



1. “Protocol Picker” Sorting Activity

Purpose: Help learners identify and categorize common internet protocols by use case (web, email, or file transfer).

How It Works:

- Display draggable protocol cards labeled with:
 - HTTP, HTTPS, SMTP, POP3, IMAP, FTP, SFTP, FTPS
- Provide **three drop zones**:
 - Web Browsing
 - Email Communication
 - File Transfer
- Learners drag each card into the correct category.
- After submission, the system gives feedback on each placement and short definitions with real-world examples.

Why It Works:

This reinforces distinctions between protocol functions and allows for self-correction, supporting cognitive schema-building and retention.

2. “Secure or Not?” Encryption Challenge

Purpose: Teach students to recognize secure versus insecure versions of protocols and understand the role of encryption.

How It Works:

- Show 10 simulated real-world scenarios (e.g., a login page using `http://`, or a file transfer using FTP).
- Learners must click “Secure” or “Not Secure.”
- Upon selection, display an **explanation bubble**:
 - Example: “Incorrect. HTTP transmits in plaintext. Use HTTPS for login pages.”
- Add a challenge mode: “Upgrade this protocol” — where students must choose the secure variant (e.g., switch SMTP to SMTPS).



Student Engagement & Mentoring in Technology

Why It Works:

Promotes awareness of **cybersecurity risks** and aligns with real-life decisions students will face in professional environments.

3. “Email Protocol Simulator”

Purpose: Visualize the full flow of email from client to server and back using SMTP, IMAP, and POP3.

How It Works:

- Create an interactive **email journey animation**:
 - Compose and send email → SMTP sends to mail server
 - Choose POP3 or IMAP:
 - POP3: Downloads email to device → Deletes from server
 - IMAP: Syncs across devices → Remains on server
- Include toggle options for:
 - Secure vs. insecure version (e.g., POP3 vs. POP3 over TLS)
 - Desktop client vs. webmail
- Quiz-style checkpoints test understanding:
 - “Which protocol keeps messages on the server?”
 - “Which protocol is best for using multiple devices?”

Why It Works:

This visual representation demystifies email flow and enables comparison of behavior between POP3 and IMAP, common trouble points for learners.

Summary Table

Activity	Focus	Learning Benefit
Protocol Picker	Categorizing protocols	Reinforces function and classification
Secure or Not?	Encryption and secure variants	Promotes cyber-awareness and critical thinking
Email Protocol Simulator	SMTP, IMAP, POP3 workflows	Clarifies differences through visualization