NEWTON: Networking and Information Technology
Vol. 6 No. 1 June 2026, Page. …- …
E-ISSN: 2797-0728

A Web-Based Diploma Service Management Information System

Riska Damayanti[1*], Siti Sufaidah[2]
[1.2] Information System Study Program, Universitas KH. A. Wahab Hasbullah

*Email: riskadamayanty38@gmail.com

ABSTRACT
Manual diploma service management often causes delays and limits students in obtaining real-time information about their application status. This study aims to design and implement a web-based diploma service management system that provides integrated and accessible administrative services. The system supports multiple user roles, allowing students to submit diploma requests, upload required documents, and monitor application status, while administrators verify documents and validate academic data. The development process follows a structured software development method consisting of requirement analysis, system design, implementation, testing, and maintenance. Functional testing shows that all system features operate according to user needs. The resulting system enables structured diploma processing, accurate data verification, real-time status monitoring, and secure digital record management. The implementation of this system improves efficiency, accuracy, and accessibility of diploma services and supports the digital transformation of academic administration.

Keywords: *Digitalization; Diploma Service; Web-Based Information System; Academic Administration*

INTRODUCTION
The development of information and communication technology has significantly influenced many aspects of life, including the education sector. In the current digital era, educational institutions are required to adapt to digital transformation to improve efficiency, effectiveness, and service quality. Digitalization is no longer merely a necessity but has become an important strategy to respond to globalization challenges, public expectations, and the need to enhance the overall quality of educational management.

One important aspect of educational administration that requires attention is diploma services. Digitalization in diploma service management is a strategic step to improve efficiency and effectiveness in academic administration. The digital process not only simplifies workflows but also strengthens accountability in delivering educational services (Bhati & Dahiya, 2024).

At the national level, Indonesia has implemented an electronic-based government system to promote integration, transparency, and innovation in public services. Through this initiative, communities gain faster and simpler access to information and services. Digital transformation also plays a crucial role in developing human resources by improving educational processes and supporting long-term national development goals related to technology advancement (Soleh & Rahman, 2024).

However, at Universitas KH. A. Wahab Hasbullah, diploma management is still conducted manually using paper-based procedures. This situation causes delays in services, increases the risk of data recording errors, and limits students in monitoring their diploma application status. As a result, administrative processes after graduation become less efficient. Therefore, a web-based system is required to improve time efficiency, reduce administrative costs, and enhance security and transparency in diploma data management.

Several previous studies have explored the digitalization of diploma and academic document services. (Rofiah et al., 2022) developed a web-based diploma legalization system using a Spiral software development model to simplify online legalization requests for alumni. Their research focuses primarily on legalization services and document monitoring. (Arif, 2023) proposed a web-based diploma application integrated with single sign-on authentication to enhance access security and user convenience.

Meanwhile, (Nuraeni et al., 2023) implemented a diploma management system using Extreme Programming that supports online validation and real-time monitoring across institutional units. Although these studies demonstrate the importance of digital academic services, most of them concentrate on legalization or limited document processing features rather than comprehensive diploma service management.

Compared to prior research, integrated diploma service systems that combine multi-stage verification, correction handling, and structured requirement tracking remain limited. Existing studies tend to address isolated administrative tasks rather than providing an end-to-end workflow that connects multiple institutional units. This limitation creates a research gap in developing holistic digital diploma management systems capable of supporting full administrative processes.

In general, digital transformation in diploma services is not only about adopting new technology but also reflects a fundamental shift in institutional management. Successful implementation requires collaboration between government institutions, educational organizations, and the community to ensure sustainability. This study focuses on developing a web-based diploma service management system as a response to these challenges. The system is intended to facilitate digital diploma management from submission and verification to issuance while considering relevant regulations concerning validity, accuracy, and legality in diploma administration (Lelen et al., 2022).

Based on these problems, this research aims to design a web-based diploma service management system that improves administrative service quality, accelerates issuance processes, and reduces the risk of errors and document loss. It is expected that this research can serve as a reference for developing digital administrative services in other higher education institutions.

METHOD

This study develops a web-based diploma service management system using the Waterfall software development model. The model is selected because it provides a systematic and sequential workflow that ensures each development stage is clearly defined, documented, and evaluated. This approach guarantees that the system is built based on actual administrative needs and validated progressively before deployment.

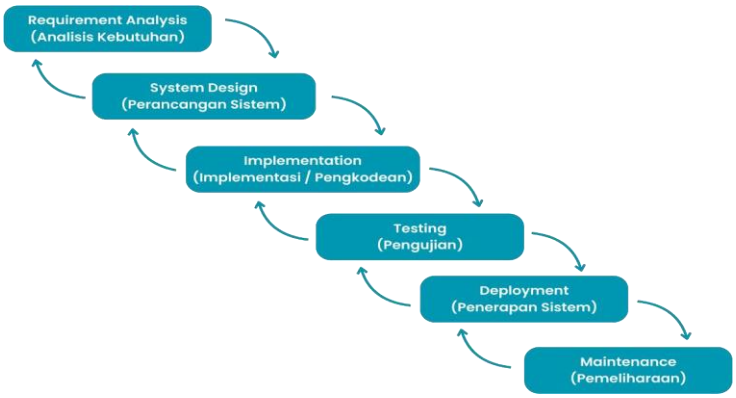

Figure 1. Waterfall Model

The Waterfall model in this research consists of requirement analysis, system design, implementation, testing, deployment, and maintenance.

1. **Requirement Analysis**

   The requirement analysis stage identifies functional and non-functional system needs. Functional requirements include diploma submission, correction requests, multi-unit verification, academic approval, and automatic status tracking. Non-functional requirements emphasize data security, web accessibility, usability, and system stability. Requirements were collected through interviews, observation of the existing manual process, and document study to ensure alignment with administrative procedures.

2. **System Design**

   The system design stage transforms requirements into a technical blueprint. The design defines user roles, workflows, database structure, and interface layout. The system supports multiple actors including students, super administrators, faculty verification units, and academic administrators, each with role-based permissions. Database modeling is designed to manage users, student data,

submission records, verification stages, and activity logs in an integrated structure. Interface design includes login modules, student dashboards, submission forms, verification panels, and approval interfaces to support structured administrative workflows.

3. **Implementation**

The implementation phase converts the system design into a web-based application. The system is developed using a server-side framework to manage application logic, supported by a relational database and an interactive user interface. This architecture enables secure handling of submission data and multi-level verification processing.

4. **Testing**

System testing is conducted using black box testing to validate functional performance. Testing ensures that submission processes, verification workflows, approval mechanisms, and access control operate according to user requirements

5. **Deployment**

After successful testing, the system is deployed on the university server and integrated into the academic administrative workflow. Installation, configuration, and user trials are performed to ensure operational readiness.

6. **Maintenance**

Maintenance activities are carried out after deployment to fix bugs, adapt to changing requirements, and maintain system performance and security. Continuous maintenance ensures long-term reliability and usability.

RESULT AND DISCUSSION

This section presents the results of system development and implementation of the web-based diploma service management system. The system is evaluated based on its functional features and user interaction workflow. The presentation of results focuses on how the application supports administrative processes, improves verification efficiency, and provides transparency in diploma services.

Result

The developed system successfully digitizes the diploma submission and verification process through a multi-level administrative workflow. The application supports different user roles, including students and multiple administrative units, ensuring structured service management. The main system features are described as follows.

1. **Dashboard Interface**

The dashboard serves as the main interface for administrators and students. For administrators, the dashboard displays summary statistics such as the number of diploma records, submission requests, and correction requests. It also provides a workflow overview to guide administrative processing. For students, the dashboard shows submission procedures and a checklist of requirement completion status, allowing them to monitor document readiness before submitting requests.

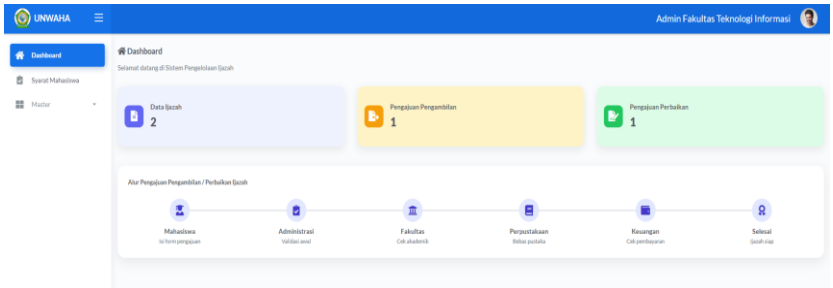

Figure 2. Administrator Dashboard Interface

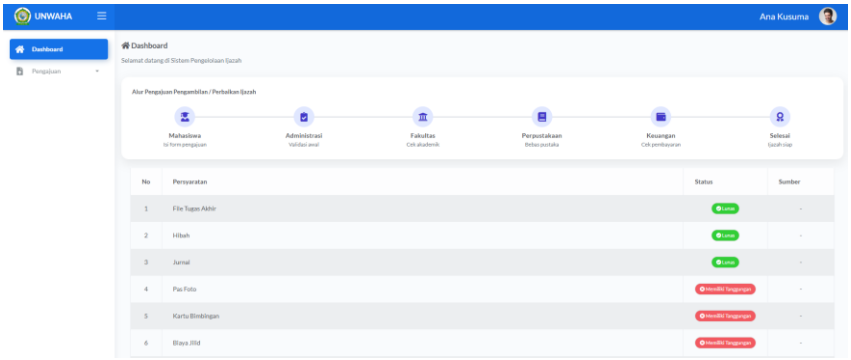

Figure 3. Student Dashboard Interface

2. Student Data Management

The system provides a master student management module accessible to faculty administrators. This module allows administrators to add, edit, delete, import, and export student data efficiently. The feature ensures accurate and centralized student record management.

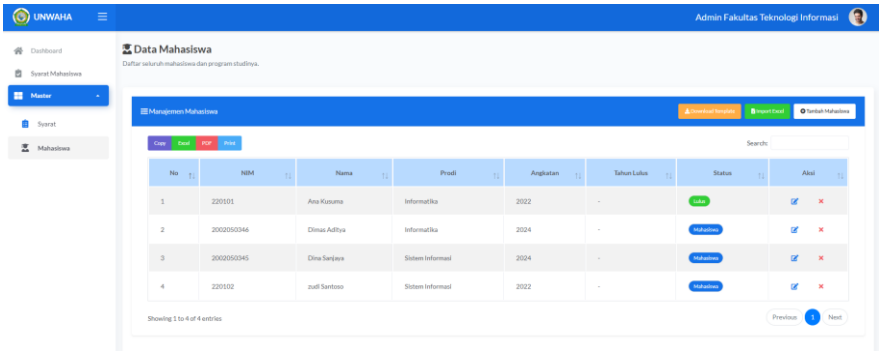

Figure 4. Student Master Data Interface

3. Requirement Verification Modules

Requirement verification is divided across multiple administrative units. Faculty, finance, and library administrators validate student compliance based on their respective responsibilities. Each module enables administrators to review requirements and finalize verification status once all conditions are fulfilled, ensuring a structured multi-stage approval process.

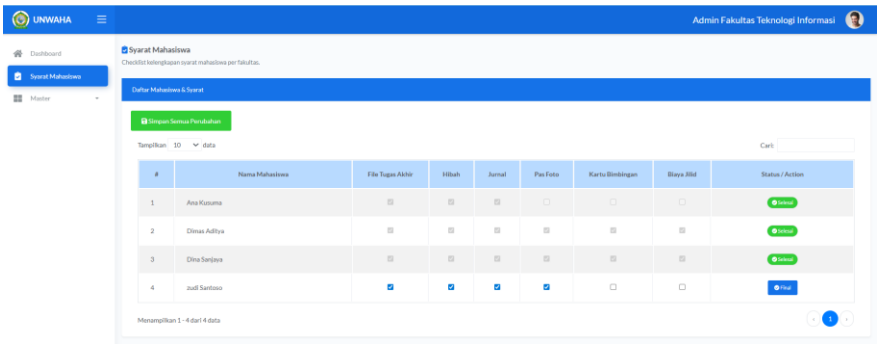

Figure 5. Faculty Verification Interface

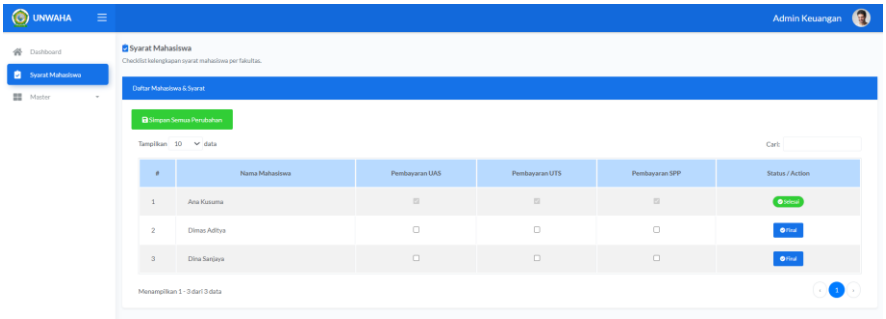

Figure 6. Financial Verification Interface

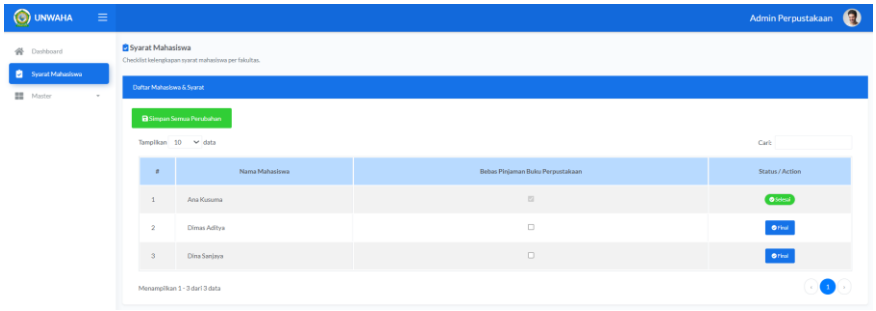

Figure 7. Library Verification Interface

4. Diploma Submission Module

The diploma submission module connects student requests with academic administrative approval. Students can submit diploma collection requests only after completing all required conditions, and the system automatically validates requirement status to prevent incomplete submissions. Academic administrators then review requests, manage scheduling, and provide approval or cancellation with explanatory notes, ensuring controlled and transparent diploma distribution.

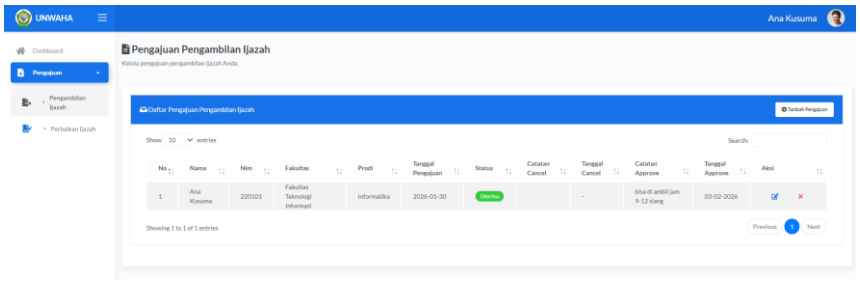

Figure 8. Student Diploma Submission Interface

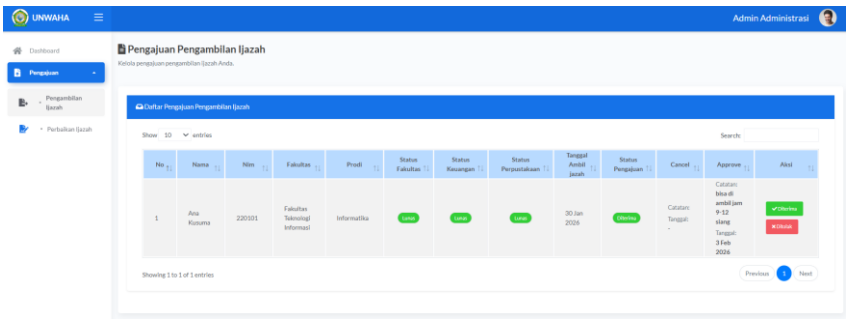

Figure 9. Academic Administrator Approval Interface

5. Diploma Correction Module

The diploma correction module allows students or alumni to submit revision requests by uploading supporting documents as evidence. The system requires complete documentation before submission to ensure administrative validity. Academic administrators review each request and can

approve or reject it with explanatory notes, maintaining transparency and proper documentation control throughout the correction process.

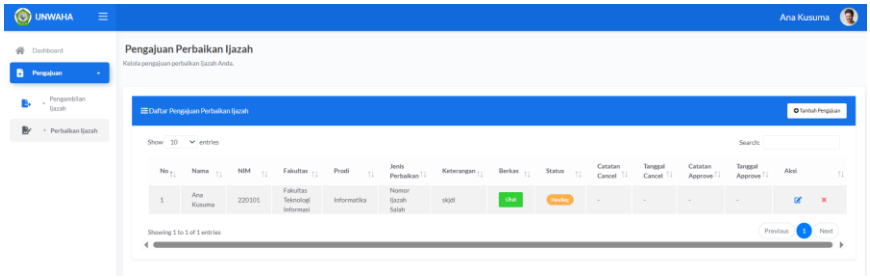

Figure 10. Academic Administrator Correction Verification Interface

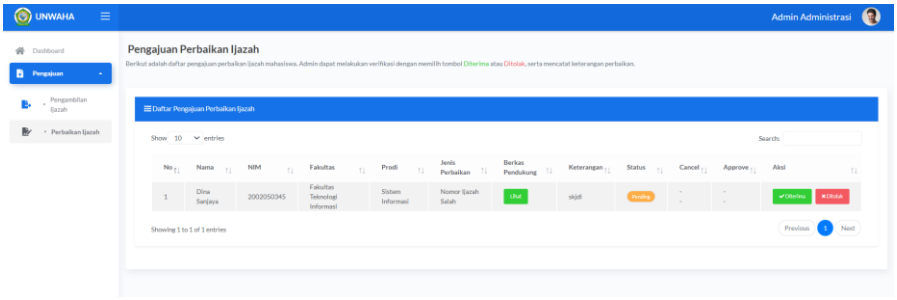

Figure 11. Student diploma Correction Submission Interface

6. Activity Log and System Administration

The system records all user activities in an audit log accessible only to super administrators. This feature supports accountability and traceability of administrative actions. Additionally, super administrators manage system master data, including user roles, departments, and requirement definitions.

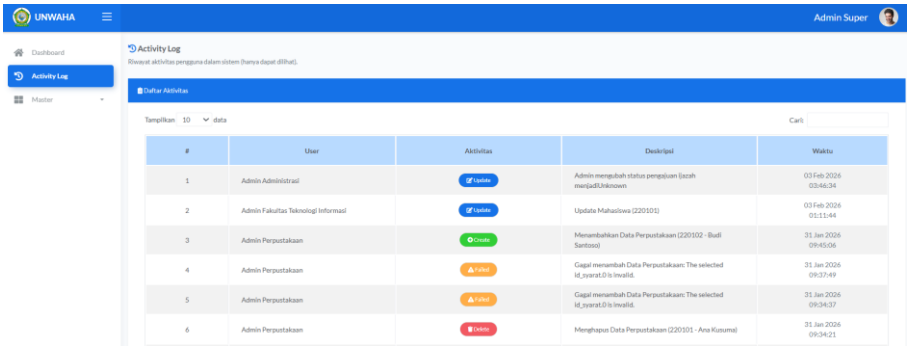

Figure 12. Activity Log Interface

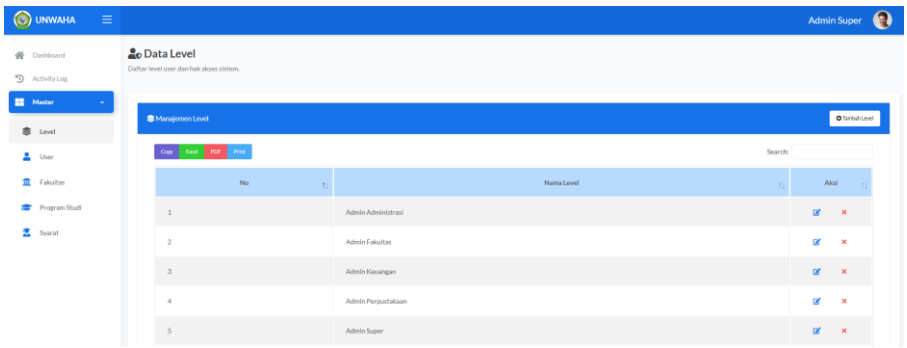

Figure 13. System Master Management Interface

Discussion

System testing was conducted using the Black Box Testing method to evaluate whether all functional and non-functional requirements were fulfilled. The testing focused on core system modules including authentication, student data management, requirement verification, diploma submission, correction requests, and audit logging. Black Box Testing is widely used in software evaluation because it assesses system behavior from an external perspective without requiring access to internal code, focusing on input/output validation and ensuring the system meets user requirements (Kartono et al., 2024). The results confirm that the system operates according to the defined specifications and supports multi-role administrative workflows without functional failure. The summarized testing results are presented in Table 1.

Table 1. System Functional Testing Results

No	Feature Tested	Test Scenario	Expected Result	Test Result
1	Login & Authentication	User logs in with valid and invalid credentials	System grants or denies access appropriately	Match
2	Dashboard Display	Admin and student access dashboard	Summary information displayed correctly	Match
3	Student Data Management	Admin imports and edits student records	Data stored and updated successfully	Match
4	Requirement Verification	Faculty, finance, and library finalize requirements	Verification status updated correctly	Match
5	Diploma Submission	Student submits collection request	Submission saved and validated automatically	Match
6	Approval Process	Academic admin approves or cancels submission	Status updated with notes	Match
7	Diploma Correction	Student uploads correction request	Validation and decision recorded properly	Match
8	Activity Log	Super admin views audit history	Activity displayed accurately	Match
9	Security & Session	Unauthorized access attempt after logout	Access blocked	Match
10	System Performance	Import medium dataset	System responds within acceptable time	Match

All test cases show successful execution without critical errors. The testing confirms that the system satisfies functional requirements, including multi-level verification, document validation, and administrative approval processes. From a non-functional perspective, the system demonstrates adequate security through session control and responsive performance during data processing. These results indicate that the system is suitable for operational use and supports efficient digital diploma service management.

CONCLUSIONS

This study successfully developed a web-based diploma service management system that digitizes administrative workflows and improves the efficiency of diploma submission, verification, and correction processes. The implementation of a structured multi-level verification system ensures accountability and transparency across administrative units. Functional testing confirms that all system features operate according to requirements, while non-functional evaluation demonstrates adequate security and performance. The system provides a practical solution for modernizing academic administrative services and can serve as a reference model for other higher education institutions seeking digital transformation in diploma management.

REFERENCES

Arif, E. (2023). Perancangan Protoipe Aplikasi Legalisir Ijazah dan Transkip Akademik Berbasis Web Menggunakan Layanan Autentikasi Single Sign-On Gmail. *JUTIN : Jurnal Teknik Industri Terintegrasi*, *6*(1), 156–161. https://doi.org/10.31004/jutin.v6i1.14799

Bhati, G., & Dahiya, J. (2024). *The Impact Of Technology On Education Planning And Administration*.

21(S7), 995–1006.

Kartono, F. K., Nursaadah, S., Nugroho, M. R., & Tama, D. A. (2024). Pengujian Black Box Testing Pada Sistem Website Osha Snack : Pendekatan Teknik Boundary Value Analysis. *JURNAL KRIDATAMA SAINS DAN TEKNOLOGI*, *06*(02), 754–766.

Lelen, H., Gunawan, I. K., & Alaydrus, A. (2022). Digitalisasi Sistem Pelayanan Dalam Meningkatkan Efisiensi Kerja Pegawai Dan Sistem Pelayanan Akademik Sebelum Pandemi Covid-19 Dan Masa Pandemi Covid-19 (Studi Kasus : Fakultas Tik Uinsi Dan Fakultas Saintek Umkt Samarinda) Digitalization Of Service Sy. *Jurnal Ilmu Pemerintahan*, *10*(03), 94–102.

Nuraeni, F., Kurniadi, D., & Wijaya, T. H. (2023). Perancangan Sistem Informasi Manajemen Ijazah dan Transkrip Nilai Baru di Institut Teknologi Garut. *Jurnal Algoritma*, *10*(2), 284–293.

Rofiah, V., Mulyono, & Indiyah, F. H. (2022). Perancangan Sistem Informasi Legalisir Ijazah dan Transkrip Nilai Berbasis Website di FMIPA UNJ. *J-KOMA: Jurnal Ilmu Komputer Dan Aplikasi*, *5*(1).

Soleh, N., & Rahman, F. (2024). Kontribusi mahasiswa dalam meningkatkan kualitas sumber daya manusia dan mewujudkan visi Indonesia Emas 2045. *Journal of Smart Education and Learning*, *1*(1), 22–28.