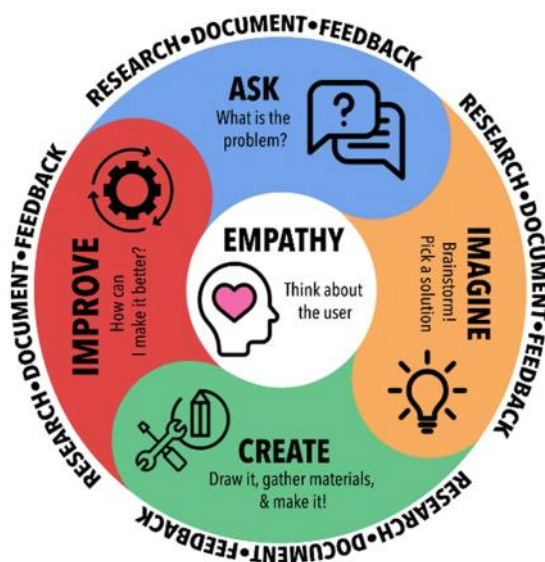


## Changemakers: Creativity and Value Creation (ACCA5053)



Student name: Daniel Velenciuc  
(2321094)

Course name: Cloud Computing  
(BSc)



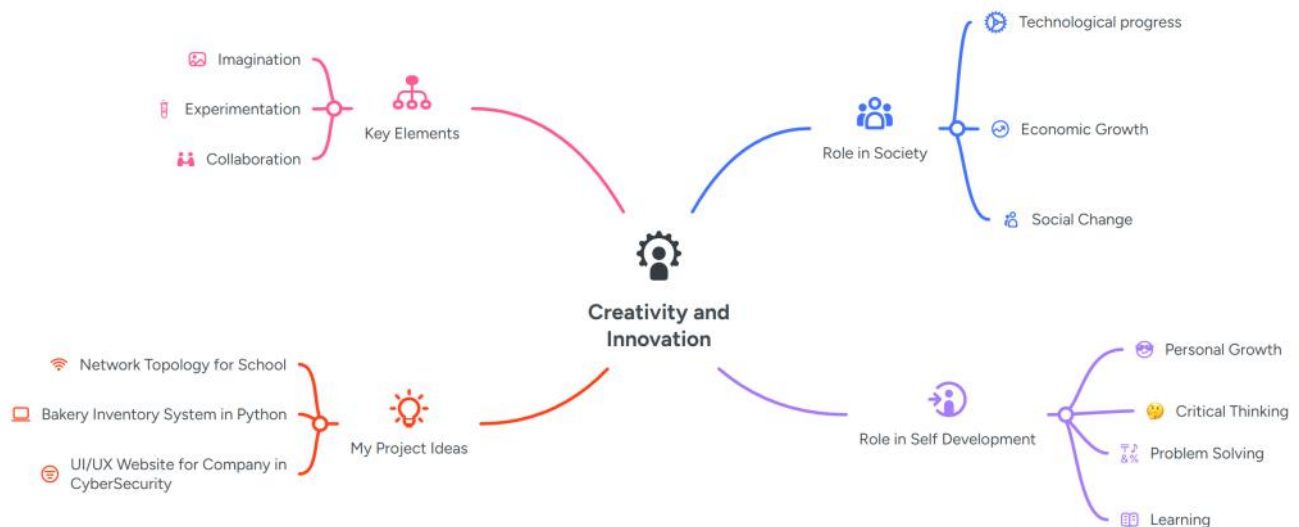
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Trinity Saint David

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# Task1 (Mind Map)

3 декабря 2025 г. 14:44



## Role in Society

The way communities think, develop, and change is greatly influenced by creators. Beyond creating works of art, innovations, or designs, they have an impact on the economy, culture, and evolution of humanity.

- Technological progress- is the engine of social change and economic growth. It boosts productivity, cuts costs, and makes life better. But to avoid making inequalities worse, its benefits must be managed in a way that includes everyone.[1]
- Economic Growth- is the engine of prosperity, allowing societies to raise living standards, cut down on poverty, and put money into the future. It depends on money, people with skills, technology, and strong institutions. The speed at which it happens varies from country to country based on policies and global conditions.[2]
- Social Change- is the inspiration behind changes in society, culture, politics, and economics. It comes from both planned actions and outside forces, and it affects everything from everyday life to global systems.

## Role in Self Development

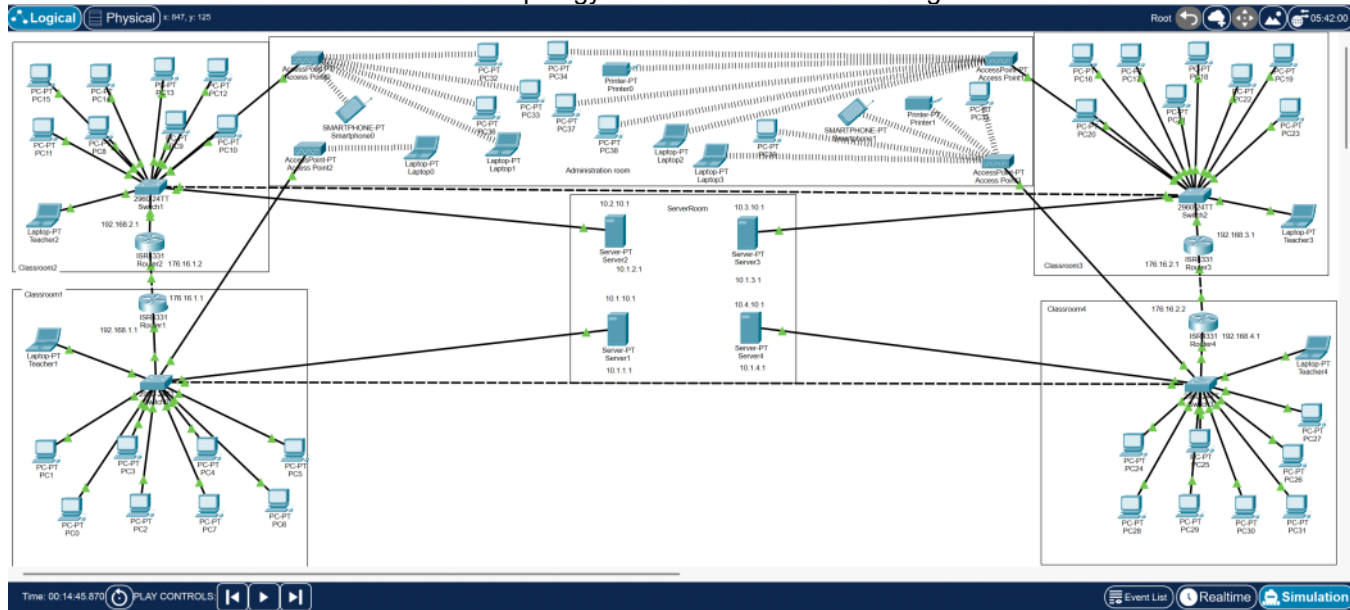
- Personal Growth- a lifelong journey of learning, changing, and growing. It gives you the power to make a real difference in the world while also living a more fulfilling life.
- Critical thinking- is the ability to look at facts without any prejudice, consider the evidence, and make logical decisions. It helps people get past their feelings and assumptions and come to logical, well-supported conclusions.[3]
- Problem Solving- is a skill that combines thinking, creativity, and doing. It gives people and groups the tools they need to get through tough times, deal with change, and do well in complicated situations.
- Learning- is what helps people grow and develop. It gives people the power to adapt, come up with new ideas, and make a real difference in the world. It's not a single thing, it could happen over and over again and changes as you learn and become more curious.

## Key Elements

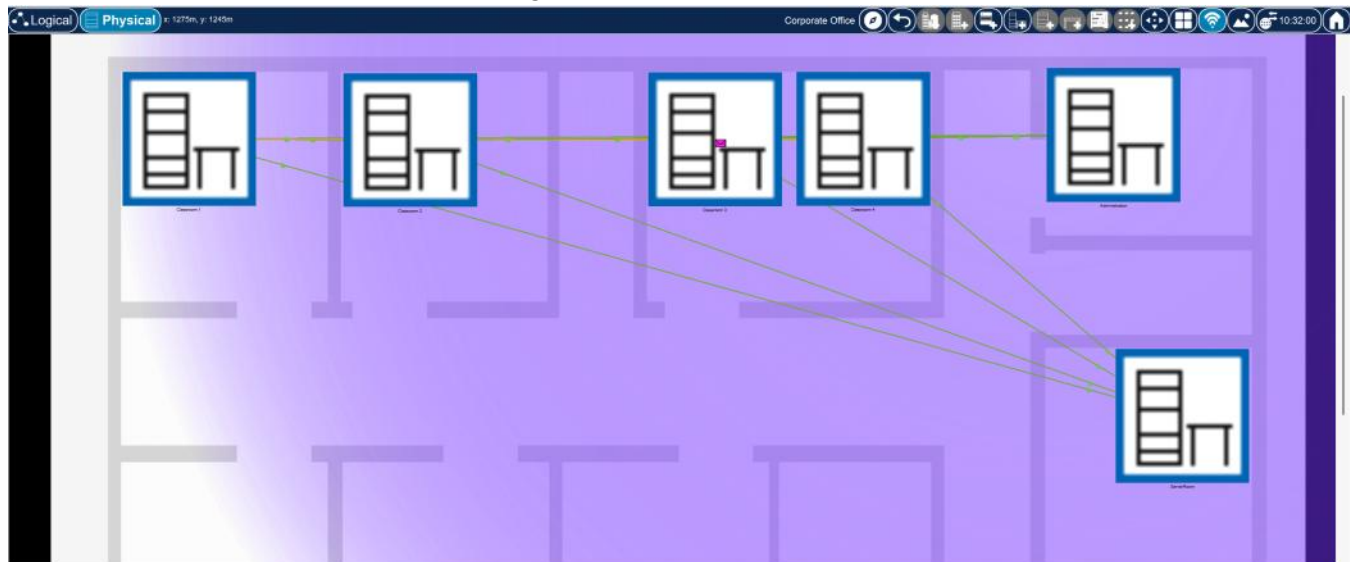
- Imagination- is what inspires creativity and new ideas. It lets people and groups dream, plan, and change the world. Without imagination, progress stops; with it, we open up endless possibilities.
- Experimentation- is what motivates discovery and new ideas. It turns confusion into knowledge, errors into lessons, and thoughts into things that happen.
- Collaboration- Working together is what makes people successful as a group. It transforms individual strengths into shared success, fostering innovation, growth, and stronger communities.[5]

## My project idea

## Network Topology for a School in African Village



## Behind The Classrooms



## Classroom1



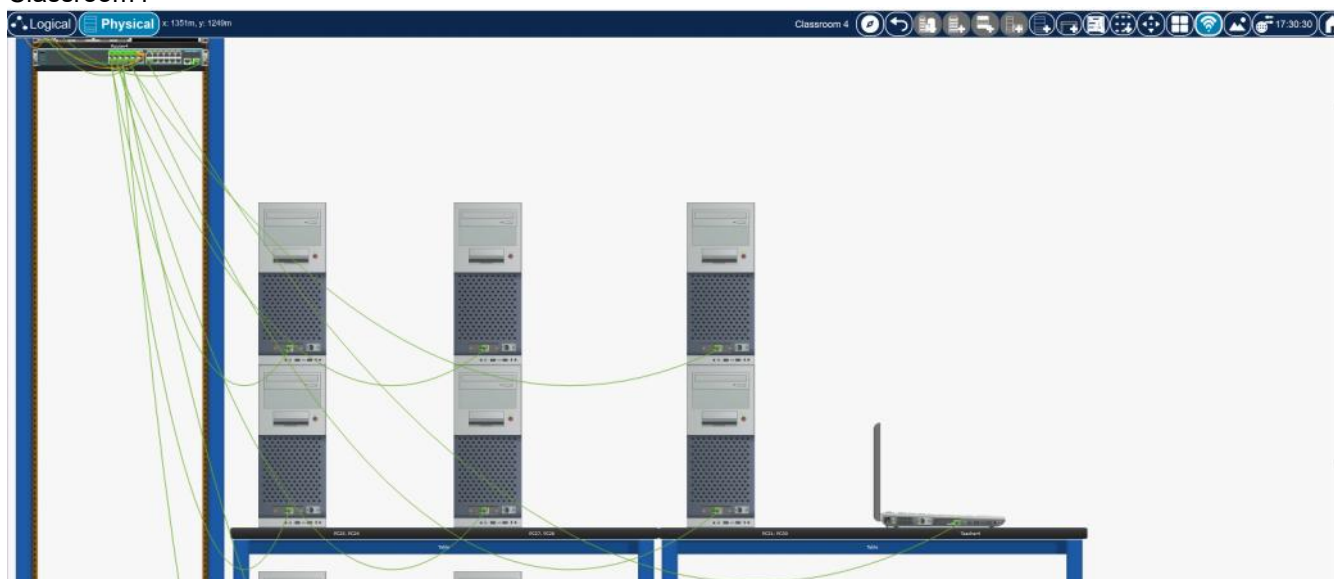
## Classroom2



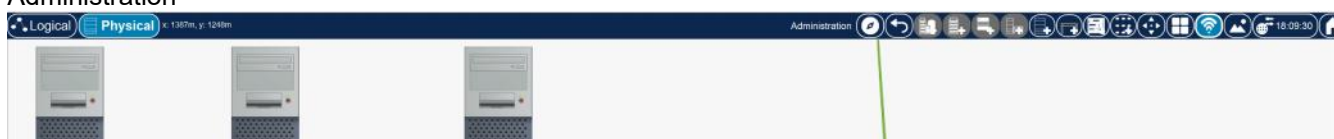
### Classroom3

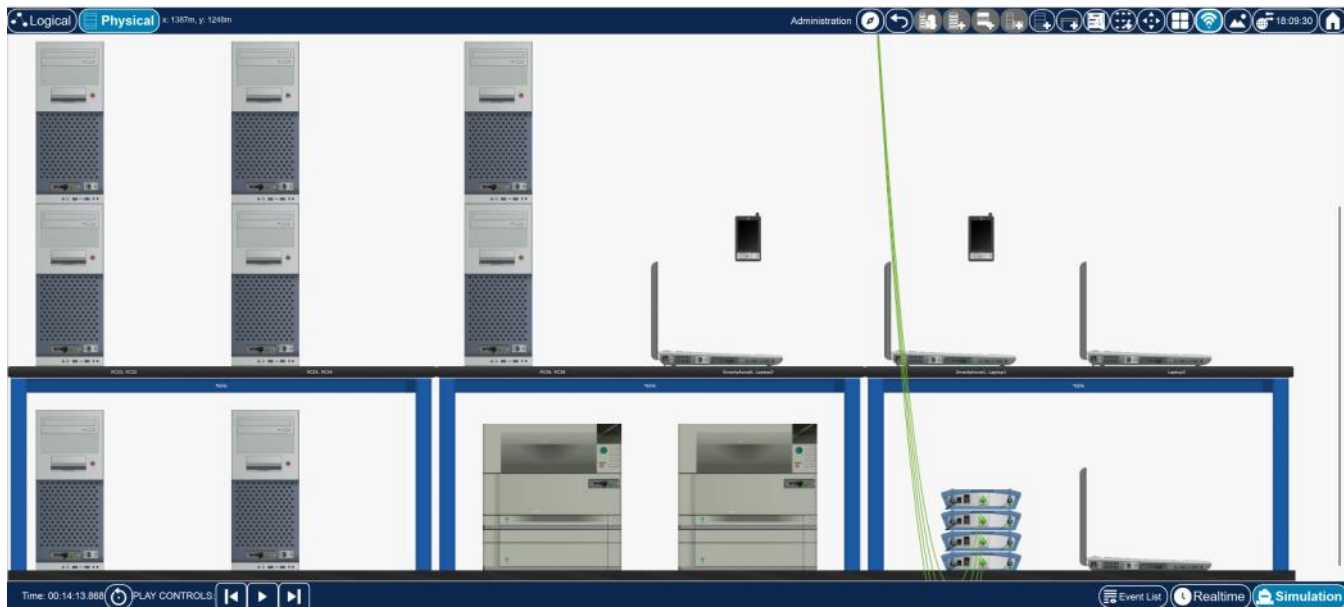


### Classroom4

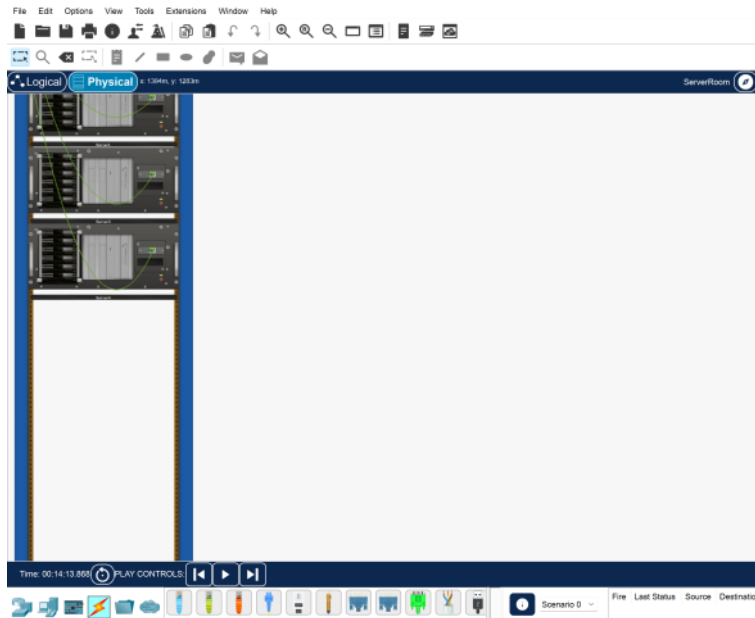


### Administration





## Server Room



This topology shows my experience in network for schools. It has a methodical approach, can grow, and combines wired and wireless parts. This makes it great for both teaching and real-world use.

# Task2 (Aim & Objectives and Research)

4 декабря 2025 г. 18:18

## Aim

To create and put into practice a network topology that is scalable, secure, and focused on education that connects several classrooms, administrative areas, and centralized servers. This will make it easier for students to communicate, share resources, and learn by doing in a simulated school setting.

## Objectives

1. Logical Segmentation - Give each classroom and administrative zone its own IP subnet to make traffic flow better and to make management easier.
2. Centralized Server Integration - Set up a Server Room with separate servers for DNS, DHCP, file sharing, and authentication, each with its own IP address.
3. Router Configuration - Set up and use ISR4331 routers to handle inter-VLAN routing and make sure that classrooms can always connect to the Server Room.
4. Switch deployment - Use 2960-24TT switches to connect wired devices in each zone. This will make sure that they work well and have as few collision domains as possible.
5. Wireless Access Implementation - Add access points that work with laptops and mobile devices so that students can learn in different ways and bring their own devices.
6. Device Allocation - Put PCs, laptops, and smartphones in classrooms and offices in a way that makes them look like they are being used in real life.
7. Scalability and Modularity - Make the topology so that new classrooms or services can be added in the future without affecting the current infrastructure.
8. Documentation and Visualisation - Make clear diagrams and guides to show how the network is set up, how IP addresses work, and what each device does for teaching and presentation purposes.

## Research

Pragmatism(Epistemology) is the best research philosophy for my topology project because it focuses on solving problems in a practical way, doing experiments over and over again, and designing things based on their results. Pragmatism highlights practical solutions and results over abstract theories. It values both approaches like qualitative (ideas, creativity, design choices) and quantitative (IP addressing, router configs, performance metrics).

Based on Unit 1 Topic 2 Pragmatism research philosophy very fits my project because it highlights:

- Problem-Solving Orientation: My project is about solving a real-world problem like how to connect classrooms, servers, and administration in a way that can work efficiently.
- Experimentation: I was testing router settings, VLANs, and IP schemes over and over again, which is exactly how pragmatism says you should learn: by trying things out, making mistakes, and improving them.
- Blending Methods: I was combining technical rigor (like network design and routing protocols) with creative documentation (like flowcharts and mind maps). This mix is what pragmatism is all about.
- Outcome Focused: The goal isn't just a theory; it's a working topology that helps with learning and management. Pragmatism puts usefulness and applicability at the top of its list of priorities.[6]

## Appropriate Search Tools for My Project

### 1. General Academic Databases

- Google Scholar - Broad access to peer-reviewed articles, theses, and conference

- papers.
- Microsoft Academic - AI-powered search for scholarly publications, useful for networking and IT infrastructure topics.
- CORE Aggregates open-access research papers across disciplines.
- 2. Specialized IT & Networking Databases
  - IEEE Xplore - Premier source for networking, router configuration, and educational IT infrastructure research.
  - ACM Digital Library - Strong in computer science, networking protocols, and simulation studies.
  - ScienceDirect (Elsevier) - Covers applied computer science, engineering, and educational technology.
- 3. Professional & Industry Sources
  - Cisco Networking Academy Resources - Vendor-specific guides and case studies on ISR routers and Packet Tracer.
  - SpringerLink - Research on applied networking in educational contexts.
  - ERIC (Education Resources Information Center) - Useful for studies on technology in schools and learning environments.

#### Search Strategies

1. Boolean Operators - "network topology" AND "educational institutions", "Cisco Packet Tracer" OR "ISR4331 routers", "inter-VLAN routing" AND "school networks"
2. Filters - Date range limit (e.g., last five years for current networking practices), Sort by subject (e.g., computer science, educational technology), Peer review should only be used for academic rigor.
3. Begin with one important paper and then follow its references both forward and backward to create a research trail.
4. Known Knowns Approach - Start with popular sources, like Cisco documentation and IEEE standards and look at case studies and applied research in educational networking to learn more.

# Task3 (Research Strategies)

5 декабря 2025 г. 9:46

## Strategies to Enhance Research Quality

### 1. Validity

Clear Objectives - Make sure that your topology design fits with the goal you set (an efficient, scalable school network).

Accurate Simulation - Use Cisco Packet Tracer to create real-world conditions, such as IP addressing, VLANs, and routing.

Triangulation - Check your configurations with Cisco documentation, academic sources (IEEE/ACM), and industry best practices.

Pilot Testing - Before you finish the design, make sure that classrooms can connect to servers. This will make sure that the topology shows what you want it to.

### 2. Reliability

Standardized Procedures - Document all router and switch configurations step by step.

Repeat Testing - To make sure the results are always the same, run multiple connectivity tests (ping, traceroute) on different devices.

Version Control - To keep track of changes and make sure you can always get the same results, save different versions of your Packet Tracer file.

Peer Review - Show your topology to classmates or teachers to make sure the results are the same.

### 3. Generalisability

Scalable Design - Use modular routers and subnets to make it possible to add more schools or institutions to the network.

Contextual Flexibility - Write down how the design could work in different places, like bigger campuses or schools in the country.

Comparative Analysis - Cite similar case studies in educational networking to demonstrate additional relevance.

Abstract Principles - Emphasize out lessons that are true in all situations, such as segmentation, centralized servers, and wireless integration.

### 4. Ethical Considerations

Data Privacy - Make sure that simulated IPs and devices don't show real student or staff data.

Transparency - It should be clear that the topology is a simulation and not a live deployment.

Accessibility - Write up the project so that both technical and non-technical people can understand it.

Equity - Highlight how the design helps with inclusive education, like making sure that all classrooms have reliable access.

Academic Integrity - To avoid plagiarism, make sure to properly cite your sources, such as Cisco guides and IEEE papers.

## Data Collection Methods

### Surveys/Questionnaires:

The target audience is staff, students, or people from the community who use the system.

Goal: to find out how people feel, how easy it is to use, and how happy they are.

Questions on a Likert scale and open-ended prompts are the format.

Notes from the field/observation:

Seeing how the system is used in real life.

Goal: find out where the workflow is stuck, how users act, and problems that aren't being talked about.

System Log Data and Usage Analytics:

Get automated data from the system, like logs of ingredient tracking and network traffic.

Purpose: give objective measures of performance, efficiency, and error rates.

Interviews that are only partly structured.

Done with important people, like teachers, bakers, and IT staff.

Goal: to learn more about needs, expectations, and areas that need work.

## Pilot Data Collection Method

### Pilot Design

Goal: Test the survey and observation methods on a small group of people before using them on a larger group.

Sample: 5–10 participants (e.g., bakery staff or school IT users).

Tools:

A short survey with 10 questions, 7 of which are closed and 3 of which are open-ended.

A list of things to look for while observing (system usability, how often errors happen, how long it takes to do tasks).

Steps:

1. Give the survey to people after they have used the system for a week.
2. Watch for 30 minutes while the live use is going on.
3. Get system log data for the same time period.

### Feedback Loop

#### First Results:

Participants thought the survey was a good length, but they wanted clearer language for technical terms.

It was clear from watching that some users skipped certain features, which meant that the instructions were not clear.

Log data showed that ingredient input errors happened a lot, which means the UI needs to be redesigned.

#### Changes to the Main Study:

Make the survey language easier to understand and add examples.

Add "feature avoidance" to the observation checklist.

Give out training materials before the full rollout.[7]

## Quantitative Analysis Methods

These focus on numerical data and statistical techniques.

- Descriptive Statistics
- This type of statistics uses measures like the mean, median, mode, and standard deviation to summarize data.
- For example, the average amount of time it takes bakery staff to enter ingredient data.
- Inferential Statistics: This type of statistics uses data from a sample to make predictions or generalizations about a whole population.
- For example, checking to see if training staff significantly lowers input errors.
- Regression Analysis looks at how variables are related to each other.
- For example, using sales volume to guess when there will be a shortage of ingredients.
- Correlation Analysis: This looks at the strength and direction of the relationships between different variables.
- For example, the link between network downtime and student performance.
- Tests whether differences between groups are statistically significant.
- For example, comparing usability ratings between users who have been trained

and those who haven't.

- Time-Series Analysis: This looks at data collected over time to find patterns or trends.
- For example, keeping track of how many ingredients are used in different seasons.

#### Qualitative Analysis Method

These focus on things that aren't numbers, like text, observations, and interviews.

- Thematic Analysis: This method finds patterns or themes that show up over and over again in qualitative data.
- For example, staff interviews that show themes of "confusion with categories."
- Analysis of Content
- Systematic coding of text to measure patterns.
- For example, counting how many times "difficulty" or "ease" comes up in survey answers.
- Analysis of Narratives
- Looks at stories or personal accounts to learn about experiences.
- For example, teachers talking about how network diagrams helped or hurt lessons.
- Theory Based on Grounded Theory
- Constructs theory from data through iterative coding and categorization.
- For example, making a model of how bakery workers adjust to new systems.
- Analysis of Discourse
- Looks at how language is used in communication.
- For example, looking at how staff members talk about "errors" and "features."
- Case Study Analysis: A deep look at one case or a small group of cases.
- For example, a close look at how one bakery keeps track of its inventory.[8]

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- [8] R. Rose, K. Hölzle, and J. Björk, "More than a quarter century of Creativity and Innovation Management: The journal's characteristics, evolution, and a look ahead," *Creativity and Innovation Management*, vol. 29, no. 1, 2020, doi: 10.1111/caim.12361.

