Educational Tour Learning Journal

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the College of Information and Computing Sciences
In Partial Fulfillment
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Submitted By:

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I. Tour Overview and Objectives

The main purpose of the educational tour was to see how technology jobs really work in the real world. I also wanted to learn more about the different IT careers I can take after college, and get a clearer idea of what path might fit me in the future.

II. Establishment Analysis

A. Establishment Profile(LRTA FACILITY)

- **Name of Establishment Visited:**LRTA FACILITY
- **Date of Visit:** Oct 21, 2025
- **Core Mission/Function:** The Light Rail Transit Authority (LRTA) is a government agency under the Department of Transportation that handles the construction, operation, maintenance, and overall management of the country's light rail systems. Its main goal is to give the public a safe, dependable, and accessible way to travel, focusing on service rather than profit. By running the LRT, the LRTA helps improve mobility, provides a modern and convenient transit option, reduces traffic in busy areas like Metro Manila, and helps lessen air pollution—leading to a more efficient and sustainable transportation system.

B. Systems and Technology Deep Dive

- **Key Systems Observed:**
  - System: **Signaling and Train Control System**
    - Description: A computerized system that oversees train movement by keeping safe distances between trains and managing their speed and track switches. It uses sensors, communication networks, and control algorithms to prevent collisions and ensure smooth and efficient train operations.
  - System: **Automated Fare Collection System**
    - Description: A digital ticketing system that allows commuters to pay using smart cards or contactless methods. It involves ticket vending machines, gate scanners, and backend servers that record transactions and manage passenger data.
  - System: **Communication Systems**
    - Description: These systems include radios, public address systems, CCTV networks, and open communication lines that allow train operators, station staff, and the central control center to coordinate smoothly. They help ensure safety, enable real-time monitoring, and allow for quick responses to any incidents.

- ➢ System: **Central Control Center**
  - Description: The IT-based control center where operators keep track of train locations, track conditions, CCTV cameras, power systems, and station activities. It brings together data from various systems to ensure the railway runs smoothly and efficiently.

- ➢ System: **Maintenance Management System**
  - Description: A digital system that monitors the condition of equipment, schedules preventive maintenance, records repairs, and tracks spare parts. It helps keep railway assets reliable and minimizes downtime.

- ➢ System: **Power Supply and Distribution Monitoring System**
  - Description: A digitally monitored system that provides consistent electrical power to trains and stations. It detects faults, manages substations, and automatically switches to backup power when needed.

- **The Flow of Information:** At LRTA, a passenger's journey is tracked using the Automated Fare Collection System. When they tap in, the gate reads their card, records the entry, and sends the data to the central server. When they tap out, the system calculates the fare, deducts it from the balance, and updates the trip in the main database.

- **Observed Infrastructure:** The facility houses fare collection machines, CCTV networks, the Operations Control Center, SCADA terminals, server rooms, signaling equipment, radio communication systems, and fiber-optic network infrastructure.

C. Academic Connection and Critical Analysis

- **Relevance to Your Program:**

- **For BSIT Students:** The LRTA visit showed me how the concepts we study in class actually work in real life. Seeing how the Automated Fare Collection System records tap-ins and tap-outs and sends the data to a central database was eye-opening. Even the way their servers, control panels, and monitoring tools were set up felt like a real-life version of what we practice in school. It really made me appreciate how important IT is in keeping a public transportation system running smoothly.

- **Challenges & Opportunities:** From an IT perspective, LRTA could face challenges like system downtime, outdated equipment, or cybersecurity risks because so many systems are connected. But these challenges also bring opportunities. They could update their infrastructure, improve cybersecurity, and adopt innovations such as mobile ticketing, predictive maintenance, and better real-time analytics. With the right improvements, their operations could become more efficient and user-friendly for commuters.

- **Most Insightful Moment:** The moment that struck me the most was seeing the Operations Control Center in action. Watching how they monitored train locations, CCTV feeds, power systems, and passenger flow all in one place was truly eye-opening.

A. Establishment Profile(DOST)

- **Name of Establishment Visited:** DOST
- **Date of Visit:** Oct 21, 2025
- **Core Mission/Function:** The Department of Science and Technology is the country's main authority on science and technology, guiding and coordinating initiatives to support national development. Its key roles include creating policies, planning long-term programs, and promoting research and development to create local technologies and adapt foreign ones for Philippine use. DOST also transfers its research to sectors like agriculture, industry, and transportation, provides important technological services, maintains national science and technology information systems, and offers training programs to build skills and strengthen institutions across the country.

B. Systems and Technology Deep Dive

- **Key Systems Observed:**

  - System: Information and Training Management System
    - Description: Platforms used to organize seminars, manage training programs, handle scholarships, and track the progress of students and researchers supported by DOST.

  - System: Communication and Information System
    - Description: A system made up of radio lines, data-sharing platforms, public advisory channels, and digital dashboards that enable DOST agencies (like PAGASA and PHIVOLCS) to share important information with government units and the public in real time.

  - System: Research and Data Management System
    - Description: A centralized digital platform for storing, managing, and processing research outputs, scientific data, and project documents. It lets researchers upload their findings, track project progress, and securely share information across DOST agencies.

  - System: Technology Transfer and Innovation System
    - Description: A digital and administrative system that evaluates research outputs, manages patents, links innovations to industries, and transfers technologies to farmers, local businesses, and government sectors.

  - System: Central Command and Monitoring Centers
    - Description: Facilities with large display panels, data feeds, surveillance maps, and monitoring dashboards that combine information from weather stations, seismic sensors, and research labs. These centers help coordinate responses, track environmental threats, and support decision-making.

- **The Flow of Information:** At DOST, scientific data moves from field instruments to central databases. For example, when PAGASA's Doppler radar detects weather patterns, the data is sent through secure networks to DOST servers. The system processes the information, creates models and forecasts, and sends the results to monitoring centers. From there, advisories are prepared and shared with government agencies, media, and the public.

- **Observed Infrastructure:** The DOST facility houses research labs, server rooms, seismic and weather monitoring equipment, communication consoles, data dashboards, high-performance computers, training centers, and integrated monitoring centers used by agencies like PAGASA and PHIVOLCS. These facilities support scientific research, disaster monitoring, and the nationwide sharing of important information.

C. Academic Connection and Critical Analysis

- **Relevance to Your Program:**
- **For BSIT Students:** Visiting DOST showed me how the IT concepts we study in class actually support real scientific work. Seeing their databases, networks, and monitoring dashboards keep research data organized and accessible felt like watching our lessons come to life. It made me realize how crucial IT is in turning raw scientific information into something useful for the country.

- **Challenges & Opportunities:** DOST handles large amounts of data, which means they can face challenges like system overload, outdated equipment, and cybersecurity risks—especially during disasters. But these challenges also create opportunities to improve, such as stronger security, cloud storage, better analytics, and more automation. With the right upgrades, their scientific services could become even faster and more reliable.

- **Most Insightful Moment:** The most eye-opening moment for me was seeing how DOST protects its critical research and monitoring systems from cyber threats. Watching their secure servers, controlled access points, and network monitoring tools made me realize just how important cybersecurity is in keeping sensitive scientific data safe. It was a real-life example of how IT professionals defend information that affects public safety and national operations.

A. Establishment Profile(BRP)

- **Name of Establishment Visited:** BRP Hydrographer Presbitero
- **Date of Visit:** Oct 22, 2025
- **Core Mission/Function:** The BRP Hydrographer Presbitero is a Philippine Navy research vessel responsible for hydrographic and oceanographic surveys, seafloor mapping, and collecting marine and environmental data. Its mission is to provide accurate maritime information for navigation safety, national security, and scientific research. The ship carries out data collection, real-time monitoring, and shares information with government agencies, universities, and research institutions. It also supports training programs and capacity-building for personnel, ensuring that technological and scientific knowledge is effectively applied in marine operations.

B. Systems and Technology Deep Dive

- **Key Systems Observed:**
  - ➢ System: Hydrographic Data Management System
    - Description: A centralized digital platform that stores, processes, and analyzes marine and seafloor data collected by the ship. It lets scientists and crew track survey progress, upload measurements, and securely share information with naval and research agencies.

  - ➢ System: Communication and Navigation System
    - Description: Includes satellite communication, VHF radios, and digital dashboards that allow real-time coordination between the vessel, coastal stations, and other ships. These systems are crucial for navigation, safety, and transmitting collected data to shore-based facilities.

  - ➢ System: Technology Transfer and Reporting System
    - Description: Administrative and IT systems that turn collected hydrographic data into reports, charts, and maps for government agencies, port authorities, and research institutions. This system ensures that raw data is transformed into useful, actionable information.

  - ➢ System: Central Monitoring and Operations Center
    - Description: A control area on the ship where data from sonar, GPS, weather instruments, and environmental sensors is monitored. Operators can track the vessel's position, oversee survey coverage, ensure equipment is working properly, and integrate data from multiple instruments.

- **The Flow of Information:** On the BRP Hydrographer Presbitero, marine data collected from sensors like sonar, GPS, and water quality monitors is sent to onboard servers. These servers process and organize the data in real time, allowing operators to track survey progress and check readings. The processed data is then transmitted via secure satellite and radio links to shore-based offices, where it's further analyzed and turned into maps, charts, and reports for navigation, research, and public safety. This workflow ensures that maritime information is accurate and useful.

- **Observed Infrastructure:** The vessel is equipped with advanced hydrographic instruments, high-performance computers, secure servers, GPS and sonar navigation systems, satellite and radio communication consoles, and digital dashboards for real-time monitoring. It also has training areas, automated data logging systems, and reporting tools that support both scientific research and smooth operational coordination while at sea.

C. Academic Connection and Critical Analysis

- **Relevance to Your Program:**
- **For BSIT Students:** Visiting the BRP Hydrographer Presbitero showed me how IT concepts are applied in real-world marine research. Watching their servers, communication networks, and data management systems handle large amounts of oceanographic data felt like seeing our Networking and Database lessons come to life. It made me realize just how important IT is for collecting, storing, and sharing sensitive scientific and navigational data in realtime.

- **Challenges & Opportunities:** The vessel deals with large amounts of complex marine data, so it faces challenges like system overload, network interruptions at sea, and cybersecurity risks for sensitive information. Aging equipment and outdated technology are also concerns. These challenges create opportunities for upgrades, such as cloud-based data storage, automated processing, stronger cybersecurity, and real-time analytics. With these improvements, hydrographic surveys could become faster, more accurate, and more secure.

- **Most Insightful Moment:** The most insightful moment for me was seeing how the BRP Hydrographer Presbitero maps the ocean floor using advanced sonar technology. I learned that the ship sends sound waves, or 'pings,' to the seafloor, and by measuring how long it takes for the echoes to return, the system calculates the depth and shape of the seabed. Watching this data appear on their digital dashboards, forming detailed maps of underwater terrain, made me realize how IT and technology turn raw signals into precise, useful information. It was fascinating to see how this process supports safe navigation, environmental research, and maritime planning.

A. Establishment Profile(Cresc Inc)

- **Name of Establishment Visited:** Cresc Inc
- **Date of Visit:** Oct 22, 2025
- **Core Mission/Function:** Cresc Incorporated, a Japan-based printer consumables manufacturer operating in the Philippines, aims to provide high-quality, affordable products while expanding globally. Its mission includes producing defect-free products, ensuring customer satisfaction through honest business practices, staying competitive in international markets like the U.S., Canada, Germany, and Italy, and promoting the well-being of customers, employees, suppliers, and communities through environmentally responsible and recycling-focused practices.

B. Systems and Technology Deep Dive

- **Key Systems Observed:**
  - ➢ System: Product & Inventory Management System
    - Description: Tracks production schedules, raw materials, and inventory to ensure timely delivery.
  - ➢ System: Customer Relationship Management (CRM) System
    - Description: Software that manages customer interactions, tracks orders, handles complaints, and monitors feedback. It helps Cresc Inc. maintain customer satisfaction and respond quickly to issues.
  - ➢ System: Communication and Information System
    - Description: Includes internal messaging, email, video conferencing, and digital dashboards that help coordinate work between production, sales, logistics, and administrative teams.

- **The Flow of Information:** At Cresc Inc., information flows smoothly between production, logistics, and sales. When an order is placed, the CRM system records customer details and triggers production scheduling and raw material allocation. The inventory system updates stock levels in real time, while production data is tracked for quality control. Once products are ready, shipment details are sent to the logistics team, and the CRM updates the customer.

C. Academic Connection and Critical Analysis

- **Relevance to Your Program:**

- **For BSIT Students:** Visiting Cresc Inc. showed me how IT supports sales, customer service, and internal communication. Their CRM system tracks orders, manages customer interactions, and monitors feedback, making sure customer concerns are handled quickly. Communication platforms help sales, production, and logistics teams coordinate smoothly, keeping operations efficient. It made me realize that IT doesn't just support manufacturing it also plays a key role in building customer trust and satisfaction.

- **Challenges & Opportunities:** Cresc Inc. handles large volumes of customer and order data, so challenges include system downtime, miscommunication between sales and production teams, and maintaining accurate customer records. These challenges create opportunities to improve IT systems with integrated CRM and inventory solutions, automated alerts for order status, real-time communication tools, and enhanced data security. Such upgrades would help the company respond faster to customer needs, ensure a smooth coordination between departments, and strengthen overall customer satisfaction and loyalty.

- **Most Insightful Moment:** The most memorable moment was seeing Japanese work culture and careful procedures in action on the production floor. Watching each worker perform their part of the ink cartridge process with precision, while following proper etiquette and bowing politely, showed me how attention to detail, discipline, and respect are key to both productivity and workplace harmony. It highlighted how technology and human effort work together to ensure high-quality products and an efficient, respectful manufacturing environment.

A. Establishment Profile(Gardinia Bread Factory)

- **Name of Establishment Visited:** Gardenia Bakeries Philippines, Inc
- **Date of Visit:** Oct 23, 2025
- **Core Mission/Function:** Gardenia Bread Factory is one of the Philippines' leading commercial bakeries known for its fully automated "touchless" bread-making system. Its mission is to provide high-quality, safe, and freshly baked products by using world-class technology and strict quality standards. Through advanced baking machinery, robotics, and continuous quality control, Gardenia ensures consistency in taste, texture, and freshness while meeting nationwide demand. The factory emphasizes hygiene, efficiency, and innovation to deliver baked goods that reach stores quickly and safely

B. Systems and Technology Deep Dive

- **Key Systems Observed:**

  - System: Fully Automated Bread Production Line
    - Description: A robotics-driven assembly line where bread is mixed, kneaded, fermented, baked, sliced, and packed without direct human touch. Sensors, conveyor belts, and automated ovens work together to maintain consistency, cleanliness, and exact baking conditions.

Information

- ➢ System: Quality Assurance Monitoring System
  - Description: A digital system that uses sensors, weighing machines, and visual scanners to check product quality during each stage dough consistency, fermentation time, loaf texture, color, and size. All readings are recorded and analyzed to maintain uniform standards.

- ➢ System: Inventory & Raw Materials Management System
  - Description: Tracks all raw ingredients (flour, sugar, yeast, shortening) and finished products in real time. It monitors stock levels, schedules replenishments, and ensures ingredients are always fresh and within safety standards.

- **The Flow of Information:** At Gardenia, data begins from the raw materials area, where the inventory system logs ingredient levels and identifies what is needed for production. The automated production line then records dough temperature, mixing times, baking heat levels, and slicing thickness. Quality assurance systems validate the data at every checkpoint. After packaging, products are logged into the distribution database, assigning them to delivery routes. This flow ensures every loaf is documented from ingredients to store shelves.
- **Observed Infrastructure:** The facility contains large industrial mixers, tunnel ovens, fermentation chambers, robotic arms, conveyor systems, automated slicers, packaging machines, temperature and humidity sensors, quality-control scanners, distribution docks, logistics control panels, and integrated computer systems for monitoring production.

C. Academic Connection and Critical Analysis

● **Relevance to Your Program (BSIT):**
Visiting Gardenia showed me how IT supports automation, manufacturing, and logistics in a real industrial environment. Their production line works smoothly because of well-designed IT systems quality sensors, inventory systems, and monitoring dashboards. The entire bread-making process relies on accurate data collection and automated controls, which mirrors what we study in systems integration, database management, and networking. It showed me that IT doesn't just live in computers it drives real machinery and ensures products are safe and consistent.

● **Challenges & Opportunities:**
Gardenia manages massive daily production volumes, so challenges include system downtime, machine failure, and risks in maintaining consistent product quality. Cybersecurity is also important because their automated systems depend heavily on interconnected machines.

● **Most Insightful Moment:**
The most memorable moment for me was seeing the fully automated bread production line in action from dough mixing to slicing to packaging all without direct human contact. Watching the synchronized movement of conveyor belts, robotic arms, and sensors made me realize how IT and machinery come together to create high-quality, safe food products on a massive scale. It was fascinating to see how precise automation ensures freshness, hygiene, and uniform quality in every loaf.

III. Synthesis and Overall Reflection

- **Public Sector vs. Private Sector IT:** Public sector agencies like DOST, the Philippine government department that coordinates and promotes science and technology in the country, have an innovative vision of using technology for the nation's benefit. Since these agencies cover many areas, they are expected to receive proper government funding. On the other hand, private sector companies like Cresc Inc., a Japan-based manufacturer of printer consumables with a major plant in the Subic Bay Freeport Zone, focus on producing high-quality, affordable products while expanding internationally. As a private company, its funding comes directly from investors.

- **Bridging Theory with Practice:** The part of my curriculum that felt most real after this tour came from the DOST Director's advice. He encouraged us not to be blinded by money and to focus on what's right in front of us. Instead of always looking for opportunities elsewhere, he stressed the importance of helping from where we are, because problems will keep following us if we don't address their root causes. His message made me realize that we can make a meaningful impact in our own community. With a DOST branch in Marinduque and scholarship programs that can now be completed online, there's no need to go far to seek opportunities or gain new skills.

- **Career Path Illumination:** This educational tour motivated me to explore cybersecurity more deeply. Beyond being a high-paying field, it carries a strong sense of purpose and responsibility. Cybersecurity professionals act as an organization's defense, protecting sensitive data and ensuring systems remain secure. Their work helps minimize threats and allows the organization to operate smoothly without the risk of breaches or attacks. Seeing how important this role is inspired me to consider pursuing cybersecurity as a career.

- **Conclusion:** Overall, the most meaningful lesson I gained from this educational tour came from the inspiring words of DOST Director Cezar Pedraza. His message made the concepts from my curriculum feel truly real by reminding us not to be blinded by the pursuit of money or opportunities abroad. Instead, he encouraged us to focus on what's right in front of us and to help from where we are, because real progress starts with addressing the root causes of problems in our own communities. His emphasis on patriotism showed me that what we study in Information Technology can genuinely contribute to the Philippines' development. With opportunities like DOST's programs—now accessible online and even available in Marinduque—we don't need to leave our country to make a difference. We can use our knowledge and skills to build a better future for our people, right here where we're needed most.

IV. Appendices

Instructions: You may attach photos (with captions), brochures, or other relevant materials gathered during the tour that support your journal entries. Make sure to describe briefly

Information