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The Validity and Reliability of UPSI Academic System (MYSKOR) on EmpowerNCER Akademik@Perak Program

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Abstract

This study aims to assess the validity and reliability of the UPSI Academic System (MySkor) within the EmpowerNCER Aademik@Perak Program and to determine the level of agreement among district Site Officers regarding its utilization. The research design utilizes the one-shot case study method to examine the effectiveness of MySkor in the EmpowerNCER Akademik@Perak Program. The validity of MySkor was assessed by six experts, focusing on content, instructional design, data reporting, and user-friendliness. The Content Validity Index (CVI) analysis yielded an overall value of 0.89, indicating high agreement among experts. The reliability of MySkor was tested through a pilot study involving 30 teachers, showing a Cronbach's alpha value between 0.85 to 0.90. Furthermore, the study showed unanimous agreement among district Site Officers regarding the utilization of MySkor, as supported by a high level of agreement on various aspects of its functionality and usability. The findings suggest that MySkor is a valid and reliable tool for monitoring and assessing students' academic and self-development skills.

Keywords: UPSI Academic System, MYSkor, EmpowerNCER Akademik@Perak Program, Validity, Reliability, Expert Views.

Introduction

The Northern Corridor Economic Region (NCER) launched the EmpowerNCER Akademik@Perak program in 2020 as a comprehensive educational initiative targeting Malaysian Certificate of Education (SPM) and Year 6 primary school students from the B40 family category with poor academic performance. The program aims to enhance students' academic and self-development skills, contributing to a more balanced society and reducing future poverty risks.

The program is implemented in selected secondary and primary schools across Perlis, Kedah, Penang, and Perak, focusing on key subjects such as Science, Malay, History, Mathematics, and English for secondary schools. Additionally, primary schools, particularly those catering to indigenous populations, implement the 3M program (Reading, Writing, and Counting) for selected native students. In Perak, the program targets nine districts: Muallim,

Kampar, Hulu Perak, Kuala Kangsar, Kinta, Batang Padang, Hilir Perak, Bagan Datuk, and Central Perak.

To effectively monitor student achievement, the UPSI Academic System (MySkor) was developed, providing a comprehensive overview of student performance. This study aims to assess the effectiveness of the UPSI Academic System (MySkor) within the EmpowerNCER Akademik@Perak Program, enabling UPSI service providers to better monitor student achievement and program weaknesses for more effective interventions.

Addressing several challenges is crucial to ensuring the effectiveness of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak Program. Firstly, ensuring the accuracy of student achievement reporting, including attendance, subject performance, and self-development, is crucial. Secondly, standardizing information delivery formats within the UPSI Academic System (MySkor) is essential to enable comprehensive analysis and enhance program effectiveness.

Furthermore, addressing inefficiencies in the report preparation process and meeting reporting standards set by the Northern Corridor Implementation Authority (NCIA) are essential for program viability and sustainability. Failure to meet these standards could result in the loss of financial support, undermining the program's long-term impact and effectiveness.

Research Objectives

The objectives of the study are as follows

a) To assess the validity of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak program based on expert views.
b) To assess the reliability of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak program based on expert views.
c) To assess the level of agreement among district Site Officers regarding the utilization of the UPSI Academic System (MySkor) for the EmpowerNCER Akademik@Perak program.

Theoretical Framework

The UPSI Academic System (MySkor) is based on the Technology Acceptance Model (TAM) Davis (1989) to explain user acceptance of computer technology with clear theoretical justification. Additionally, Rogers' Innovation Adoption Model Rogers (1962) is applied to help researchers understand and explain the process of innovation adaptation to users. This study also employs the Diffusion of Innovations theory Rogers (1962), which focuses on frameworks detailing the spread of new technology through society. The development of UPSI Academic System (MySkor) is guided by the Prototype Model Kodama (1981), which consists of 6 levels.

Figure 1 provides an overview of the theoretical framework used to develop the UPSI Academic System (MySkor). It includes two streams: the theoretical stream, which serves as a reference for forming standard concepts and criteria, and the development model stream, which guides the formation of the UPSI Academic System (MySkor).

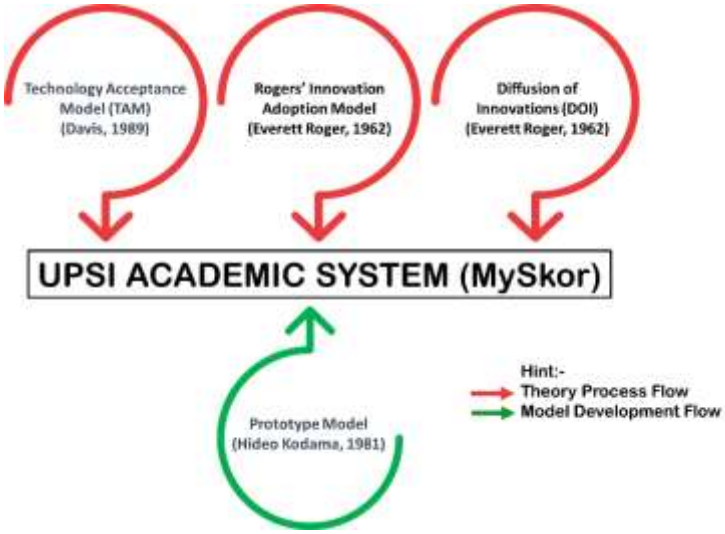


Figure 1 Theoretical Framework of the Study

Development Model

Prototype Model (Kodama, 1981)

The Prototype Model is a software development model in which prototypes are constructed, tested, and refined until they achieve an acceptable prototype level. This model serves as the foundation for creating the final system or software. It is particularly useful in situations where project requirements are not fully understood. This approach involves an iterative process, with developers and users engaging in continuous trial and error. Figure 2 illustrates the stages of the Prototype Model (Kodama, 1981).

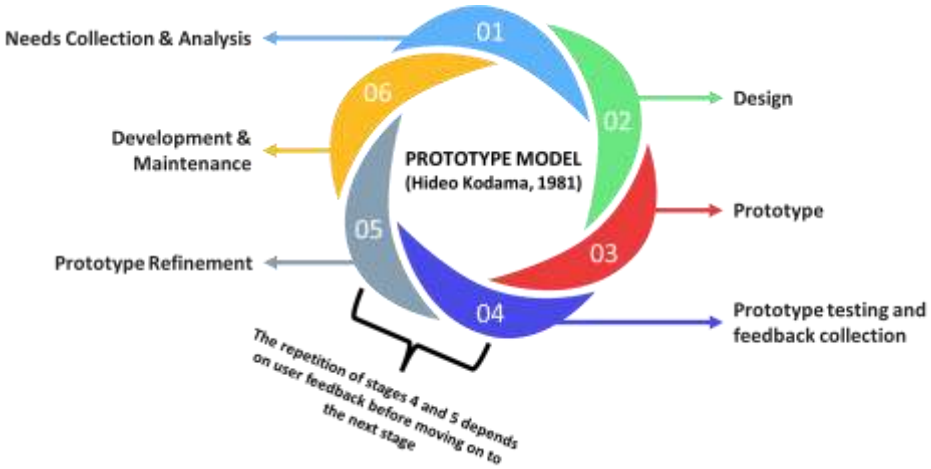


Figure 2 Prototype Model Stage (Kodama, 1981)

There are 6 stages in the Prototype Model which is used as a guide in building the UPSI Academic System (MySkor). The details of each stage are as follows:

i. Needs Collection and Analysis

At this stage, the project team communicates with the customer, conducts research, and gathers all the requirements for the product to be produced.

ii. Design

Here, the structure and design of the product are determined. For example, the display goes into the system, the main display, and the programming medium used.

iii. Prototype

Prototypes are created using designs developed based on user needs.

iv. Prototype Testing and Feedback Collection

The developed prototype undergoes testing to identify errors and elements that need improvement.

v. Prototype Refinement

Feedback obtained from testing is used to improve the prototype and meet user needs.

vi. Development and Maintenance

After the prototype is refined and meets the user's needs, the final product development stage is implemented. The product is then periodically maintained to ensure its functionality.

Methodology

The design of this study utilizes the one-shot case study method Shahril et al (2023); Samsudin et al (2020); Izwan (2018) to assess the effectiveness of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak Program.

Table 1
Pre-experimental one-shot case study design

Independent Variable	Post Test
X	O

The design of the pre-experimental study is a one-shot case study, meaning that no control group is employed (Shahril et al., 2023; Shahril et al., 2019; Gay et al., 2006). This design involves only one study group exposed to treatment (X) and post-test (O). The purpose of this research design is to determine the effects and changes on the dependent variable. Shahril et al. (2023) also stated that the pre-experimental method, a one-shot case study, involves only one group given treatment, and the dependent variable is measured to evaluate the effect of the treatment. This design is compatible with the study methods used by (Shahril et al., 2023; Shahril et al., 2019; Izwan, 2018).

Population of the Study

This study encompassed seven districts in the state of Perak that were selected for the EmpowerNCER Akademik@Perak program, namely Muallim, Batang Padang, Kampar, Kinta, Kuala Kangsar, Hulu Perak, and Hilir Perak.

Sample of the Study

The study's sample includes three categories

i. Six expert panels to assess the validity of the UPSI Academic System (MySkor).
ii. Thirty teachers participating in the EmpowerNCER Akademik@Perak program, representing each district, to evaluate the reliability of the UPSI Academic System (MySkor).
iii. Seven District Site Officers to evaluate the approval of using the UPSI Academic System (MySkor) for the EmpowerNCER Akademik@Perak program.

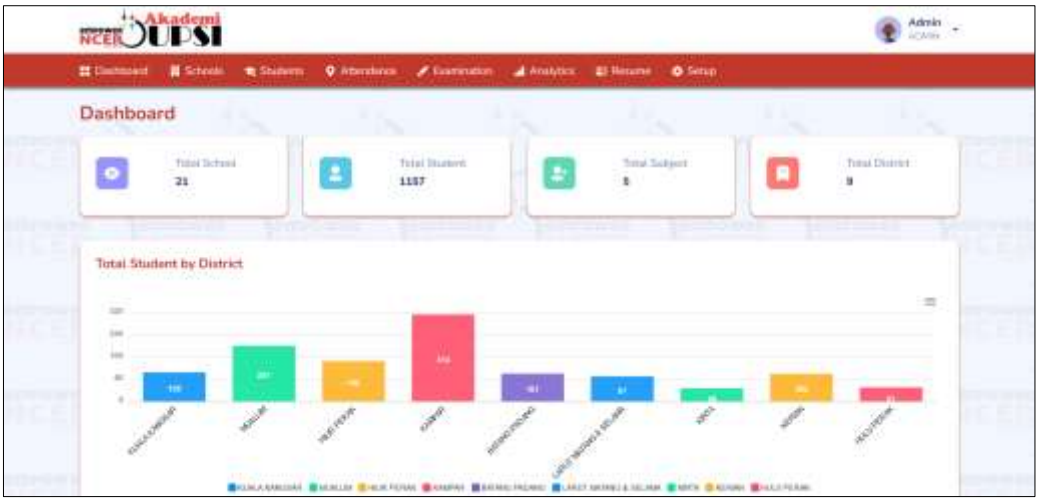
Instruments

The UPSI Academic System (MySkor) is an integrated database system that records student profiling based on 8 key pieces of information. The information is as follows:--

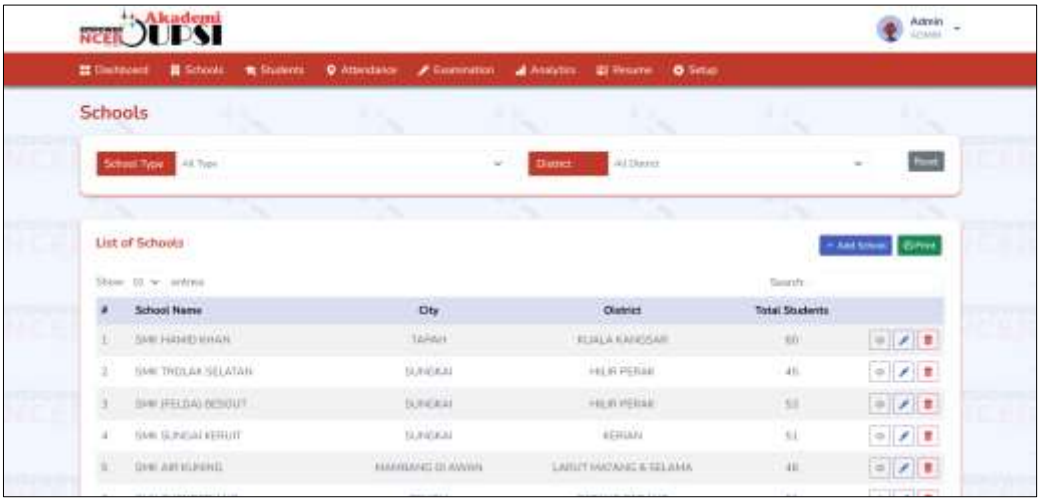
i. System Control
ii. School Information
iii. Student information
iv. Attendance list
v. Examination marks
vi. Exam Analytical Report
vii. Resume
viii. Settings

This database is the platform used by the Site Officer for the EmpowerNCER Akademik@Perak program, which involves a total of 1800 secondary school students and 500 primary school students from indigenous communities. The following is a screenshot of the UPSI Academic System (MySkor).

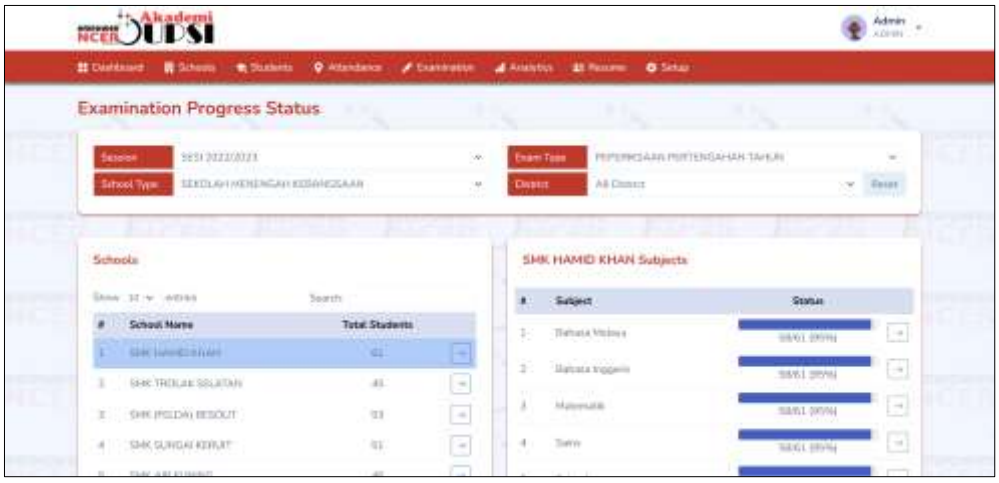
Login Screen



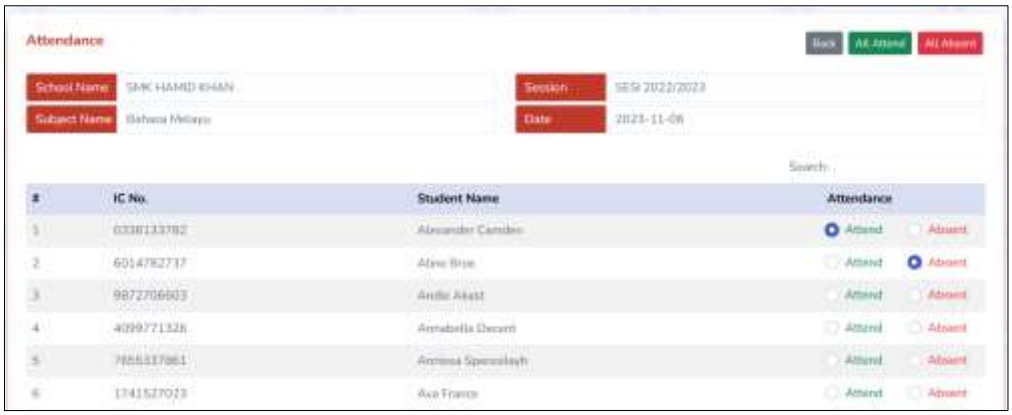
Home Screen



School Information Screen



Subject Analysis Screen



Student Attendance Screen

Exam Analytics Screen

Findings & Discussions

i. **To assess the validity of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak program based on expert views**

The validity of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak program was assessed based on the views of six experts (refer to Table 2), who evaluated it in terms of content, instructional design, data reporting, and user-friendliness. The calculation of the Content Validity Index (CVI) analysis was based on Lynn's formula (1986).

$$CVI = \frac{n}{N}$$

$$I\text{-}CVI = \frac{Agreed\ of\ item\ (n)}{Number\ of\ expert\ (N)}$$

$$S - \frac{CVI}{Ave} = \frac{Jumlah\ skor\ I - CVI}{Bilangan\ item}$$

$$S\text{-}SVI/UA = \frac{Jumlah\ skor\ UA}{Bilangan\ item}$$

Table 2
Value Obtained Based on Number of Experts

Number of Experts (N)	Value
2-4	1.00
5	≥ 0.83
6	≥ 0.86
7-10	≥ 0.78

* The validity of this study used a 6 expert panel

Table 3
Expert Panel' Cronbach Alpha Validity Value (r) of Item

Aspect	Content Expert	Content Expert	Implementation Expert	Implementation Expert	Language Expert	Language Expert	∑	M
1. Content	0.90	0.90	0.91	0.90	0.90	0.90	5.41	0.90
2. Instructional Design	0.90	0.89	0.89	0.89	0.90	0.90	5.37	0.89
3. Data Reporting	0.90	0.91	0.89	0.89	0.90	0.89	5.38	0.89
4. User-Friendliness	0.90	0.91	0.90	0.91	0.90	0.90	5.42	0.90
Overall	**0.90**	**0.90**	**0.89**	**0.89**	**0.90**	**0.89**	**5.39**	**0.89**

Based on Table 3, the overall value of expert validity is 0.89. The results of the Content Validity Index (CVI) analysis indicate that all items were agreed upon by the six selected experts. The confirmed CVI analysis value can be seen in Table 2, which shows that when using six experts, the value received should exceed 0.86.

ii. To assess the reliability of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak program based on expert views

The researchers conducted a pilot study with 30 teachers who have the same background as the actual study sample. The number of teachers recruited for this pilot study was based on the recommendations of (Johanson and Brooks, 2010). The pilot study aimed to test the reliability of the questionnaire instrument and examine the consistency of the measurement

tools used. The item reliability of an instrument is often tested using Cronbach's alpha reliability coefficient (α) (Rafidah & Mohd Effendi Ewan, 2019). This study refers to the reliability classification values proposed by Pallant (2010) for Cronbach's Alpha, as illustrated in Table 4.

Table 4
Cronbach's Alpha Value Reliability Classification

Indicator	Cronbach's Alpha Value
Very high	> 0.90
High	0.70 – 0.89
Moderate	0.30 – 0.69
Low	< 0.30

Table 5 shows the results of the analysis of the results of the pilot study on 30 respondents. The questionnaire that was built is reliable and can be used for real research when the Cronbach's Alpha reliability value for each construct is between 0.85 to 0.90 as shown in Table 4.

Table 5
Analysis Results of the Pilot Study (N:30)

Construct	Number of Questions	Alpha Cronbach Value	Interpretation
Content	4	0.90	Very high
Understanding	4	0.89	High
Clarity	4	0.90	Very high
Relevance	4	0.85	High
Easy to use	4	0.90	Very high

iii. To assess the level of agreement among district Site Officers regarding the utilization of the UPSI Academic System (MySkor) for the EmpowerNCER Akademik@Perak program.

The study's result indicated unanimous agreement among all district Site Officers regarding the utilization of the UPSI Academic System (MySkor) for the EmpowerNCER Akademik@Perak program, as illustrated in Table 5. According to Shahril et al. (2023) and Rink (2002), the accepted criterion requires at least 70% agreement between testers. These findings suggest that the UPSI Academic System (MySkor) can serve as a standard and standardized integrated database system, aligning with the study's objectives.

Table 5
The District Site Officer's Agreement Level on the Utilization of the UPSI Academic System (MySkor)

Item	Agreement % (N:7)				
	SA	A	SmA	D	SD
The content of the UPSI Academic System (MySkor) is relevant	80	20	-	-	-
The data analysis process coincides with the requirements	100	-	-	-	-
Student data can be reported systematically	100	-	-	-	-
Instructions in the UPSI Academic System (MySkor) are easy to understand	85	15	-	-	-
The UPSI Academic system (MySkor) is user friendly	90	10	-	-	-

SA- Strongly Agree, A- Agree, SmA- Somewhat Agree, D- Disagree, SD- Strongly Disagree

Conclusion

In conclusion, the study provides valuable insights into the effectiveness of the UPSI Academic System (MySkor) in the EmpowerNCER Akademik@Perak Program. The high validity and reliability scores obtained through expert assessment and pilot study indicate that MySkor is a robust tool for monitoring and assessing student performance in basic sports skills. These findings have significant implications for education policymakers, teachers, and students, as MySkor can enhance the teaching and learning processes, leading to improved academic outcomes and self-development skills. By incorporating MySkor into the program, educators can better tailor their instructional strategies to meet the needs of students, ultimately contributing to a more inclusive and equitable education system.

Furthermore, the study underscores the importance of utilizing innovative technological solutions, such as MySkor, to address educational challenges effectively. The success of MySkor in the EmpowerNCER Akademik@Perak Program highlights the potential of integrating technology into education to facilitate learning and improve student outcomes. Moving forward, it is essential to continue exploring and implementing innovative tools and strategies to enhance education delivery and promote holistic student development. Overall, MySkor's validation and reliability in this study pave the way for its wider implementation in educational programs, with the potential to revolutionize teaching and learning practices.

This research substantiates the effectiveness of the UPSI Academic System (MySkor) within the EmpowerNCER Akademik@Perak Program and significantly enriches both the theoretical and practical understanding of technology integration in education. By applying the Technology Acceptance Model (TAM) and Rogers' Diffusion of Innovations theory in a real-world setting, the study extends these models to demonstrate how user acceptance and innovation diffusion can impact educational outcomes. Contextually, it addresses a critical gap by validating MySkor in underprivileged regions, offering a model for similar educational programs aimed at enhancing skills among marginalized populations. The successful implementation and positive evaluation provide a blueprint for integrating educational technologies that cater to diverse educational challenges, promoting more tailored and effective strategies. This research thus encourages the adoption of innovative tools that can transform educational practices, supporting broader goals of reducing disparities and enhancing education quality across various socio-economic contexts.

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