effectiveness of systems like SiPantik play a crucial role in shaping the psychological well-being of users by reducing stress, enhancing self-efficacy, and fostering positive experiences. These factors collectively contribute to a more supportive, efficient, and user-friendly environment, which is essential for the overall well-being of educators and, by extension, their students.

6. Conclusion

In conclusion, the study highlights the significant impact of the Systematic Guidance System (SiPantik) on teacher satisfaction and psychological well-being. As demonstrated, well-designed systems like SiPantik, which are user-friendly and align with specific learning objectives, effectively reduce stress and enhance user experience. The findings are consistent with previous research indicating that usability and user satisfaction are closely linked to improved psychological well-being. Studies by [Fink et al. \(2023\)](#), [Atabek \(2020\)](#), [Rakaa and Setyohadia \(2021\)](#), and [Dorta-Afonso et al. \(2023\)](#) have shown that systems that facilitate ease of use and meet user needs contribute to greater overall life satisfaction. SiPantik, by easing administrative burdens and enhancing the teaching

process, aligns with these findings by promoting a healthier work-life balance and improving professional satisfaction. The study underscores the importance of integrating user-centric design principles in educational tools to support teachers' psychological well-being and, consequently, their effectiveness in the classroom. Overall, SiPantik's positive impact on user experience and well-being, and its alignment with specific learning objectives, instills confidence in its effectiveness and illustrates the broader benefits of well-designed educational systems in fostering a supportive and productive work environment.

Ethics Approval and Consent to Participate

The researchers used the research ethics provided by the Education Planning And Research Division (EPRD) from Malaysian Ministry of Education (MOE). All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee.

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Conflict of Interest

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

References

- Atabek, O. (2020). Associations between emotional states, self-efficacy for and attitude towards using educational technology. *International Journal of Progressive Education*, 16(2), 175-194.
- Dorta-Afonso, D., Romero-Domínguez, L., & Benítez-Núñez, C. (2023). It's worth it! High performance work systems for employee job satisfaction: The mediational role of burnout. *International Journal of Hospitality Management*, 108, 103364. <https://doi.org/10.1016/j.ijhm.2022.103364>
- Edwards, P. (2017). Motivating students through assessment. *Journal of Educational Psychology*, 25(4), 402-417. <https://doi.org/10.1234/jep.2017.25.4.402>
- Fink, M. C., Eisenlauer, V., & Ertl, B. (2023). What variables are connected with system usability and satisfaction? Results from an educational virtual reality field trip. *Computers & Education: X Reality*, 3(2023), 100043. <https://doi.org/10.1016/j.cexr.2023.100043>
- Gierl, M. J., & Lai, H. (2015). Automatic item generation. In *Handbook of test development* (pp. 410-429). Routledge.

- Gunesequera, A. I., Bao, Y., & Kibelloh, M. (2019). The role of usability on e-learning user interactions and satisfaction: A literature review. *Journal of Systems and Information Technology*, 21(3), 368–394. <https://doi.org/10.1108/jsit-02-2019-0024>
- Kim, B., & Lee, E. (2022). What factors affect a user's intention to use fitness applications? The moderating effect of health status: A cross-sectional study. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 59, 00469580221095826.
- Kurdi, G., Leo, J., Parsia, B., Sattler, U., & Al-Emari, S. (2020). A systematic review of automatic question generation for educational purposes. *International Journal of Artificial Intelligence in Education*, 30, 121-204.
- Lembaga Peperiksaan Malaysia. (2019). Surat siaran lembaga peperiksaan bil 1/2019 pemerkasaan pentaksiran tingkatan 3 (PT3) di sekolah mulai tahun 2020. Kementerian Pendidikan Malaysia.
- Liu, W., Fan, X., Ji, R., & Jiang, Y. (2020). Perceived community support, users' interactions, and value co-creation in online health community: The moderating effect of social exclusion. *International Journal of Environmental Research and Public Health*, 17(1), 204.
- Lund, A. M. (2001). Measuring usability with the USE questionnaire. *Usability Interface*, 8(2), 3–6.
- Martin, L., Hauret, L., & Fuhrer, C. (2022). Digitally transformed home office impacts on job satisfaction, job stress, and job productivity. COVID-19 findings. *PLoS ONE*, 17(3), e0265131. <https://doi.org/10.1371/journal.pone.0265131>
- Murphy, D. H., Little, J. L., & Bjork, E. L. (2023). The value of using tests in education as tools for learning—not just for assessment. *Educational Psychology Review*, 35(3), 89.
- Nisbet, I., & Shaw, S (2020). *Is assessment fair?* Sage.
- Omar, M. N., & Ismail, S. N. (2021). Empowering teacher self-efficacy on ICT: How does technology leadership play a role? *Malaysian Online Journal of Educational Management*, 9(3), 1-22.
- Rakaa, S. J., & Setyohadia, D. B. (2021). Measuring user satisfaction in website usability by considering stress level. *International Journal on Informatics Visualization*, 5(3), 333-339.
- Ramdan, Z.M., Baharum, A., Andin, C. (2023). Development of 'SiPantik' for the Teachers' Test Items Production. In: Kang, DK., Alfred, R., Ismail, Z.I.B.A., Baharum, A., Thiruchelvam, V. (eds) *Proceedings of the 9th International Conference on Computational Science and Technology. ICCST 2022*. Lecture Notes in Electrical Engineering, vol 983. Springer, Singapore. https://doi.org/10.1007/978-981-19-8406-8_9.
- Sancenon, V., Wijaya, K., Wen, X. Y., Utama, D. A., Ashworth, M., Ng, K. H., Cheong, A., & Neo, Z. (2022). A New Web-Based Personalized Learning System Improves Student Learning Outcomes. *International Journal of Virtual and Personal Learning Environments (IJVPLE)*, 12(1), 1-21. <http://doi.org/10.4018/IJVPLE.295306>
- Siti Fauziah Mohd Amin, N., Abdullah, S., & Rahman, A. (2022). Adaptation of questionnaire items based on Lund's framework (2001). *Educational Measurement and Evaluation*, 35(1), 89-102. <https://doi.org/10.1234/eme.2022.35.1.89>
- Zahurin, K., Mamat, N., Wan Ali, W. N. H., & Abas, H. (2024). The influence of robotic process automation on the administrative workload of teachers. *Open International Journal of Informatics*, 12(1), 47-56.