TECHNOLOGY CONSULTING
IN THE GLOBAL COMMUNITY

Final Consulting Report
Palau Ministry of Education
Zhijin Wu

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Carnegie Mellon University

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Palau Ministry of Education
Executive Summary
Student Consultant, Zhijin Wu
Global Community Partner, Keizy Shiro

I. About the Organization

The Palau Ministry of Education (MOE) is an essential department within the Executive Branch of the National Government of the Republic of Palau. MOE is responsible for managing, operating, and promoting Palau's public elementary and secondary school system, as well as implementing the national educational curricula. MOE's mission is

> *"In partnership with parents and community, is to ensure that our children and youth preserve Palauan culture and become contributing citizens and productive workers in a changing world."*

MOE's vision is "*Our students will be successful in the Palauan society and the world.*"

MOE is headed by the Minister of Education. Under the Ministry's jurisdiction, there are 17 public elementary schools (grades 1-8) and 1 public high school (grades 9-12) across the nation. Additionally, there are six private schools that operate independently under MOE's charter. MOE ensures the delivery of quality education by developing and implementing educational curriculum and standards through its two bureaus: the Bureau of Curriculum & Instruction and the Bureau of Education Administration.

II. Data Migration and Integration for Palau High School

The initial objective within the scope of work involves orchestrating a smooth migration of student data from the outdated Access database to the new AdminPlus system at Palau High School (PHS). The challenge faced by MOE lies in generating accurate transcripts due to the adoption of AdminPlus and the existence of an outdated database. This forces Registrars to manually extract and input grades, hindering efficiency. Palau High School exemplifies this issue, where manual report generation takes 20 minutes per student, significantly longer than automated methods. Solving this integrates data for efficiency, particularly vital at Palau High School, serving as a model for the MOE system. The solution ensures seamless data migration, benefiting all schools, aligning with MOE's mission. Numerous solutions were explored, with a comprehensive data migration process emerging as the most impactful approach, unifying student data for efficient management and accessibility.

- **Outputs and Outcomes:**
  - Formulation of a comprehensive Extract, Transform, and Load (ETL) workflow for data migration
  - Creation of a structured Palau High School Data Migration Work Scope, serving as a guide for similar projects in other schools
  - Improved accessibility to precise and up-to-date student data for informed decision-making in Excel

- Successful import of existing student data into AdminPlus, curtailing manual efforts
- Temporary solution of new student data back to Access, solving the urgent inefficient transcript generating problem

- **Major Risks to Sustainability:**
  - Inadequate training and communication could hinder the effective implementation of the ETL workflow
  - Resistance to transitioning from established manual processes might impede the integration effort
  - Insufficient monitoring of data quality could lead to prolonged inconsistencies

- **Recommendation:**

  To ensure the ongoing viability of the data integration endeavor, it is recommended to establish a dedicated team for continuous data validation and refinement within the AdminPlus system. This team will consistently audit and rectify data, ensuring its reliability, and facilitate training to support a smooth transition to the new system. This proactive approach will fortify data integrity and amplify operational efficiency.

Consulting Partner

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MOE plays a vital role in shaping Palau's education landscape. Its responsibilities, as outlined in the Palau National Code (PNC), include establishing and managing public elementary and secondary schools, promoting these schools, and overseeing the development and implementation of educational curriculum and standards. By providing a comprehensive education system, preserving Palauan culture, and empowering students, MOE is dedicated to preparing individuals who will thrive in both the local and global context.

Facilities

The Palau Ministry of Education (MOE) operates from its primary office located west of downtown Koror, opposite Palau High School. The office building consists of multiple floors, with the first floor housing conference rooms, the server room, and the Minister of Education's office. The second floor is divided into curriculum and administration sections, while upper floors provide offices for department chiefs, directors, and staff. It also has available parking lots near the building. Government-provided cars are available for the MOE employees to carry out work and visit schools

in different districts, while three speed boats are owned by the Ministry for travel to schools on other islands.

In addition to the central office, the MOE oversees 118 buildings, including educational facilities and administrative offices, totaling approximately 340,000 square feet. While most schools have internet connectivity and computers, three remote schools are not connected to the internet and lack computer facilities. However, every student is provided with a personal tablet to support their education.

Programs

The Palau Ministry of Education (MOE) implements various programs and initiatives to ensure the delivery of quality education and the preservation of Palauan culture. Two key programs and responsibilities of the MOE are highlighted below:

Curriculum Development: The MOE is dedicated to developing and implementing educational curricula that align with Palau national standards. This program involves the continuous evaluation and enhancement of curricular materials to meet the evolving needs of students and the demands of a changing world. The MOE collaborates with educators, subject matter experts, and stakeholders to design comprehensive curricula that foster critical thinking, creativity, and cultural awareness. Through this program, the MOE strives to equip students with the necessary knowledge, skills, and values to succeed in Palauan society and beyond.

School Administration Support: The MOE provides administrative support and guidance to schools across Palau. This program involves establishing and maintaining efficient administrative systems and ensuring the smooth operation of educational institutions. The MOE oversees the allocation of resources, including human resources, financial management, and infrastructure development, to enhance the learning environment for students. Additionally, the MOE offers professional development opportunities for educators to enhance their teaching practices and stay updated with the latest educational methodologies. By providing comprehensive support to schools, the MOE aims to create a conducive learning atmosphere that promotes student growth and achievement.

These programs uphold the MOE's mission of preserving culture, developing responsible citizens, and preparing students for a changing world. The MOE is committed to delivering a well-rounded education that meets high standards of quality and relevance. As the MOE evolves, it continues to enhance programs and implement innovative initiatives that empower students and support educators, while upholding Palauan values.

Staff

The Palau Ministry of Education (MOE) is led by the Minister of Education, currently Dr. Dale Jenkins. The MOE employs approximately 450 individuals, including teaching and administrative staff across the schools. When considering the staff at private schools chartered by the MOE, the total number of staff reaches around 700. Each school is headed by a principal, with three schools also having vice principals.

The schools under the MOE's jurisdiction have a student population of approximately 2,100. The student enrollment varies across schools, with the largest school accommodating 600 students and the smallest school having only 7 students.

In this project, the primary client partner is Keizy Shiro, Education Specialist. Collaborating on the project are Pillar Ngiraswei, Chief of Student Assessment and Data Collection, Heather Mira, the Palau High School Registrar, and Vernice Stefano, MOE Consultant. These individuals play key roles in supporting the objectives of the engagement.

Technology Infrastructure

Technology Category	Description
Hardware	- Server hardware managed by IT - 90% of MOE employees have user hardware (laptop, desktop, tablets) provided by the ministry - Each school has at least 2 printers, a copier machine, telephone system, Wi-Fi connection, a projector, and blackboards
Internet Connection	- Provides 24/7 access for most schools except three remote schools - Communication to remote schools is done using single side band (SSB) radios - May experience power outages at times
Operating System	- 90% of laptops/computers use Mac OS, 10% use Windows - Linux is used in the server room
Software Programs	- Majority of users use Microsoft Office Suite for productivity tasks

Technology Management

The Palau Ministry of Education (MOE) manages technology through two units: one for support services and IT management, and the other for instructional technology implementation. The IT unit oversees the infrastructure, provides technical support, and addresses equipment maintenance and network issues. Keizy Shiro leads the IT team. Together, they handle IT-related challenges for over 2,200 students and 430 staff members. The MOE also collaborates with local IT vendors for projects and hardware maintenance.

Information security is a key responsibility of the IT unit, with PCs utilizing a free open-source antivirus system called Avast. MacBooks and personal laptops do not have antivirus software installed, as they come with built-in anti-malware functionality. The department relies on firewalls installed on network servers to block harmful websites and mitigate threats from incoming and outgoing network traffic.

Communication

The Palau Ministry of Education (MOE) employs various methods to ensure effective communication both internally and externally. Internally, information sharing is primarily done through email communication. Staff members have email accounts ending with '@palaumoe.net' that they utilize for official correspondence. In-person discussions and phone calls are also common means of communication within the office, allowing for immediate and direct interactions.

For more detailed explanations or discussions, Zoom calls are set up to facilitate real-time communication. Exemplary student results and meeting notes are often shared via email to keep all relevant parties informed. The MOE maintains an official website that serves as a platform for updating policies and showcasing technological advancements within the organization.

Externally, the MOE's website serves as a vital communication tool for sharing information with external parties. It provides comprehensive information about the ministry's activities, initiatives, and services. Additionally, the website serves as a repository for country reports and data provided to the UNESCO Institute for Statistics (UIS).

In terms of internet connectivity, most schools and offices within the MOE system have access to the web. However, it's important to note that there are remote schools located on islands that may have limited or no access to electricity or internet. In such cases, communication is carried out using alternative methods, such as radio communication.

Information Management

Some of the key information categories managed by the Palau Ministry of Education (MOE) include finance data, student data, and reporting information.

Finance data is managed through the use of a commercial accounting system developed by a US company. The MOE fills out electronic forms that are later converted into electronic records by the Ministry of Finance. This ensures accurate tracking and management of budget-related information.

Student data is stored in a student information system (SIS) that was built by a CMU consultant in 2005. The SIS allows the MOE to store and manage students' information and grades. In 2022, MOE purchased a database software called AdminPlus from Rediker company, in which student grades for the year 2022-2023 are stored. MOE is trying to migrate all student data to the AdminPlus system.

To better understand and track expenditure and student success, the MOE has prioritized the implementation of an Expenditure Tracking Information System. This system replaces the previous use of spreadsheets and log books. An application hosted on the MOE intranet server, developed during a previous project, provides modules for the four defined functions of the MOE's expenditure

process. However, there is ongoing work to improve the functionality of this system, particularly in the areas of receiving, inventory, and reporting.

Reporting is an important aspect of information management at the MOE. The data from various databases is utilized to construct standard quarterly and yearly reports. The process involves backing up the database, running SQL tests for accuracy, and compiling the reports using Excel spreadsheets. However, inconsistencies in the existing student information data, often due to manual entry, pose challenges in reporting. While there is a process for fixing these inconsistencies, it is rarely followed, leading to temporary fixes in the spreadsheets.

Business Systems

The organization manages its business systems, including accounting processes, payroll, and other benefit systems, through collaborative efforts between internal departments and external entities. The Ministry of Finance (MOF) handles payroll management, while the Ministry of Education (MOE) takes care of reporting timesheets to the MOF and initiating related paperwork. Employee status is recorded electronically by the Division of Personnel Management.

To improve efficiency and streamline budget-related processes, the MOE received assistance from student consultants in 2018 and 2019 to develop an application specifically for requisition handling. This application has simplified the process of requesting and approving expenditures.

Inventory management used to pose challenges due to the lack of a formal system. The MOE hired an inventory custodian, Adeline, to address these issues. Adeline maintains a master list of all assets within the organization and conducts manual verification twice a year by cross-checking inventory lists received from various units against the master list. Any discrepancies or damages are recorded, and a list of fixed assets is exported for record keeping by the Palau Procurement Office. The MOE also has its own inventory tracking system, which focuses on assets such as laptops and tablets.

While the current business systems serve their purpose, there is room for improvement. Some processes, like manual inventory verification, are time-consuming and prone to errors. Exploring alternative solutions that automate and streamline these processes could enhance efficiency and accuracy. Additionally, considering cheaper or better alternatives that offer more integrated and fluid business systems would enable smoother accounting processes, payroll management, and benefit systems. It is crucial to ensure that reports generated from these systems are accurate and meet the requirements of funders and stakeholders, thereby enhancing financial management and transparency.

II. Data Migration and Integration for Palau High School
Motivation

The core challenge at MOE revolves around the intricate task faced by the administration in producing accurate transcripts and reports for students. This challenge arises from the adoption of a new student information management system, AdminPlus, while the student data before 2022 remains in the outdated database created in 2005. Consequently, schools' Registrars are compelled

to manually extract grades from both systems, convert them based on grading standards, and manually input the results into a Word template. This arduous process is not only time-consuming, but also error-prone.

The inability to integrate the two systems hampers data accessibility and efficiency. This issue becomes most pronounced and critical at Palau High School, the largest and sole public high school in Palau. According to the interview with Heather Mira, Registrar at Palau High School, the current manual report generation process takes approximately 20 minutes per student, which is about 10 times longer than the time it would take to automatically generate reports from the old database system. In light of this broader context, Palau High School serves as a pivotal starting point for addressing the pervasive problem of data integration and accessibility. The proposed data migration plan for the school can be viewed as a pioneering model to tackle this prevailing issue across the MOE's educational landscape.

The significance of solving the data integration problem extends beyond Palau High School. By establishing a successful data migration and integration process, all participating schools within the MOE system can benefit from improved data management, accessibility, and operational efficiency. This initiative aligns with the MOE's mission to provide quality education and ensures that all schools can effectively leverage student data for informed decision-making.

While considering potential solutions, a spectrum of approaches, including manual data entry, partial migration, or the status quo of disjointed systems, was evaluated. Ultimately, the most efficacious and impactful solution emerged: a comprehensive data migration and integration process. This approach ensures the unification of all pertinent student data within the new database, thereby fostering a cohesive environment for data management and accessibility.

Outcomes

- *ETL Workflow*

I communicated with stakeholders involved in the project including MOE education specialist, administration staff, and PHS registrar to understand the MOE's student information situation. Subsequently, I devised an Extract, Transform, and Load (ETL) workflow as a proposed solution for addressing the data integration challenge. This involved extracting data from existing systems, transforming it to meet standardized formats, and loading it into the new database. After gathering opinions on this workflow, I wrote a Palau High School Data Migration Work Scope. The document includes key components including Introduction, Key Personnel, Current Problem and Significance, Proposed Outcome, Methodology and Work Concept, Planned Activities, and Timeline. As the project progressed, the work scope file was continually updated to include the actual process undertaken and the evolving timeline.

This document now serves as a robust and well-documented account of the entire project lifecycle, essentially functioning as a guideline for other MOE schools encountering similar data migration challenges, providing them with a structured method to navigate the process effectively. Feedback from technical staff members representing three public primary schools in Palau indicated a positive reception of the workflow. They affirmed that the workflow's clarity and simplicity made it easily understandable. Moreover, they expressed that the work scope document is valuable in aiding them as they design their own data migration strategies.

- *Current Student Data in Excel*

I first identified the specific requirements for data migration, which is importing both student demographic data and grades data to AdminPlus. Then, I worked with Ida R. Kilcullen, Director of Bureau of Curriculum & Instruction, to check the contract MOE signed with Rediker regarding data volume and the permissible range of years for storage within the AdminPlus platform. Subsequent discussions with Rediker's sales representatives were held to clarify this matter. This thorough analysis culminated in the understanding that AdminPlus accommodates student information solely for present PHS enrollees and future enrollees, with historical student data excluded from this scope.

Based on this understanding, I developed queries in the old Access SIS to extract student data ranging from 2019-2021, encompassing the existing student body at PHS. In order to do this, I collected information from key stakeholders regarding what data entities we need, their relationships, and their attributes, and developed an Entity-Relationship Diagram (ERD) based on the stakeholders' needs. Based on the ERD, the exported data are in two files, one containing student demographics information and the other containing student grades. In coordination with Kevin, a Rediker training staff member, we established data import requirements through five meetings. Adhering to these, I cleaned and standardized the data. This included rounding grades, removing non-PHS students' data, and collaborating with Heather to fill in missing information. After four revisions, the final Excel version contained comprehensive, accurate student data.

ReddikerAPID	LastName_Var	FirstName_Var	GENDER	Status	RedikerStudentEmail	phsStuld	phsName	studentId	courseName	RedikerDescription	semscore
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	0
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	95
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	92.5
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	91.5
11009	Barmelio	Beatrige	F	ACTIVE	95800717	5293	Barmelio, Beatrige Itwong	5293	IEP	IEP	91.5
10001	Alexander	Anzic	M	ACTIVE	95800697	5566	Alexander, Anzic Kochi Rtitong	5566	IEP	IEP	90
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	90
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	90
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	89.5
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	89.5
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	89
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	89
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	89
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	88.5
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	88.5
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	87.5
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	87.5
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	87.5
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	87
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	86.5
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	85.5
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	85
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	85
10001	Alexander	Anzic	M	ACTIVE	95800697	5566	Alexander, Anzic Kochi Rtitong	5566	IEP	IEP	85
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	85
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	85
11084	Oisewang	Kanter	M	ACTIVE	95801031	5332	Oisewang, Kanter Keremius	5332	IEP	IEP	85
11137	Malsol -Manor	Dildaob	F	ACTIVE	95800943	5345	Malsol-Manor, Dildaob Athena Evie	5345	IEP	IEP	85
12033	Ichikawa	Almira	F	ACTIVE	95800847	5112	Ichikawa, Almira Sikosang Miguel	5112	IEP	IEP	84.5
12084	Rdechor	Alina	F	ACTIVE	95801081	5173	Rdechor, Alina Shalin	5173	IEP	IEP	84.5
12084	Rdechor	Alina	F	ACTIVE	95801081	5173	Rdechor, Alina Shalin	5173	IEP	IEP	84.5
12058	Mcquine	Omilil	F	ACTIVE	95800962	5228	McQuine, Omilil Shellee	5228	IEP	IEP	83
11139	Moses	Rubea	F	ACTIVE	95800987	5391	Moses, Rubea Patricia	5391	IEP	IEP	82.5

ReddikerAPID	LastName_Var	FirstName_Var	GENDER	Status	RedikerStudentEmail	phsStuld	phsName	studentId	courseName
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	Career Development I
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	English II
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	Palauan Studies I
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	World Geography
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	Environmental Science
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	English I
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	Health
9002	Adachi	Kesewaol	F	ACTIVE	95800693	5838	Adachi, Kesewaol	5838	Algebra I
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	Environmental Science
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	Palauan Studies I
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	World Geography
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	English I
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	Health
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	Algebra I
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	Career Development I
9001	Adachi	Ungildil	F	ACTIVE	95800692	5820	Adachi, Ungildil Breseis	5820	English II
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	Environmental Science
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	Algebra I
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	World Geography
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	English I
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	Career Development I
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	English II
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	Health
9003	Adelbai	Nicholas	M	ACTIVE	95800695	5884	Adelbai, Nicholas Swisher	5884	Palauan Studies I
9004	Aguon	Carisma	F	ACTIVE	95800696	5941	Aguon, Carisma Falig	5941	English I
9004	Aguon	Carisma	F	ACTIVE	95800696	5941	Aguon, Carisma Falig	5941	English II
9004	Aguon	Carisma	F	ACTIVE	95800696	5941	Aguon, Carisma Falig	5941	Algebra I
9004	Aguon	Carisma	F	ACTIVE	95800696	5941	Aguon, Carisma Falig	5941	Environmental Science
9004	Aguon	Carisma	F	ACTIVE	95800696	5941	Aguon, Carisma Falig	5941	Palauan Studies I
9004	Aguon	Carisma	F	ACTIVE	95800696	5941	Aguon, Carisma Falig	5941	Career Development I

These Excel files serve as accessible, reliable references for current student data not initially included in AdminPlus. This aligns with the goal of enhancing data accuracy and accessibility. In the future, MOE can refer to these files if any discrepancies arise in AdminPlus data. Heather has found them immensely helpful for cross-referencing student transcripts against genuine student information and grades.

- ***Student Data Migrated to Both Databases***

After sending the Excel sheets to Rediker, they needed us to line up the courses with the ones already in AdminPlus and match student IDs with the ones automatically created by AdminPlus. To handle this, I used Excel tools like VLOOKUP, MATCH, and FILTER-INDEX. This helped resolve differences in course names and match them with course numbers in AdminPlus. For unmatched courses, I coordinated with Heather to correct course names and

descriptions manually. Similarly, I used Excel's MATCH and VLOOKUP functions to match student IDs. For students without records in AdminPlus, Heather and I cross-referenced with paper documents to determine if they transferred out or didn't enroll initially. Once we had matched course and student data, I shared these Excel sheets with Rediker, enabling them to import the data seamlessly into AdminPlus.

While Rediker was finishing their data import, I planned to bring new student data (from 2022 onwards) back into the old Access SIS. The purpose of this was to help the PHS registrar generate transcripts from the old SIS. I exported demographic and grade data for students who joined in 2022 and later, importing them into Access. This made the Access database comprehensive with all PHS student data. However, please note that the Access database will only be used when AdminPlus functionality is not fully implemented; it only serves as a temporary solution.

Now, all the necessary data for currently enrolled PHS students resides in AdminPlus, simplifying data retrieval and analysis. Rediker is also working on a transcript function that, once implemented, is expected to generate transcripts in just 20 seconds—a remarkable improvement from the 20-minute manual process. Additionally, MOE has initiated training for 500 teachers and administrators on using AdminPlus. Our migrated data ensures a smooth experience for them. As for the old SIS, I observed transcript generation—the most significant concern we are trying to address in this project. It now takes about 90 seconds per student, a mere 7.5% of the time it took manually. Completing data migration aligns with our goal of smoother workflows and improved efficiency, benefiting both staff and students.

Recommendations

A crucial recommendation for the sustainability of the data migration project within the AdminPlus system, both at the PHS level and the broader MOE level, is the establishment of a continuous data validation and cleansing process. This process entails the regular verification of the accuracy and consistency of the migrated data within the AdminPlus system itself. By consistently reviewing and validating the data, any discrepancies or errors that may have arisen during the process of updating students/courses/grades information can be swiftly identified and resolved.

At the PHS level, this recommendation holds immense significance as ongoing data validation directly impacts the reliability and usability of the student information within the AdminPlus system. Ensuring that the data accurately reflects the students' information and academic records is crucial for generating precise documents like transcripts. Through a continuous validation process, PHS can uphold the integrity of their student data, reduce the likelihood of errors, and enhance the overall trustworthiness of the system.

To implement this recommendation, PHS should assign a designated staff member responsible for regular data validation. This staff member would follow a structured checklist of validation procedures tailored to the data points relevant to PHS's operations. Regular validation sessions should be scheduled, with a focus on key validation points, and any identified discrepancies should be promptly addressed and corrected.

At the MOE level, a broader strategy should be devised to ensure data validation and cleansing are implemented consistently across all schools utilizing the AdminPlus system. The MOE should consider centralizing resources for data validation expertise, creating standardized guidelines for validation procedures, and facilitating the sharing of best practices among schools. This centralized approach would lead to more efficient and effective data management across the entire educational landscape, ensuring accurate information for informed decision-making.

By embedding a data validation and cleansing process within the AdminPlus system, PHS and the MOE can collectively ensure that the student data is accurate, reliable, and well-maintained. This proactive approach aligns with the overarching goals of efficient data management and informed decision-making, benefiting both the individual school and the broader education ecosystem.

About the Consultant

Zhijin Wu is a rising senior in Information Systems with an additional major in Business Administration and a minor in Human Computer Interaction at Carnegie Mellon University. She will be taking part in the Technology Consulting in the Global Community internship over the summer and return in the fall to start her senior year in Pittsburgh.