Short Research Article

Enhancing Timeliness and Efficiency in Quarterly Report Submissions: Implementation of an Online Reporting System in Education

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ABSTRACT

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| **Aims:** This action research study aimed to determine the impact of an online reporting system (RFCNHS Q-ORS) on the timely submission of quarterly proficiency level reports by teachers in a school in Davao City, Philippines. Timely reporting is essential for effective educational monitoring and decision-making processes that directly impact student learning outcomes.  **Study Design:** A mixed-methods approach using quantitative and qualitative data collection and analysis was employed.  **Methodology:** Eight classroom teachers participated in the study. Data was collected through monitoring checklists for quarterly report submissions before and after implementation of the Q-ORS during the 2022-2023 academic year. Qualitative data were gathered through focus group discussions to explore teachers' experiences with the new system. Descriptive statistics and thematic analysis were used to analyze the data. Limitations of this study include the small sample size and implementation at a single institution, which may affect generalizability of findings.  **Results:** Prior to implementation, only 25% of Subject Teachers submitted reports on or before deadlines, while 75% submitted them late. Among Learning Area Coordinators, 100% submitted reports after the deadline. Following Q-ORS implementation, 100% of Subject Teachers submitted reports on time (62.5% before deadline, 37.5% on deadline), and 100% of Learning Area Coordinators submitted on time (75% before deadline, 25% on deadline). Thematic analysis of teachers' perceptions revealed three major themes: Ease of Use and Accessibility, Adaptability and Support, and Improved Reporting Compliance.  **Conclusion:** The RFCNHS Quarterly Online Reporting System significantly improved the timely submission of quarterly proficiency level reports. The findings support the efficacy of digital reporting systems in enhancing administrative efficiency in educational institutions. Recommendations include implementing user-customizable interfaces, providing comprehensive training materials in multiple formats, and conducting similar validation studies. |

*Keywords: Online Reporting System, Quarterly Reports, Timely Submission, Educational Administration, Teacher Compliance*

1. INTRODUCTION

As the School Head of one of the schools in the Division of Davao City, I had observed a persistent challenge in the timely submission of quarterly reports, particularly the Proficiency Level Report on General Scholastic Average (GSA) and Summative Tests (MPS). This issue had significant implications for our school's ability to track learner progress, inform instructional decisions, and meet regulatory requirements. Upon closer examination, I had identified that the root cause of this problem lies in the confusion among teachers regarding the proper submission channels and their difficulty in interpreting the data required for these reports. This situation not only hampered our administrative efficiency but also had a potential impact on the quality of education we provide for our learners.

In response to this challenge, we considered several potential solutions, each addressing different aspects of the problem. The first solution involved restructuring our communication lines to clarify the reporting hierarchy and submission processes. The second focused on providing technical assistance to teachers, ensuring they fully understand the policy guidelines for classroom assessment reporting. However, the first two interventions did not directly resolve the issue. So, we conducted a focus group discussion to recalibrate our solution and found that the most promising solution we have identified is the creation of a Quarterly Online Reporting System. This approach stood out as the most practical, impactful, and sustainable long-term solution to our reporting challenges.

The proposed Quarterly Online Reporting System offers numerous advantages that align with our school's needs and goals. By centralizing and automating the reporting process, we can streamline data collection, reduce confusion, and minimize the risk of errors. This system would provide a user-friendly interface for teachers to input data, with built-in guidance for data interpretation. Furthermore, it would offer real-time access to reports for instructional leaders, facilitating timely decision-making and interventions. Guskey and Bailey (2024) found that schools implementing online reporting systems saw a significant improvement in data accuracy and that this enhancement in precision is crucial for making informed decisions about student progress and educational strategies. Thus, implementing the proposed Quarterly Online Reporting System would not only address our immediate reporting issues but also position our school at the forefront of educational technology adoption, potentially improving overall educational outcomes and administrative efficiency.

The study was conducted to assist teachers in submitting the quarterly reports promptly. This would help the teachers to experience a reduced administrative burden and increase clarity in reporting processes. This may also help the school administrator by gaining timely access to crucial data for decision-making. Most importantly, the learners may benefit from more responsive and data-informed educational strategies, potentially leading to improved academic outcomes and a more tailored learning experience.

**1.1. Literature Review**

An Online Reporting System (ORS) is a digital platform that facilitates the collection, processing, and analysis of data in real-time. In educational contexts, it streamlines the submission and management of academic reports. The implementation of ORS in schools has emerged as a transformative approach to enhance educational management, improve efficiency, and foster better communication between stakeholders. This section synthesizes the advantages and challenges of ORS based on insights from relevant academic papers.

**1.1.1. Advantages of Using Online Reporting System**

Implementing an Online Reporting System (ORS) significantly enhances operational efficiency in educational institutions by streamlining processes like grade recording, attendance tracking, and report generation. By automating data entry, grade calculations, and report creation, ORS reduces the administrative workload on teachers and staff, allowing them to focus more on teaching and student support. As demonstrated by Jarti et al. (2024), such systems eliminate manual data entry errors and improve report generation efficiency. Real-time access to student data facilitates monitoring and timely interventions, with Budiarto et al. (2024) highlighting technology's role in enhancing operational efficiency, particularly in attendance monitoring. Furthermore, Badru et al. (2022) showed that ORS can effectively manage large datasets and generate dynamic visualizations for decision-making, making it adaptable for schools of various sizes.

In addition, Online Reporting Systems foster transparency and enhance communication between educational stakeholders by providing a centralized information-sharing platform. Research by Jarti et al. (2024) and Saryoko et al. (2024) demonstrates how ORS enables remote parental access to academic records, reducing the need for physical meetings while increasing involvement. Students benefit by tracking their own progress and setting goals, with Makarenko et al. (2024) highlighting how digital tools provide real-time feedback and foster collaboration. Additionally, Ajuwon et al. (2024) emphasizes how ORS ensures transparent, data-driven decision-making processes accessible to all stakeholders, particularly for resource allocation and academic planning.

Moreover, Online Reporting Systems deliver significant cost savings and resource optimization by reducing paper dependency and automating administrative tasks. Jarti et al. (2024) and Saryoko et al. (2024) document how Kallista School reduced expenditure on paper and printing materials after implementing digital reporting. Budiarto et al. (2024) found that automated attendance systems minimize paperwork and manual errors, reducing administrative staffing needs. Furthermore, Ajuwon et al. (2024) highlights AI's role in optimizing resource allocation and reducing operational costs, allowing schools to redirect resources to educational priorities more effectively.

Furthermore, Online Reporting Systems significantly improve data accuracy and integrity compared to error-prone manual systems. Jarti et al. (2024) and Budiarto et al. (2024) document how automated systems ensure correct and consistent data entry, minimizing human error. Badru et al. (2022) discusses the implementation of NoSQL databases in Educational Management Information Systems, providing robust data security and protection against tampering. Additionally, Saryoko et al. (2024) emphasizes how ORS generates reports in consistent formats, improving comparability across different time periods and departments while maintaining reliability in educational record-keeping.

More so, Online Reporting Systems empower schools with data-driven decision-making capabilities, providing real-time insights to identify trends and implement targeted interventions. Research by Badru et al. (2022) and Ajuwon et al. (2024) demonstrates how MERN stack-based EMIS offers actionable data for educators and policymakers in Pacific Island Countries. These systems excel at identifying at-risk students through early predictors of academic performance (Baker et al., 2015), enabling timely support. Additionally, ORS facilitates continuous monitoring of student progress, highlighting areas needing intervention and delivering real-time feedback, as emphasized by Makarenko et al. (2024). By leveraging these comprehensive data insights, schools can enhance educational outcomes through informed, strategic decisions tailored to specific needs.

Nevertheless, Online Reporting Systems create a centralized platform that facilitates communication and collaboration among educational stakeholders. Jarti et al. (2024) and Saryoko et al. (2024) demonstrate how Kallista School's system enabled remote parent-teacher communication and record access. Makarenko et al. (2024) explores how tools like Google Docs foster collaboration among teachers sharing resources and coordinating student support. Additionally, Ajuwon et al. (2024) emphasizes the importance of student involvement through access to academic records and progress reports, empowering them to take active roles in their education and improving overall educational outcomes through multi-stakeholder engagement.

Finally, Online Reporting Systems prepare schools for future educational challenges by establishing adaptable digital infrastructures. Ajuwon et al. (2024) examines how ORS serves as a foundation for adopting emerging AI and advanced technologies in educational administration. Badru et al. (2022) and Saryoko et al. (2024) highlight the scalability and flexibility of these systems, which can evolve alongside changing educational needs. Additionally, Davey et al. (2001) emphasizes how ORS facilitates continuous improvement through ongoing evaluation and refinement of educational practices, ensuring schools remain innovative and responsive to future pedagogical and administrative requirements.

**1.1.2. Challenges and Barriers in Using Online Reporting Systems**

The use of online reporting systems presents several challenges and adaptation difficulties across various sectors. These challenges range from technical issues to human factors, impacting the effectiveness and efficiency of these systems (Newman et al., 2021). The adaptation difficulties often stem from a lack of resources, training, and compatibility with existing processes.

Many users find online reporting systems difficult to use due to complex interfaces and lack of user-friendly features (Kato et al., 2021). Aside from that, slow internet connections and system downtimes are common issues that hinder the effective use of online systems (Mohammadi et al., 2021). Moreover, ensuring data privacy and security is a critical concern, especially involving sensitive information (Abu Alrub et al., 2021). Furthermore, insufficient training and digital literacy among users are also significant barriers in the use of online reporting systems (Huang et al., 2024).

In synthesis, the implementation of Online Reporting Systems in schools offers numerous advantages and benefits, ranging from enhanced operational efficiency and improved transparency to cost savings and environmental sustainability. By leveraging digital tools and technologies, schools can create a more efficient, effective, and future-ready educational framework. The insights from the academic papers highlight the transformative potential of ORS in addressing the challenges of modern education and improving student outcomes.

**1.2. Proposed Intervention, Innovation, and Strategy**

In this study, the RFCNHS Quarterly Online Reporting System (Q-ORS) was systematically implemented using MS Excel in MS365, ensuring structured data management and accessibility. During the Pre-Implementation Phase, we conducted a needs assessment, designed the system interface, and developed the Excel templates. Teachers received comprehensive training on navigating the system as well. During the Implementation Phase, we launched a pilot phase, gathered feedback, and made necessary adjustments. The full rollout included ongoing support and monitoring. Finally, for the Post-Implementation Phase, regular evaluation of the system's effectiveness was conducted, with continuous improvements based on user feedback and emerging needs. Throughout this process, we ensured data security and user-friendly interfaces, leveraging MS365's collaborative features to facilitate seamless reporting and analysis.

The proposed Online Reporting System intervention demonstrated high plausibility in addressing our school's reporting challenges. By centralizing data submission and automating certain processes, it directly tackled the identified root causes of confusion and data interpretation difficulties. The use of familiar MS Excel in MS365 reduced the learning curve for teachers, increasing the likelihood of successful adoption. Moreover, the system's ability to provide real-time data access and analysis tools aligned perfectly with our need for timely, accurate reporting. The structured implementation process, including thorough orientation and ongoing support, further enhanced the intervention's feasibility and potential for long-term success in resolving our reporting issues.

**1.3. Action Research Question**

This action research aimed to find out the impact of the RFCNHS Quarterly Online Reporting (RFCNHS Q-ORS) on the timely submission of reports, particularly the Proficiency Level Report on General Scholastic Average (GSA) and Summative Tests (MPS). Further, this study intended to answer this action research question: Will RFCNHS Quarterly Online Reporting (RFCNHS Q-ORS) assist teachers in submitting the quarterly proficiency level reports promptly?

2. methodology

**2.1. Participants, Other Sources of Data, and Information**

The participants of this study were the eight (8) classroom teachers assigned at one of the schools in Cluster 4 with the school ID of 305669. The intervention will be implemented in a whole school approach involving all teachers. The data gathered in this study will be based on the monitoring checklist for quarterly submission of Proficiency Level (PL) Report. Moreover, other important sources of data to support the findings of the study such as the focus group discussion notes will be utilized.

**2.2. Data Gathering Methods**

This action research employed a mixed-methods approach to comprehensively evaluate the effectiveness of the RFCNHS Quarterly Online Reporting System (RFCNHS Q-ORS). Quantitative data was collected through a monitoring checklist that tracks the timeliness of quarterly Proficiency Level Report submissions, comparing pre-implementation and implementation phases to measure improvement in submission rates.

To gather qualitative insights, focus group discussions (FGDs) were conducted with the eight participating classroom teachers to explore their experiences, challenges, and suggestions regarding the online reporting system. The FGDs were guided by semi-structured questions focusing on system usability, technical challenges, and perceived benefits in streamlining the reporting process. Additionally, system logs and usage analytics from the MS Excel-based platform were collected to analyze patterns of user engagement and identify potential areas for system enhancement. This triangulation of data sources provided both statistical evidence of the intervention's impact on timely submissions and rich, contextual understanding of teachers' experiences with the new reporting system.

**2.3. Data Analysis**

The quantitative data analysis employed descriptive statistics to measure the improvement in submission rates between pre-implementation and implementation phases. Submission compliance rates were calculated as percentages for both Subject Teachers and Learning Area Coordinators, comparing on-time, before-deadline, and late submissions. A comparative analysis was conducted to quantify the percentage change in timely submissions following the implementation of the RFCNHS Q-ORS.

Meanwhile, for the qualitative data gathered through focus group discussions, thematic analysis was applied following Braun and Clarke's six-step approach: familiarization with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report (Braun & Clarke, 2019).

**2.4. Limitations of the Study**

This study has several limitations to consider. The small sample of eight teachers from a single school limits generalizability to larger or different educational contexts. The short evaluation period of one academic quarter doesn't capture long-term adoption patterns or seasonal variations in reporting workload. Differences in participants' technological access and digital literacy could have introduced confounding variables. The findings are specific to the Philippine educational context and may not transfer to systems with different requirements. Addressing these limitations in future research through larger sample sizes, longer implementation periods, and multi-site validation would strengthen the evidence base for online reporting systems in educational settings.

3. results and discussion

**3.1 Pre-Implementation Data**

Figure 1 shows the data on the submission of quarterly reports before the implementation of the RFCNHS Q-ORS.

**Figure 1. Data on the Submission of Quarterly Reports before the Implementation of the RFCNHS Quarterly Online Reporting System (Q-ORS)**

The analysis of quarterly report submission patterns among different categories of educational personnel reveals trends in organizational compliance and time management within the school. The data presents a clear pattern of delayed submissions across all three personnel categories, with particularly notable implications for institutional efficiency and administrative workflow. As presented in Figure 1, among Subject Teachers (N=8), only 12.5% (2 out of 8) submitted their reports before the deadline, with an equal percentage submitting on the deadline, while the majority (75% or 6 out of 8 teachers) submitted after the prescribed deadline. Most striking is the case of Learning Area Coordinators (N=8), where 100% of submissions were delayed beyond the deadline.

**3.2 Post Implementation Data**

On the other hand, the implementation of the RFCNHS Quarterly Online Reporting System (Q-ORS) has had a significant impact on the submission patterns of quarterly reports across different personnel categories within the academic institution. Figure 2 shows the data on the submission of quarterly reports after the implementation of the RFCNHS Q-ORS.

**Figure 2. Data on the Submission of Quarterly Reports after the Implementation of the RFCNHS Quarterly Online Reporting System (Q-ORS)**

As presented in Figure 2, among Subject Teachers (N=8), the data indicates that 62.50% (5 out of 8) submitted their reports before the deadline, while the remaining 37.50% (3 out of 8) submitted on the deadline. The most striking finding is the submission behavior of Learning Area Coordinators (N=8). In this category, 75% of the teachers (6 out of 8) submitted their reports before the deadline, and the remaining 25% teachers (2 out of 8) submitted their reports on the deadline.

**3.3 Comparative Analysis**

Figure 3 reveals the improvement in the submission rate of quarterly reports by teachers across categories as shown in the comparative data of the monitoring of report submission before and after the implementation of the RFCNHS Quarterly Online Reporting System (Q-ORS).

Examining the data presented in Figure 3, a clear improvement in compliance rates is observed. Among Subject Teachers (N=8), the proportion of on-time submissions increased from 25% (2 out of 8 teachers) before the Q-ORS implementation to 100% (8 out of 8 teachers) after, with 62.5% (5 out of 8 teachers) submitting before the deadline and 37.5% (3 out of 8 teachers) submitting on the deadline. This indicates a substantial improvement in timely reporting behavior among this group.

**Figure 3. Comparative Data on the Submission of Quarterly Reports Before and After the Implementation of the RFCNHS Q-ORS**

The most significant impact is seen among Learning Area Coordinators (N=8), where 75% (6 out of 8) submitted their reports before the deadline and an additional 25% (2 out of 8) submitted on the deadline. This represents a complete reversal from the pre-Q-ORS scenario, where all Learning Area Coordinators submitted their reports after the deadline.

**3.4 Analysis of the Perceptions and Experiences of Teachers about the Implementation of RFCNHS Q-ORS**

In addition, as per the teachers’ perceptions and experiences about the implementation of RFCNHS Q-ORS, Table 1 summarizes the themes generated from this research undertaking.

**Table 1. Emerging Themes on the Perceptions and Experiences of Teachers about the implementation of RFCNHS Q-ORS**

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| **Major Theme** | **Sub-Themes** | **Core Statements** |
| **Ease of Use and Accessibility** | **Improved Efficiency** | The Q-ORS has streamlined the reporting process, saving me valuable time each quarter. |
| I appreciate how the online system allows me to submit my reports quickly and conveniently. |
| The interface of the Q-ORS has made the reporting task much less burdensome for me. |
| **Enhanced Accessibility** | I can now access the reporting platform from anywhere, which has been a game-changer for me. |
| The Q-ORS has provided me with greater flexibility in managing my reporting responsibilities. |
| The online system has removed barriers I previously faced in submitting reports on time. |
| **Adaptability**  **and Support** | **Ease of Transition** | The training and resources provided for the Q-ORS implementation have been extremely helpful for me. |
| I felt well-prepared to use the new online system thanks to the support offered during the transition. |
| The gradual rollout of the Q-ORS has allowed me to adjust to the changes at a comfortable pace. |
| **Responsive Support** | Whenever I've encountered any issues with the Q-ORS, the support group has been quick to assist me. |
| I appreciate the open channels of communication that have been established to address my Q-ORS-related concerns. |
| The responsiveness of the Q-ORS support group has made the implementation process much smoother for me. |
| **Improved Reporting Compliance** | **Timely Submissions** | I am now able to submit my quarterly reports before the deadline consistently. |
| The Q-ORS has helped me develop better habits around timely report submission. |
| I no longer worry about missing reporting deadlines since the Q-ORS implementation. |
| **Enhanced Accountability** | The Q-ORS has increased my sense of accountability for submitting reports on time. |
| I feel the online system has improved overall reporting compliance across our school. |
| The Q-ORS has provided better visibility into the reporting process, which has benefited me greatly. |

The data in Table 1 reveals several key themes regarding teacher perceptions and experiences with the implementation of the RFCNHS Quarterly Online Reporting System (Q-ORS). A primary theme is the improved ease of use and accessibility, with teachers highlighting enhanced efficiency through streamlined reporting processes and greater flexibility from the online platform. Teachers also expressed appreciation for the adaptability and support provided during the transition, noting the helpful training, resources, and responsive troubleshooting from the Q-ORS team. Additionally, the data indicates that the new system has led to better reporting compliance, with teachers reporting more consistent on-time submissions and a heightened sense of accountability. Overall, the teacher perspectives suggest the Q-ORS implementation has yielded tangible benefits in terms of usability, accessibility, change management, and reporting outcomes.

Finally, as presented in Figure 1, Figure 2, Figure 3, and Table 1, these findings align with existing research on the efficacy of digital reporting systems in enhancing administrative efficiency and compliance. For instance, Jarti et al. (2024) found that the implementation of online reporting tools led to significant improvements in timely submission rates across various personnel categories in educational institutions. Similarly, Budiarto et al. (2024) study highlighted the positive impact of automated workflow systems on reducing administrative bottlenecks.

The findings presented here have important implications for institutional management and policy development. The successful implementation of the Q-ORS underscores the potential of technological interventions to streamline administrative processes and enhance organizational efficiency. These results provide empirical support to the recommendations of Saryoko et al. (2024) and Badru et al. (2022) for adopting digital solutions to address administrative challenges in educational settings.

Overall, the data presented in Figure 3 suggests that the implementation of the Quarterly Online Reporting System has been highly effective in improving the timeliness of quarterly report submissions. These results contribute to the growing body of literature on the role of technology in enhancing administrative efficiency within educational institutions.

However, since this study has several limitations to consider such as the small sample size, short evaluation period, and differences in participants' technological access and digital literacy, it is important to note that along the implementation, although not presented in the results due to limited variations, participants experienced user adaptation difficulties (Makarenko et al., 2024) such as slow internet connection that affects the entire process (Mohammadi et al., 2021). It is important to highlight the need for proper training and ensure data privacy (Abu Alrub et al., 2021) especially on student records in implementing online reporting systems.

**4. Conclusion**

The RFCNHS Quarterly Online Reporting System (Q-ORS) implementation demonstrates significant educational administrative advancement, transforming late submissions into 100% on-time compliance. Qualitative data reveals benefits beyond compliance, including enhanced accessibility, responsive support, and strengthened teacher accountability. The system's impact extends beyond administrative efficiency to potentially improve instructional effectiveness by reducing educators' administrative burdens. This study provides empirical evidence for technological integration in educational administration and offers a replicable model for similar institutional challenges.

Consent

As per international standards or university standards, Participants’ written consent has been collected and preserved by the author(s).

Ethical approval

This study was reviewed and approved by the Research Committee of the Division of Davao City before the actual implementation of the study and data collection.

**DISCLAIMER (Artificial intelligence)**

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1. Scispace.com

2. Quillbot.com

References

Abu Alrub, A. M., Amer, Y. S., Titi, M. A., May, A. C. A., Shaikh, F., Baksh, M. M., & El‐Jardali, F. (2021). Barriers and enablers in implementing an electronic incident reporting system in a teaching hospital: A case study from Saudi Arabia. *The International Journal of Health Planning and Management*, *37*(2), 854-872. https://doi.org/10.1002/hpm.3374

Ajuwon, O.A., Animashaun, E.S., & Chiekezie, N.R. (2024). Integrating AI and technology in educational administration: Improving efficiency and educational quality. *Research Journal of Science and Technology, 11*(02), 116–127. https://doi.org/10.53022/oarjst.2024.11.2.0102

Badru, L. O., Vasudevan, V., Lingam, G. I., & Khan, M. G. (2022). MERN stack web-based education management information systems for Pacific Island countries. *SN Computer Science*, *4*(1), 70. https://doi.org/10.1007/s42979-022-01457-7

Baker, R. S., Lindrum, D., Lindrum, M. J., & Perkowski, D. (2015). Analyzing Early At-Risk Factors in Higher Education E-Learning Courses. *International Educational Data Mining Society*. https://files.eric.ed.gov/fulltext/ED560553.pdf

Budiarto, M., Audiah, S., Astuti, E. D., Sanjaya, Y. P. A., & Firli, M. Z. (2024, August). Enhancing school and college attendance using advanced technology. In *2024 3rd International Conference on Creative Communication and Innovative Technology (ICCIT)* (pp. 1-6). IEEE. https://doi.org/10.1109/ICCIT62134.2024.10701150

Davey, B., Visscher, A. J., & Wild, P. (2001). Conclusions, Reflections and the Road Ahead. In: Visscher, A.J., Wild, P., Fung, A.C.W. (eds) *Information Technology in Educational Management*. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-1884-4\_9

Huang, D., Luo, Y., & Lu, J. (2024). Towards Digital Adaption: An Exploration of Chinese Social Workers’ Experiences of Digital Service Challenges and Coping Strategies in the Context of COVID-19. *The British Journal of Social Work*, *55*(1), 45-64. https://doi.org/10.1093/bjsw/bcae125

Garrison, B. (2020). *Computer-assisted reporting*. Routledge. https://doi.org/10.4324/ 9781003064237

Guskey, T. R., & Bailey, J. M. (2024). *Developing grading and reporting systems for student learning*. Corwin Press. Retrieved from https://bit.ly/ DevelopingGradingandReportingSystemsforStudentLearning

Jarti, N., Suryadi, A., & Andriawan, A. (2024). Implementation of online report information system based on website to improve efficiency and accessibility of student grade management in junior high school. *Jurnal Liga Ilmu Serantau*, *1*(1), 12-21. https://doi.org/10.36352/jlis.v1i1.787

Kato, A., Kisangiri, M., & Kaijage, S. (2021). A review development of digital library resources at university level. *Education Research International*, *2021*(1), 8883483. https://doi.org/10.1155/2021/8883483

Makarenko, V., Aleksieieva, O., Fysiuk, A., Filimonova, T., & Tsypliak, N. (2024). Google’s Digital Tools for Education: A Selection of Tools. *Journal of Curriculum and Teaching*. https://doi.org/10.5430/jct.v13n3p91

Mohammadi, M. K., Mohibbi, A. A., & Hedayati, M. H. (2021). Investigating the challenges and factors influencing the use of the learning management system during the Covid-19 pandemic in Afghanistan. *Education and Information Technologies*, *26*, 5165-5198. https://doi.org/10.1007/s10639-021-10517-z

Newman, A., Bavik, Y. L., Mount, M., & Shao, B. (2021). Data collection via online platforms: Challenges and recommendations for future research. *Applied Psychology*, *70*(3), 1380-1402. https://doi.org/10.1111/apps.12302

Saryoko, A., Aziz, F., Elyana, I., Kurniyawantoro, K., & Saputra, B. E. (2024). Digital assistance for SMPIT Ajimutu Global Insani Tambun Utara-Bekasi school toward digital-based school management. *Jurnal AbdiMas Nusa Mandiri*, *6*(2), 105-111. https://doi.org/10.33480/abdimas.v6i2.5935