INNOVATION AND CREATIVITY PRODUCT EXHIBITION
ISSN XXXX-XXXX (Media Online)
https://journals.adaresearch.or.id/icpex
OPEN ACCESS
Vol. 1, No. 1, June 2026 | pp. 26-34

PAPER

PENJAWAPs: A Cloud-Based Timetable Management System for Arau Community College Administration

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ABSTRACT

Timetable management is a critical administrative process because lecturers and students depend on accurate, current, and accessible schedules. Before digital implementation, timetable preparation at Arau Community College involved fragmented files, face-to-face coordination, printed approvals, and repeated distribution when revisions occurred. PENJAWAPs, an acronym for Pengurusan Jadual Waktu Kolej Komuniti Perlis, was introduced in 2022 as a cloud-based timetable management system using Google Sites, Google Drive, and Google Sheets. The innovation centralises collaborative planning, document storage, timetable publication, and digital access. This article describes the system workflow and evaluates lecturers' acceptance using the Technology Acceptance Model. The evaluation dataset comprised 78 completed lecturer responses collected through a questionnaire with 10 perceived ease-of-use items and 10 perceived-usefulness items. Descriptive statistics, Cronbach's alpha, and Pearson correlation analysis were applied. Lecturers reported high perceived ease of use ($M = 4.67$, $SD = 0.40$) and high perceived usefulness ($M = 4.61$, $SD = 0.38$). Reliability was excellent for ease of use (alpha = 0.920) and good for usefulness (alpha = 0.894). A strong positive relationship was identified between both constructs ($r = 0.705$, $p < 0.001$). PENJAWAPs remains in use and provides a maintainable digital access pathway for lecturers and students, including timetable viewing and downloading.

KEYWORDS

Cloud-Based Administration; Digital Timetable Management; Google Workspace; Perceived Ease of Use; Perceived Usefulness; Technology Acceptance

How to Cite: [1] S. b. Bakar, M. Z. b. Abdullah, and N. N. b. Musa, "PENJAWAPs: A Cloud-Based Timetable Management System for Arau Community College Administration," *Innovation and Creativity Product Exhibition*. vol. 1, no. 1, pp. 26-34, 2026.

Article Submitted 2026-06-01. Revision Uploaded 2026-06-12. Final Acceptance 2026-06-30

1. INTRODUCTION

Digital transformation is increasingly understood as an organisational change process rather than the simple conversion of paper records into electronic files. It involves the purposeful use of digital technologies to redesign activities, improve coordination, and create more responsive services [1], [7]. In higher education, this transformation extends beyond teaching and learning because administrative processes also influence the quality of the institutional experience. Studies have shown that higher education institutions need coherent digital strategies, sustainable management approaches, and suitable information systems to support academic and operational activities [2]-[5]. The value of a digital solution therefore depends not only on technical sophistication but also on whether it addresses a recurring operational problem in a manner that users can maintain and adopt.

Sustainable digital implementation requires attention to practical constraints. Institutions may face barriers related to organisational readiness, staff competencies, fragmented processes, access control, and the suitability of the selected technology [6], [8]. A highly complex system is not automatically the most appropriate option for every institution. In a resource-conscious educational setting, a manageable solution built on familiar tools may provide meaningful value when it improves the reliability of routine work, reduces dependence on scattered records, and enables users to obtain updated information through a consistent access pathway. This consideration is particularly important for processes that affect multiple programmes, lecturers, administrators, and students.

Timetable management is one such process. A timetable is not merely a schedule displayed at the beginning of a semester; it is a coordination instrument that links classes, lecturers, programmes, rooms, and student activities. Educational timetabling remains a complex administrative domain because schedules must be prepared, checked, communicated, and revised when necessary [9]. Information systems for timetable management are therefore expected to support the organisation of scheduling information, storage of records, and access to current data [10]. Even when timetable construction is performed manually or semi-manually, the mechanism for coordinating and distributing the approved timetable can determine how efficiently changes are managed.

Before the implementation of PENJAWAPs at Arau Community College, several timetable-related activities relied on separate files and physical or face-to-face processes. Timetable records had to be prepared for each semester, programme planning was conducted individually, and issues were commonly discussed through in-person coordination. Completed timetables were printed for confirmation, and lecturers had to distribute schedule information to students. When revisions occurred, updated schedules had to be circulated again. Task handover also required the transfer of records and files. The COVID-19 period exposed the limitations of this workflow because staff members could not always coordinate from the same location. However, the underlying issue was broader than the pandemic: the institution needed a centralised and maintainable digital pathway for planning, storing, publishing, and accessing timetable information.

PENJAWAPs was introduced in 2022 to respond to this need. The name is derived from the Malay phrase Pengurusan Jadual Waktu Kolej Komuniti Perlis, which refers to community college timetable management in Perlis. The innovation combines Google Sheets, Google Drive, and Google Sites. Google Sheets is used to support collaborative planning, Google Drive provides cloud-based storage for timetable-related records, and Google Sites functions as an organised web-based access hub. Lecturers can obtain the latest timetable information online, while students can view and download their schedules. The system remains in use at the time of writing. Its contribution lies in the integration of commonly available digital tools into a structured administrative workflow rather than in the development of a complex standalone scheduling engine.

The selection of familiar cloud-based tools is consistent with research on the use of Google Workspace in educational settings. Recent studies have examined educators' adoption of Google Workspace tools, the use of such platforms for collaboration, and the importance of digital competencies in sustaining their use [11]-[14]. These findings suggest that accessibility and user confidence are central considerations when institutional processes are digitised. A system that is technically available but difficult to understand may not be used consistently. Conversely, a straightforward system can create operational value when users recognise that it supports their work and can be accessed with limited additional training.

The Technology Acceptance Model (TAM) provides a suitable framework for evaluating this aspect of PENJAWAPs. TAM proposes that perceived ease of use and perceived usefulness are key constructs in understanding user acceptance of technology [18], [19]. Educational technology research has continued to employ and review TAM because it offers a clear basis for examining how users judge a system's practical value and usability [15]-[17]. In the context of PENJAWAPs, perceived ease of use reflects lecturers' views on whether the system is understandable and manageable, whereas perceived usefulness reflects whether the system supports timetable-related tasks and improves access to relevant information.

This article presents PENJAWAPs as a cloud-based timetable management innovation for community college administration. It has three objectives: to describe the operational workflow and digital components of PENJAWAPs; to compare timetable-management practices before and after implementation; and to evaluate lecturers' perceptions of ease of use and usefulness, including the relationship between these constructs. By combining an innovation description with quantitative user-acceptance evidence, the article positions PENJAWAPs as a practical, sustainable, and maintainable approach to digital timetable management.

2. METHOD

2.1 Innovation Setting and Development Stages

PENJAWAPs was implemented at Arau Community College in 2022 as an administrative innovation for timetable management. The innovation was developed in response to difficulties associated with fragmented timetable records, face-to-face dependency, repeated schedule distribution, and the need for remote access. The development approach was deliberately practical. Rather than building a new software platform from the ground up, the innovation configured widely available cloud-based tools into a single workflow that could be maintained using institutional accounts and familiar interfaces.

The implementation process can be described in five stages. First, the existing timetable workflow was reviewed to identify activities that created duplication or access difficulties. Second, the required information flow was mapped, including timetable planning, record storage, approval, publication, and student access. Third, Google Sheets, Google Drive, and Google Sites were configured according to their roles in the workflow. Fourth, timetable links and supporting information were organised in the Google Sites hub so that lecturers and students could access the relevant resources. Fifth, user acceptance was evaluated through a questionnaire, and the system continued to be used as an operational timetable-management pathway.

2.2 System Architecture and Workflow

The PENJAWAPs architecture uses three integrated components. Google Sheets supports collaborative timetable planning because authorised coordinators can update shared information without maintaining separate offline copies. Google Drive functions as the central storage location for timetable records and related files. Google Sites provides a structured web-based interface that brings the access links together in a user-friendly format. Official Google Workspace learning resources describe Drive as a platform for storing, sharing, and organising files; Sites as a tool for creating and

publishing internal or public-facing sites; and Sheets as a collaborative spreadsheet tool [22]-[24]. PENJAWAPs applies these capabilities to a specific educational-administration need.

Figure 1 illustrates the workflow. Timetable committees or programme coordinators update planning information through Google Sheets. Approved timetable records are stored in Google Drive, and relevant links are presented through the Google Sites hub. Lecturers use the hub to access the latest timetable information, while students can view and download their schedules. When a revision occurs, the central source is updated so that users can retrieve the current version through the same access route. This approach does not claim to automate constraint optimisation. Its purpose is to improve coordination, storage, and distribution through a centralised cloud-based pathway.

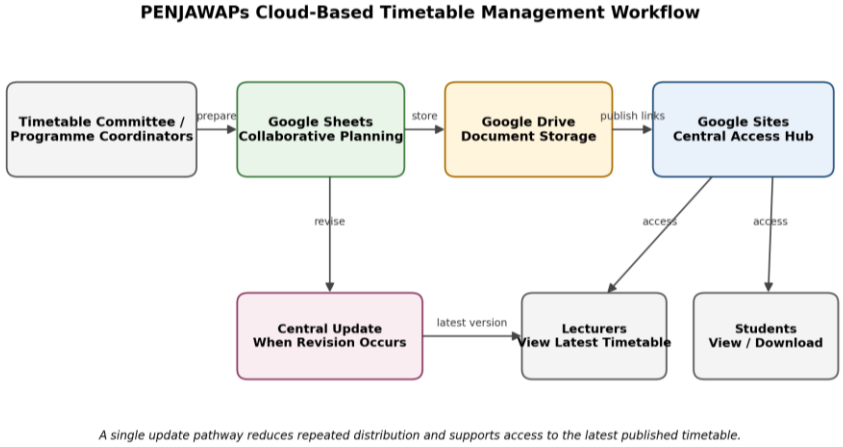

Figure 1. PENJAWAPs cloud-based timetable management workflow

Access governance is an important operational consideration. Editing permissions should be restricted to authorised staff, while viewing permissions should be configured according to the intended audience. Institutional accounts facilitate handover when responsibilities change. In practice, the value of the architecture depends on consistent file naming, link maintenance, access permissions, and the availability of an internet connection. These considerations were treated as part of the system's administrative workflow rather than as separate technical tasks.

2.3 User Acceptance Evaluation

A quantitative evaluation was used to examine lecturers' acceptance of PENJAWAPs. The available dataset contained 78 completed questionnaire responses from lecturers at Arau Community College who used the system. The instrument contained demographic questions and 20 Likert-scale items. Ten items measured perceived ease of use and ten items measured perceived usefulness. The items were adapted to the timetable-management context based on the TAM constructs introduced by Davis [18] and subsequently extended by Venkatesh and Davis [19]. The continued use of TAM in educational and application-based studies supports its suitability for evaluating how users judge the usability and value of a digital system [15]-[17], [20], [21].

Each construct was calculated by averaging the relevant ten items for each respondent. Descriptive statistics were used to report respondent characteristics, construct means, and standard deviations. Cronbach's alpha was calculated to examine the internal consistency of the questionnaire items. Pearson correlation analysis was applied to test the relationship between perceived ease of use and perceived usefulness. Statistical significance was interpreted at the 0.05 level, while the reported result was expressed as $p < 0.001$ when the probability value was smaller than 0.001. The analysis was reported in aggregate form and did not include personally identifying information.

3. RESULT AND DISCUSSION

3.1 Implementation of PENJAWAPs

PENJAWAPs was implemented as a web-accessible timetable-management hub that connects the institution's planning and distribution activities. The interface documentation from the earlier implementation shows a mobile-access layout with links to timetable-related resources, revision information, programme schedules, and organisational information. Figure 2 reproduces the available interface documentation. Although the system has not been expanded with new functions since the earlier presentation, it remains in use. Continued use is relevant in an innovation context because it indicates that the solution has moved beyond a demonstration prototype and has been incorporated into routine practice.

The system's design reflects a pragmatic view of digital transformation. It does not attempt to replace every administrative decision with automated logic. Instead, it addresses the flow of information after coordinators begin planning a timetable and before users retrieve the final schedule. Google Sheets supports shared preparation, Google Drive retains records, and Google Sites acts as the access point. The integration of these roles reduces the need for users to search for files through multiple channels. It also provides a consistent route for students who need to view or download their schedules.

INNOVATION AND CREATIVITY PRODUCT EXHIBITION
ISSN XXXX-XXXX (Media Online)
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Vol. 1, No. 1, June 2026 | pp. 26-34

Figure 2. Existing mobile-access interface documentation for PENJAWAPs

3.2 Comparison of Timetable-Management Practices

Table 1 summarises the operational differences before and after the implementation of PENJAWAPs. The comparison is based on the documented workflow used in the earlier innovation presentation and the continued system configuration. The table should be interpreted as a process comparison, not as a quantified efficiency study. No numerical measurements of time savings, printing reduction, or financial impact were collected. Nevertheless, the comparison identifies the administrative tasks that were reorganised through the digital workflow.

Table 1. Timetable-management practices before and after PENJAWAPs

Area	Before PENJAWAPs	After PENJAWAPs
Timetable records	Files had to be prepared for each semester.	Records are stored digitally in Google Drive.
Timetable planning	Planning was conducted individually, and issues required face-to-face discussion.	A shared Google Sheet supports virtual planning and reference across programmes.
Coordination meetings	Coordination was conducted face-to-face.	Coordination can be supported virtually, with records accessible in Google Drive.
Confirmation of completed timetable	The completed timetable had to be printed.	Digital confirmation and digital-signature practices can be used.
Timetable access	Lecturers distributed schedules and redistributed revised versions to students.	Lecturers and students can access current timetable information online.
Student registration support	Officers had to check with lecturers or print schedules for newly registered students.	Students can view or download timetable information through PENJAWAPs.
Task handover	Records and files had to be physically handed over.	Institutional account access and cloud-based records support handover.

The most important change is the shift from fragmented access to a centralised access pathway. Centralisation does not eliminate the need for careful timetable planning, but it improves the way information is stored and communicated. Users no longer depend solely on the physical presence of a particular officer or on the repeated circulation of files. A revision can be reflected in the central source, and the same hub can continue to direct users to the current schedule. This feature is particularly useful in an educational environment where students and lecturers may need timetable information at different times and from different devices.

The workflow also supports continuity of administration. When responsibilities change, cloud-based storage and institutional account access reduce dependency on personal files. This is an important distinction. The innovation is not valuable merely because documents are online; it is valuable because the documents, planning sheets, and access links are organised as parts of one administrative process. Digital transformation research similarly emphasises that technology must be integrated with organisational processes to create sustainable value [1], [3], [5], [7].

3.3 Respondent Profile

The user-acceptance dataset comprised 78 completed lecturer responses. Table 2 presents selected respondent characteristics. Female lecturers represented 56.4% of respondents, while male lecturers represented 43.6%. Most respondents rated themselves as proficient or very proficient in using technology. More than half had over ten years of teaching experience, and 79.5% had used PENJAWAPs for two to three years at the time of the survey. These characteristics are useful for interpreting the findings because the results were not derived mainly from first-time users. Respondents had experience with the system and were able to evaluate its role in their timetable-related work.

Table 2. Respondent profile (N = 78)

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	34	43.6
	Female	44	56.4

Characteristic	Category	Frequency	Percentage (%)
Technology competency	Very proficient	27	34.6
	Proficient	47	60.3
	Moderate	4	5.1
Teaching experience	Less than 1 year	9	11.5
	1-5 years	13	16.7
	6-10 years	11	14.1
	More than 10 years	45	57.7
Duration of PENJAWAPs use	New user	5	6.4
	Less than 1 year	5	6.4
	1-2 years	6	7.7
	2-3 years	62	79.5
Frequently used device	Desktop computer	32	41.0
	Smartphone	28	35.9
	Laptop	9	11.5
	Tablet	9	11.5

The device distribution further supports the relevance of web-based access. Desktop computers were the most frequently used devices (41.0%), followed by smartphones (35.9%). Laptops and tablets each accounted for 11.5%. The presence of smartphone use is significant because the PENJAWAPs interface is intended to provide a practical access route beyond a fixed workstation. However, the findings should not be interpreted as a comparative usability test across devices because the questionnaire did not separately measure the quality of the experience on each device.

3.4 Reliability of the Evaluation Instrument

Table 3 presents the reliability results. Cronbach's alpha was 0.920 for perceived ease of use and 0.894 for perceived usefulness. The alpha value for the combined 20 items was 0.939. These values indicate that the questionnaire items demonstrated strong internal consistency in the PENJAWAPs dataset. Reporting the reliability of the actual responses strengthens the evaluation because it shows that the items within each construct measured related aspects of users' perceptions.

Table 3. Reliability analysis of questionnaire constructs

Construct	Number of items	Cronbach's alpha	Interpretation
Perceived ease of use	10	0.920	Excellent
Perceived usefulness	10	0.894	Good
Overall questionnaire items	20	0.939	Excellent

3.5 Perceived Ease of Use and Perceived Usefulness

Table 4 and Figure 3 present the descriptive statistics for the two TAM constructs. Perceived ease of use recorded a mean of 4.67 with a standard deviation of 0.40, while perceived usefulness recorded a mean of 4.61 with a standard deviation of 0.38. Both values are high on a five-point scale. The results show that lecturers generally viewed PENJAWAPs as understandable, manageable, and beneficial for timetable management.

Table 4. Descriptive statistics of user-acceptance constructs

Construct	N	Mean	Standard deviation	Interpretation
Perceived ease of use	78	4.67	0.40	High
Perceived usefulness	78	4.61	0.38	High

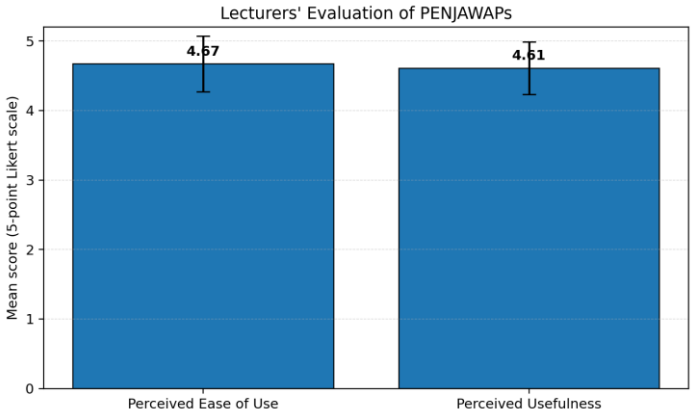

Figure 3. Lecturers' mean ratings for perceived ease of use and perceived usefulness

The difference between the two construct means is small. This pattern is valuable because usefulness and ease of use address different questions. A system may be useful but difficult to operate, or simple to operate but insufficiently relevant to users' work. PENJAWAPs received high ratings for both dimensions. The findings are consistent with the practical design of the innovation: it uses familiar browser-accessible tools and focuses on a routine task for which lecturers require current information.

Table 5 highlights the highest-rated items. For perceived ease of use, lecturers rated the statement that PENJAWAPs was easy to understand most highly (M = 4.77). They also indicated that the system could be learned quickly and was easy to use (M = 4.73 for both items). For perceived usefulness, the highest-rated item concerned the provision of relevant and useful timetable-management information (M = 4.68). The results suggest that the perceived value of the system is closely linked to its ability to provide accessible information without an unnecessarily complicated interaction process.

Table 5. Highest-rated questionnaire items

Construct	Item	Mean
Perceived ease of use	PENJAWAPs is easy to understand.	4.77
Perceived ease of use	Users can learn to use PENJAWAPs quickly.	4.73
Perceived ease of use	Users believe that PENJAWAPs is easy to use.	4.73
Perceived usefulness	PENJAWAPs provides relevant and useful timetable-management information.	4.68
Perceived usefulness	PENJAWAPs significantly improves timetable management.	4.65
Perceived usefulness	PENJAWAPs is important for timetable management.	4.64

These findings align with broader research on technology adoption in education. Systematic reviews have shown that perceived usefulness and perceived ease of use remain central in studies of educational technology acceptance [15], [16]. A meta-analytic examination of teachers' adoption of digital technology also supports the relevance of TAM for understanding educators' decisions [17]. The PENJAWAPs results add a practical administrative example: acceptance is not limited to classroom tools, learning platforms, or mobile applications. Administrative innovations are also more likely to be sustained when users perceive that they are both usable and relevant to recurring work.

The findings can also be discussed in relation to the Google Workspace literature. Studies have examined educators' acceptance of Google Workspace tools and their role in collaboration and digital competence development [11]-[14]. PENJAWAPs illustrates a focused institutional application of these tools. The system does not ask users to adopt a completely unfamiliar platform. Instead, it organises existing cloud services around a clearly defined problem. This may help explain why lecturers rated the system highly for understandability and learnability.

3.6 Relationship Between Ease of Use and Usefulness

Pearson correlation analysis was conducted to examine the relationship between perceived ease of use and perceived usefulness. As shown in Table 6, the relationship was positive, strong, and statistically significant ($r = 0.705$, $p < 0.001$). Lecturers who rated the system as easier to use also tended to rate it as more useful. The result does not establish causality because the evaluation was cross-sectional. Nevertheless, it shows that usability and practical value were closely related in lecturers' evaluations of PENJAWAPs.

Table 6. Pearson correlation between perceived ease of use and perceived usefulness

Relationship	N	Pearson r	p-value	Interpretation
Perceived ease of use and perceived usefulness	78	0.705	< 0.001	Strong positive relationship

The correlation is consistent with TAM, which positions perceived ease of use as an important factor in the acceptance of technology [18], [19]. Related research has also found that TAM remains useful for investigating the acceptance of mobile applications and education-related technologies [20], [21]. In the PENJAWAPs context, the result has a direct implementation implication: maintaining a simple and clear access route is not merely a matter of convenience. It is associated with users' perception that the system is valuable for their work. Future changes should therefore preserve usability while adding only functions that address a documented need.

3.7 Innovation Strengths, Limitations, and Future Development

PENJAWAPs has several practical strengths. First, it uses a centralised cloud-based workflow rather than disconnected records. Second, it enables lecturers and students to reach timetable information through a consistent access hub. Third, the use of familiar tools supports maintainability because the system does not require specialised software development skills for routine updates. Fourth, it supports administrative continuity because records can be organised under institutional accounts. Finally, the continued use of the system since its 2022 implementation demonstrates operational relevance. These strengths are particularly appropriate for institutions seeking a manageable form of digital transformation that can be sustained with available resources.

The system also has limitations. The evaluation was conducted at a single institution and focused on lecturers. Although students can access and download timetables, their perceptions were not measured. The study did not collect direct operational metrics such as the amount of paper avoided, processing time, number of timetable errors, or frequency

of revisions. The correlation analysis cannot establish cause-and-effect relationships. Furthermore, the system has not been enhanced with new functions since the earlier presentation. It remains dependent on internet availability, the maintenance of links, consistent file organisation, and appropriate account permissions. These limitations should be stated clearly so that the innovation is evaluated according to the evidence that is available.

Future development can proceed in stages. The first priority is to collect updated interface documentation and conduct an access audit covering institutional accounts, file ownership, link validity, and viewing permissions. The second priority is to obtain feedback from students, administrators, and timetable coordinators. The third priority is to measure operational indicators, such as the time needed to publish a revision, the number of printed copies avoided, and the number of access-related enquiries before and after updates. If a need is demonstrated, the system can later be expanded with version labels, update timestamps, notifications, or a simple administrative dashboard. Data governance and privacy should remain part of this process because the responsible use of technology in education requires attention to access, inclusion, and institutional control [25].

The future value of PENJAWAPs therefore lies in disciplined improvement rather than unnecessary complexity. A sustainable administrative innovation should continue to solve the original problem while generating better evidence of impact. The existing results establish a credible foundation: lecturers rated the system highly for ease of use and usefulness, the constructs demonstrated strong reliability, and both perceptions were strongly related. A subsequent evaluation can extend this foundation by including additional stakeholder groups and measurable operational outcomes.

3.8 Sustainability and Replication Considerations

A key question for a digital-administration innovation is whether it can be sustained after the initial implementation period. PENJAWAPs has an advantage because its core components are familiar cloud-based tools rather than custom software that requires a specialised development team for every routine update. However, familiarity alone is not sufficient. Sustainable use depends on clear responsibility for maintaining the Google Sites hub, reviewing Drive folders, confirming that links remain active, and ensuring that timetable versions are labelled consistently. Digital-transformation research emphasises that sustainable outcomes emerge when technology is supported by organisational practices, governance, and user capability [3], [5], [6], [8].

Replication at another community college would therefore require more than copying a web page. The receiving institution would need to map its timetable workflow, identify authorised coordinators, establish folder structures, decide which resources are intended for public or restricted viewing, and document the timetable-publishing process. The Google Workspace components can then be configured to match these decisions. Google Sites, Drive, and Sheets provide the functional basis for publishing links, organising files, and supporting shared updates [22]-[24], but the administrative rules determine whether the system remains reliable. A short operating guide and a named account owner should accompany any replication initiative.

The continued use of PENJAWAPs also creates an opportunity to strengthen evidence collection. The existing survey establishes positive lecturer acceptance, but the next evaluation should include operational and stakeholder indicators. The purpose of these indicators is not to burden the administrative process with excessive reporting. Instead, a small set of routinely recorded measures can show whether the system continues to solve the original problem and where improvement is needed. Table 7 proposes a monitoring framework that can be applied in a future evaluation. Baseline values should be collected before new features are introduced so that changes can be interpreted accurately.

Table 7. Proposed indicators for future sustainability monitoring

Indicator	Purpose	Suggested evidence
Revision-publication time	Assess the responsiveness of the update workflow.	Record the time between approval of a revision and publication of the updated link.
Access-related enquiries	Identify recurring user-access difficulties.	Maintain a simple monthly count of enquiries from lecturers and students.
Printing requirement	Examine continued dependency on printed timetable copies.	Record the number of copies requested for each semester and the reason for printing.
Link and permission audit	Maintain the reliability and governance of the cloud-based hub.	Review link validity, file ownership, and viewing permissions at the start of each semester.
Stakeholder satisfaction	Extend the evidence beyond lecturer acceptance.	Collect brief feedback from students, administrators, and timetable coordinators.
Version accuracy	Reduce confusion when revised schedules are issued.	Check that each published timetable displays a clear version label or update date.

The proposed indicators are deliberately modest. They can be incorporated into routine coordination without requiring a new analytics platform. Their use would provide a clearer basis for deciding whether additional functions are necessary. For example, repeated access enquiries might justify a clearer navigation page, while frequent revision-related confusion might justify update timestamps or notifications. If an enhancement is introduced, its effect can then be evaluated against a documented baseline rather than assumed. This approach preserves the system's simplicity while encouraging evidence-based development.

Inclusion and responsible access should remain part of sustainability planning. A web-based timetable hub improves reach, but users may still experience connectivity limitations, device constraints, or uncertainty about which version is current. Institutions should retain an appropriate support route and review whether essential timetable information remains accessible to the intended audience. Responsible educational technology use requires decisions about access, governance, and user needs, not only the availability of digital tools [25]. In this respect, PENJAWAPs can serve as a replicable model when its technical configuration is accompanied by clear administrative ownership and periodic review.

4. CONCLUSION

PENJAWAPs is a cloud-based timetable-management innovation developed to improve the organisation, storage, publication, and access of timetable information at Arau Community College . Introduced in 2022, the system integrates Google Sheets, Google Drive, and Google Sites into a structured administrative workflow. The innovation enables authorised staff to coordinate timetable-related information through shared cloud resources, allows lecturers to access current schedules online, and provides students with a pathway to view and download their timetables. Its contribution is practical: it replaces a fragmented process with a more centralised and maintainable approach while using tools that are accessible within an educational environment. The lecturer evaluation provides evidence that the system has been positively accepted. Perceived ease of use recorded a mean of 4.67, while perceived usefulness recorded a mean of 4.61. The questionnaire demonstrated strong internal consistency, and the correlation between ease of use and usefulness was positive and statistically significant ($r = 0.705$, $p < 0.001$). These findings show that lecturers who found PENJAWAPs easier to use also tended to recognise greater practical value in the system. The findings should be interpreted within the study's limitations. The evaluation was conducted at one institution, focused on lecturers, and did not measure direct operational savings or student satisfaction. Future work should collect updated interface evidence, audit access governance, involve students and administrators, and quantify indicators such as revision-publication time, access enquiries, and printing requirements. The next phase should preserve the simplicity that supports user acceptance while introducing only improvements that respond to documented needs. PENJAWAPs demonstrates that sustainable educational-administration innovation can be achieved through the purposeful integration of familiar cloud-based tools.

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