Research Article

Electronic Academic Report (e-AR)

Tutiyana Mohamed*, Shirley Arvilla Andrew[2], and Diana Indim[3]

1 Faculty of Applied Sciences, Universiti Teknologi MARA Sabah Branch, Kota Kinabalu Campus, Sabah, Malaysia; tutiy879@uitm.edu.my; 0009-0007-6565-8347

2 Faculty of Applied Sciences, Universiti Teknologi MARA Sabah Branch, Kota Kinabalu Campus, Sabah, Malaysia; shirl903@uitm.edu.my; 0009-0004-9978-5799

3 Faculty of Applied Sciences, Universiti Teknologi MARA Sabah Branch, Kota Kinabalu Campus, Sabah, Malaysia; diana908@uitm.edu.my; 0000-0002-4524-5330

* Correspondence: tutiy879@uitm.edu.my; +60162255158.

Abstract: *Students' academic performance is reported in a program or faculty meeting by the lecturer teaching their respective course code to be recorded and acted upon by the academic advisor every semester. All lecturers must be present to report their student's academic performance on the course code taught during the meeting. If the lecturer cannot attend the meeting, the student's academic performance report cannot be recorded, and the academic advisor unaware of the students who need attention. Sometimes, some lecturers did not have time to prepare the report, and some information was missing. In addition, the secretary finds it challenging to record the names of students with problems with the correct spelling of names if more than one since the previous reporting was manually reported without any template that served as guidance to the lecturers. Based on the weaknesses identified, an academic report application (e-AR) was adopted to improve from a template to an electronic application. e-AR makes it easier for the secretary to take notes, for the lecturers to make a report, and for the academic advisors to identify the students who need attention. e-AR is a digital tool designed for reporting and monitoring students' performance in all courses throughout the semester. Lecturers can quickly fill out the e-AR and click submit the report to the program coordinator in real time. This application facilitates academic reporting and thorough monitoring of all course codes in the current semester. e-AR helps the lecturer identify the potentially high failure course code, the problem faced by the student, and the improvement measures, which will guide the student's academic performance and help them graduate on time.*

Keywords: Electronic academic report, advisor, academic performance

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1. INTRODUCTION

In today's world, the significance of electronic and digital technologies, particularly mobile applications, is undeniable. These tools have become necessary, seamlessly integrating into our daily lives and transforming the way we communicate, work, and access information at anytime, anywhere. Mobile devices and applications are revolutionizing how people collect, process, and disseminate information. The rapid developments in Information and Communication Technologies (ICT) influence the academics working in higher education institutions to change their working strategies (Silvius & Silvius, 2015; Jayatilleke et al., 2018). This led to the development of the electronic

academic report (e-AR) application. The e-AR is a useful tool in education. Its importance lies in carefully assessing and monitoring student performance continuously. Performance, which is the result of education, refers to the level of achievement attained by a student, educator, or institution in pursuit of their educational objectives. To attain this objective, educators require tools to identify students who are at risk academically and adapt teaching methods to better cater to their needs. Student progress monitoring is the practice that empowers educators to use student performance data to continually evaluate the effectiveness teaching and make more informed instructional decisions (Vilanova et al., 2019). This e-AR application reports grades and offers a comprehensive view of students' strengths and weaknesses, helping lecturers and advisors understand and respond to students' needs. Data analysis tools embedded in the application enable the identification of trends and patterns in student performance, enabling early intervention when academic problems arise. Beyond this, e-AR facilitates summaries of academic reports, and lecturers can improve teaching approaches to match each student's unique needs and learning styles.

Additionally, it fosters effective communication among students, lecturers, advisors, and coordinators, creating a collaborative support network. In addition, the application maintains a digital footprint of the student's academic track, facilitating access to past performance data for reference and improvement tracking. According to Young-Jones et al. (2013), advisor empowerment is related to what students expect from their advisors regarding help with future planning, education about academic expectations, and feedback about academic results. Figure 1 shows the implemented process in our faculty regarding the student's performance monitoring and improvement.

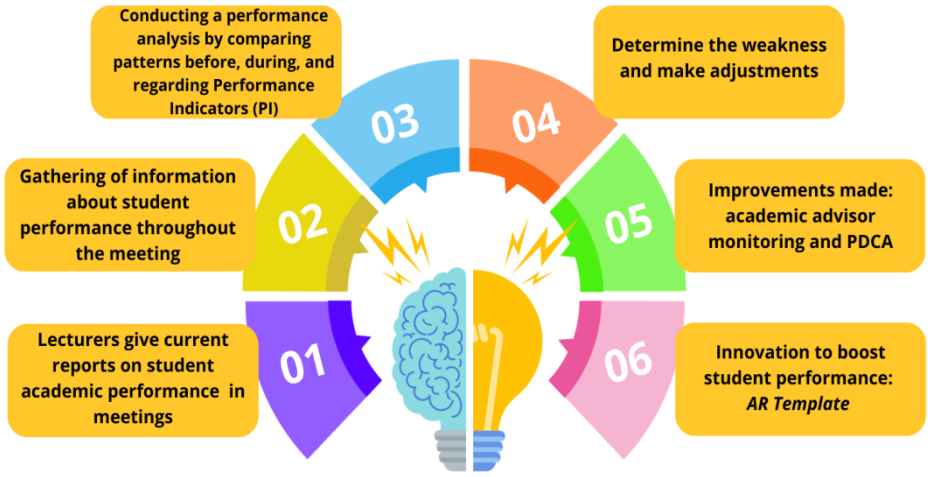

Figure 1. Student performance monitoring and improvement.

2. PROBLEM STATEMENT

There is an urgent need to address student academic performance in the current educational environment. This matter exhibits multiple dimensions, characterized by a widespread absence of student motivation, influenced to some extent by the escalating distractions presented by technology and social media. The prevalence of mental health difficulties, particularly anxiety and depression, is increasing, preventing students' capacity to concentrate and achieve academic success. Academic pressure and competitive environments often cause stress and burnout, which affects academic performance. The COVID-19 pandemic has enhanced educational access differences, resulting in unequal outcomes. e-AR has revolutionized how academic report is recorded, managed, and acted upon every semester. During meetings, lecturers teaching specific course codes had to be physically present to report on their students' performance. The challenges when lecturers couldn't attend

resulted in unreported student performance data and academic advisors being left unaware of students needing assistance.

Furthermore, the manual nature of the process often led to incomplete reports, with some information missing, and the secretary tasked with recording these reports faced difficulties in accurately documenting students' names, mainly when issues like misspellings occurred. This manual reporting system lacked a standardized template or guidance for lecturers, causing inconsistencies and inefficiencies in data collection and analysis. Recognizing these shortcomings, we designed the e-AR, a comprehensive solution to replace the manual AR template.

3. OBJECTIVES

The primary objective is to develop a new electronic academic report that simplifies the academic reporting process, enabling the lecturers and academic advisors to complete it more quickly and efficiently. In addition, e-AR is designed to help comprehend students' difficulties in their classes, such as challenges in the classroom, attendance issues, or other elements influencing their academic performance.

4. PRODUCT DESCRIPTION

The front interface of the e-AR prominently presents the option for users to sign in by using their username or official email address (Figure 2). This application access ensures a secure and efficient login process by allowing users to engage with the app's features seamlessly.

Figure 2. The e-AR icon and the front interface of e-AR.

This innovation comprises the development of a mobile application known as e-AR (Electronic Academic Report). Figure 3 shows that the access to this application is open to the academic advisor, lecturer and the program coordinator. Advisors can access students' academic reports (AR) and students' names (advisees) facing study challenges. They can assist these students by offering guidance and tracking their progress effectively. Lecturers make reports related to their course codes, explicitly identifying and reporting on students facing academic difficulties. These

reports are documenting the performance and progress of students in their courses. By highlighting weak or problematic students, lecturers can take appropriate actions to provide additional support, offer guidance, or recommend interventions to help these students improve their academic performance and graduate on time. A coordinator can access academic reports for the courses offered in a selected semester. This access allows the coordinator to monitor course progress, identify issues, and make decisions in the faculty meetings.

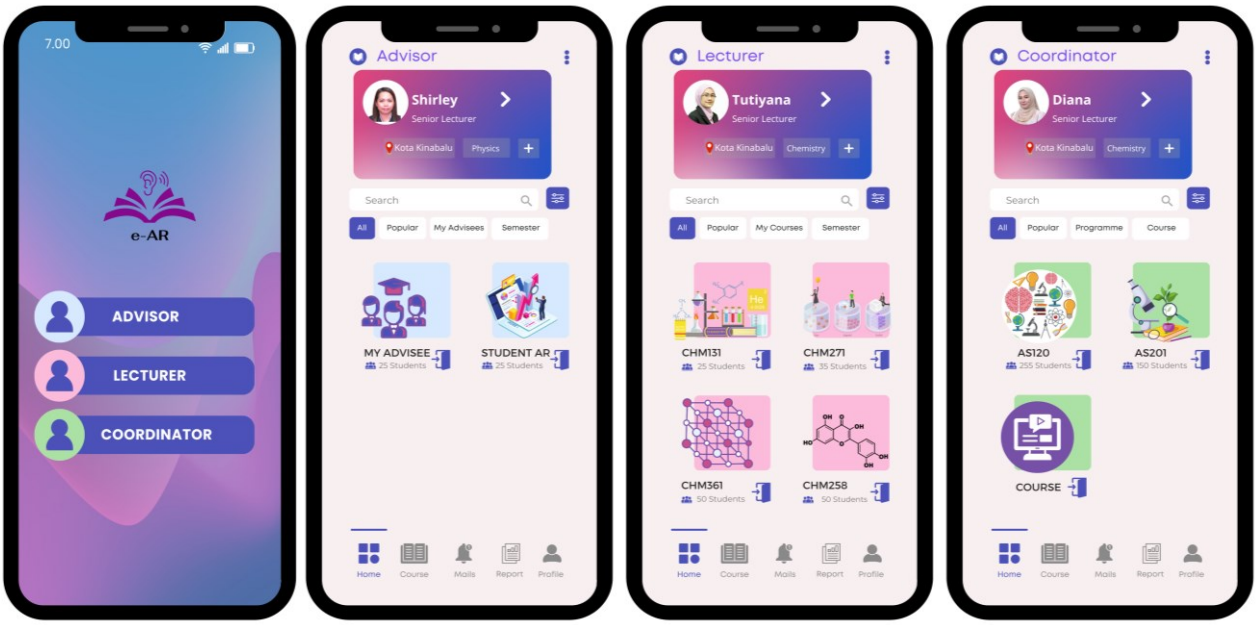

Figure 3. The home page of e-AR.

On the e-AR's home page for my courses, lecturers can easily select a specific course they need to make a report. Upon selection, they can conveniently fill in the report using the provided template. Once the report is filled, the application will process the data, and the resulting summary will be accessible in the academic report section under the report icon, allowing users (lecturers, advisors and coordinators) to track and manage their academic progress efficiently (Figure 4).

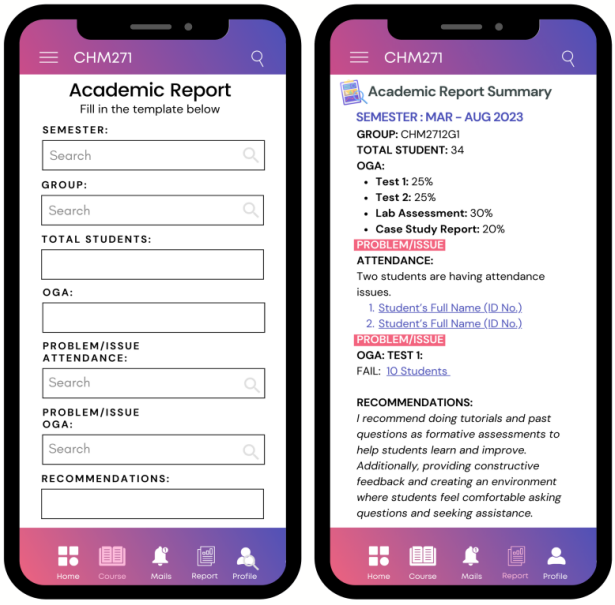

Figure 4. The template of an academic report (AR) and the summary.

5. BENEFIT OF PRODUCT/IMPACT/NOVELTY

The e-AR application streamlines note-taking and simplifies data capture and storage, which assists lecturers in maintaining correct academic records. Besides, lecturers benefit from e-AR as it simplifies the process of creating comprehensive academic reports. The application may include features like pre-filled templates, which ensure that all relevant information is captured, preventing missing data issues. This application provides real-time access to student performance data, allowing lecturers, advisors and coordinators to track progress continuously. e-AR includes data analysis tools to identify trends, strengths, and weaknesses in a student's academic performance. By detecting performance issues early, e-AR enables lecturers to intervene and provide additional support for struggling students, preventing them from falling too far behind. The previous manual method of academic reporting was time-consuming, inefficient and prone to errors. This e-AR application makes the reporting easier, convenient to user or user friendly, fast, accurate, more engaging and empowering.

6. COMMERCIALIZATION

The Electronic Academic Report application has significant commercialization potential by offering a versatile and effective tool to improve students' academic performance. e-AR can be downloaded on any smartphone (Android – Google Play, iPhone - Apple) and it is user friendly. This application will help to standardize the academic reporting, making it easier for lecturers to make the report, facilitating the academic advisors to take action and enabling the program coordinator to efficiently monitor the reports. This application should be patented before deploying it as a comprehensive academic reporting platform. An affordable price can be imposed to the patented and well-established e-AR application before it can be downloaded by the user.

7. CONCLUSION

This e-AR application provides many benefits to the faculty in monitoring students' academic performance effectively. Traditionally, lecturers for all courses have discussed their students' academic progress in faculty meetings. However, different lecturers will present their reports in different reporting styles, leading to inconsistencies in students' academic performance reports and inaccuracies in the report due to matters like misspellings of students' names recorded by the unfamiliar meeting secretary to the student's name and lecturers' absences from some faculty meetings. By using the digital e-AR application, the reporting of students' performance becomes easy with a consistent reporting style, which also allows for real-time reporting to the program coordinator. This application is particularly helpful as an early intervention mechanism as it allows the lecturers to identify the courses with a possibly high failure rate, helps academic advisors be aware of the issues their students are facing, and therefore enables early improvement measures. This application therefore has enormous potential to assist faculty in tracking students' academic progress over the course of the semesters, ensuring that the students graduate on time and achieve the faculty's key performance index (KPI).

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References

Jayatilleke, B. G., Ranawaka, G. R., Wijesekera, C., & Kumarasinha, M. C. B. (2018). Development of mobile application through design-based research. *Asian Association of Open Universities Journal, 13(2),* 145–168. https://doi.org/10.1108/aaouj-02-2018-0013

Silvius, A. J. G., & Silvius, C. M. (2015). Exploring Functionality of Mobile Applications for Project Management. *Procedia Computer Science, 64,* 343–351. https://doi.org/10.1016/j.procs.2015.08.498

Vilanova, R., Dominguez, M., Vicario, J., Prada, M. A., Barbu, M., Varanda, M. J., Alves, P., Podpora, M., Spagnolini, U., & Paganoni, A. (2019). Data-driven tool for monitoring of students performance. *IFAC-PapersOnLine, 52(9),* 165–170. https://doi.org/10.1016/j.ifacol.2019.08.188

Young-Jones, A. D., Burt, T. D., Dizon, S., Hawthorne, M. J. (2013). Academic advising: Does it really impact student success? *Quality Assurance in Education, 21(1),* 7-19. doi. http://dx.doi.org/10.1108/09684881311293034