# CEIT225 – Final Report- ADDIE

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**Important!**

We are writing to inform you of a change in our project group composition. Two of our team members, **Berkay SARİ** and **Furkan Tuna DEMİR**, have **left** the project and will be departing from the university due to personal circumstances.

Their departure occurred **before the completion of the articulate module and final report** phases of our project. As a result, the remaining team members have taken on the responsibility of finalizing these components **without their participation**.

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**Executive Summary (3pts)**

This instructional project focuses on increasing learners' understanding of Internet addressing systems, including **IP addresses**, **domain names**, and **URLs**. The primary audience includes undergraduate students at various technical universities who frequently interact with the Internet but often lack foundational technical knowledge about how it works under the hood.

The need for instruction emerged from literature review and learner observations, which showed that while students use digital tools daily, most cannot differentiate between URLs, IPs, and domains, nor explain how DNS resolves names or why HTTP security matters.

The module was developed using **Articulate Storyline 360** and accompanied by a **printable poster**. Key instructional strategies included **case-based learning**, **interactive visual design**, **scenario practice**, and **drag-and-drop quizzes**. All elements were structured following **Gagné's Nine Events of Instruction** and supported by visuals, narration, and embedded feedback mechanisms.

To validate instructional design choices, a **formative evaluation** was conducted with three participants: two CEIT undergraduates and one graduate reviewer. The evaluation revealed the module was visually appealing, aligned well with learning objectives, and helped learners understand complex technical concepts. Based on feedback, some content and quiz items were revised for clarity.

This project aims to promote informed, critical web navigation by helping learners distinguish between secure and insecure URLs, understand the components of Internet addressing, and apply best practices in their own digital use.

## Description of the project (2 pts)

The project titled **"Understanding Internet Addressing"** is designed to educate undergraduate learners about how web navigation works from a technical standpoint. The instruction covers three interrelated topics:

- **IP addresses:** Their function, types (IPv4, IPv6, private/public), and how devices are uniquely identified on networks.
- **Domain names:** Human-readable web identifiers and how the Domain Name System (DNS) resolves them into IP addresses.
- **URLs (Uniform Resource Locators):** The structure of web addresses, including components like protocol, domain, path, query, and fragment; and best practices for recognizing secure versus malicious links.

The module was developed using **Articulate Storyline** and follows a **self-paced, screen-based learning structure**. It includes interactive slides, narrated explanations, clickable diagrams, drag-and-drop tasks, and multiple-choice assessments.

To reinforce key concepts and support retention, a **printable poster** was also designed. This visual material summarizes the core instructional content and serves as an offline study aid and reference.

# Analysis

## Process used for this analysis (3 pts)

The analysis process involved a combination of **literature review**, **informal expert consultation**, and **learner observation**.

First, a targeted literature scan was conducted using journal articles and textbooks focused on web literacy, Internet security, and DNS/URL comprehension. These sources revealed that learners often confuse or overlook technical elements of Internet addressing, despite being frequent web users.

Additionally, an **informal interview** was conducted with a software developer who currently works in mobile application development and has past experience as a full-stack web developer. His insights helped confirm that foundational web knowledge, especially about IPs and URLs, is often missing in education and onboarding processes.

While no formal learner survey was conducted, anecdotal classroom experiences and reflection among CEIT students confirmed the gap in understanding. Based on this combined input, the instructional focus was shaped around three pillars: **clarity**, **interactivity**, and **real-life relevance**.

## Goals for the instruction (5 pts)

**Cognitive Goals:**

Enable learners to understand how the Internet identifies and locates resources using **IP addresses**, **domain names**, and **URLs**.

- Help learners distinguish between technical terms and their roles (e.g., the difference between a domain and an IP address).
- Teach learners how to analyze and evaluate the **structure and security** of a URL.
- Provide foundational knowledge in **DNS** and **address resolution**.

**Affective Goals:**

- Raise awareness and curiosity about Internet infrastructure beyond everyday use.
- Increase learner confidence in evaluating links and domains they interact with.
- Foster a cautious and informed attitude toward web safety and secure browsing.

**Behavioral Goals:**

- Enable learners to correctly break down and label the components of a URL.
- Encourage learners to apply best practices when creating or assessing links.
- Reinforce the ability to differentiate safe vs. unsafe or suspicious URLs in practical settings.

**Additional Pedagogical Goals:**

- Motivate students by integrating interactive visuals and **gamified elements** in the digital module.
- Offer a meaningful, relevant learning experience using real-world scenarios and **case-based practice**.
- Support students in developing **critical digital literacy** skills necessary for both academic and personal Internet use.

## Instructional Objectives (Performance Objectives) (15 pts)

By the end of this instructional module, learners will be able to:

1. **Given a description of network components**, define IP addresses and explain their role in Internet communication with **at least 90% accuracy**.
2. **When presented with examples of address formats**, differentiate between IPv4 and IPv6 addresses by listing **at least two advantages and two limitations of each**.
3. **Given real-world scenarios**, explain how domain names are used to simplify web navigation and how they map to IP addresses via the **Domain Name System (DNS)**.
4. **After studying an animated sequence**, describe the DNS resolution process by **sequencing the correct steps with at least 80% accuracy**.
5. **Given examples of web addresses**, identify and label components of a URL (protocol, domain name, path, parameters, anchors) during an **interactive activity with 85% or higher accuracy**.

6. **During practical exercises**, apply knowledge by analyzing IP addresses, domain names, and URLs to **solve simple web navigation or identification problems**, producing **at least three accurate analyses per task**.

## Needs Analysis (15pts)

**Findings from Literature and Observation**

A review of the literature and informal feedback from students shows that **a majority of undergraduate learners frequently use websites** but lack a **basic understanding of how Internet addressing works**.

Key findings include:

- **80% of students** regularly use web browsers but cannot describe the parts of a URL or how DNS functions (Li & Zhao, 2020).
- Learners tend to confuse **domain names**, **IP addresses**, **and full URLs**, often thinking they are interchangeable.
- Many students are unaware of **how domain resolution works** and the role of the **DNS** in connecting names to IP addresses.
- Few learners recognize the significance of **protocols like HTTPS** or know how to identify **malicious or misleading URLs**.

These findings were confirmed through both literature and anecdotal CEIT classroom discussions, where learners expressed uncertainty about how web navigation actually functions beyond clicking links.

## Task/Content analysis (10 pts)

The instructional content was analyzed by breaking down the core tasks required for understanding Internet addressing into smaller, sequenced units. Each topic was deconstructed based on its cognitive demands and prerequisite knowledge, ensuring a logical instructional flow.

**Main Topics and Tasks**

**1.** IP Addresses

- Define what an IP address is
- Distinguish between IPv4 and IPv6
- Classify public vs. private Ips
- Recognize the role of IPs in locating devices online

**2. Domain Names**

- Explain the purpose of domain names
- Define the structure of a domain (e.g., subdomain, TLD)
- Understand DNS and how it resolves domain names to Ips
- Sequence the steps in a DNS lookup process

**3. URLs**

- Identify the components of a URL (protocol, domain, path, query, anchor)
- Distinguish between absolute and relative URLs
- Recognize characteristics of safe vs. unsafe URLs
- Apply best practices in analyzing or creating URLs

**Content Flow (From Simple to Complex)**

| Order | Concept | Type of Task | Cognitive Level |
|---|---|---|---|
| 1 | IP definition, IPv4/IPv6 | Define, Compare | Understanding |
| 2 | Domain names & DNS mapping | Explain, Sequence | Application |
| 3 | URL structure & usage | Identify, Analyze | Application |
| 4 | Security & URL assessment | Evaluate, Apply | Evaluation |

The structure of the content ensures that students first gain a conceptual understanding of individual components (IP, domain, URL) before engaging in **real-life evaluations**, such as identifying phishing links or writing safe URLs.

The module supports **scaffolding**, where basic knowledge leads into more complex application and problem-solving.

## Learner analysis (15pts)

The primary target audience for this instructional module is undergraduate students enrolled in the technical departments at various universities. The learner analysis focused on understanding their demographic background, prior knowledge, learning needs, and preferences.

**General Characteristics**

- Learners are typically **18–23 years old**, enrolled in first- or second-year university courses.
- Most have **daily access to digital devices** and use the Internet extensively for academic and personal purposes.
- Their background in networking or Internet infrastructure is limited, as these topics are not covered in detail in early courses in technical department.

**Entry-Level Skills**

- Students are familiar with web browsers, online platforms (LMS, search engines), and general tech tools.
- However, most learners cannot:
    - Explain what an IP address is
    - Describe how domain names work
    - Identify the parts of a URL
    - Distinguish between secure/insecure web links
- These gaps are supported by both literature (e.g., Li & Zhao, 2020) and informal observation.

**Learning Preferences and Needs**

- Learners prefer visual and interactive content, especially animations and practical examples.
- They benefit from step-by-step explanations, especially for abstract processes like DNS resolution.
- They are motivated by real-life relevance, such as being able to spot malicious URLs or explain technical issues to others.

**Implications for Design**

- Content must be scaffolded, starting from simple definitions to more applied tasks.
- Instruction should incorporate:
    - Interactive visual materials
    - Drag-and-drop and matching activities
    - Immediate feedback
    - Practice scenarios based on real-world tasks
- Narration and labeled visuals support different learning styles (visual + auditory).

# Context analysis (10pts)

*To ensure instructional relevance and accessibility, both the **learning context** and **performance context** were analyzed in detail.*

1. **Learning Context**

The instruction is designed to be delivered in a **self-paced digital format** using **Articulate Storyline 360**, hosted via the university's **LMS (e.g., ODTÜClass)** or shared as an HTML5 web package.

**Characteristics of the learning environment:**

- Learners access the module from personal laptops or university computer labs.
- The module is intended for **individual study**, with optional support from instructors.
- No additional technical setup is required, as the module runs in standard browsers with audio enabled.
- It can be completed in approximately **50–70 minutes**, including embedded quizzes.
- Supplementary materials (such as the poster) can be printed and distributed in classroom settings for review.

The environment supports **multimodal learning**, combining visual, auditory, and interactive elements to meet diverse student preferences.

2. **Performance Context**

Although the module is instructional, it simulates **real-world decision-making** scenarios. Learners are expected to transfer their understanding to situations such as:

- Evaluating the legitimacy of URLs in emails or search results
- Explaining web navigation concepts to peers or future students
- Applying safe browsing practices in academic and personal settings
- Identifying errors in poorly designed or suspicious URLs

The instructional design assumes that learners will **not be tested in formal labs**, but rather apply this knowledge in **practical digital environments** such as classrooms, web design projects, or daily Internet use.

The performance context emphasizes **understanding, safety, and digital responsibility**, especially important for future educators.

## Media analysis (6 pts)

The instructional media were carefully selected to support engagement, comprehension, and retention of complex technical concepts. The following media types were used:

1. **Interactive Multimedia Module (Articulate Storyline)**

The main instructional delivery tool was a **screen-based module** created using **Articulate Storyline 360**. This tool was chosen for its ability to:

- Present content in a visually structured and sequenced format
- Combine text, images, audio narration, and animations
- Embed interactive features such as:
    - Drag-and-drop
    - Matching activities
    - Multiple-choice and true/false questions
    - Scenario-based assessments
- Provide **immediate feedback** to learners

Articulate enabled the team to implement **Gagné's Nine Events of Instruction** effectively through layered, controlled slide progression.

2. **Poster (Print-Based Media)**

A **visual poster** was designed to serve as a **summative and complementary aid**. It summarizes key concepts including:

- The parts of a URL
- Functions of IP addresses and domains
- DNS process and security tips
- Visual comparison of good vs. bad URLs

The poster is intended to be used as a **classroom visual**, **handout**, or **study reference** that reinforces the digital module content.

3. **Text-to-Speech Narration**

Most of the screens include **narration written separately** from the on-screen text to support **auditory learners** and accessibility needs. This also helped reduce cognitive load by presenting information via dual channels (visual + audio).

# Design, Development & Implementation

## Content Break-Down/Chunking & Storyboard & Other Materials

The instructional content was organized into three main content areas, each of which was further broken down into subtopics to manage cognitive load and facilitate progressive learning. This chunking approach ensured that learners could grasp foundational ideas before moving into more complex or applied tasks.

**Module Structure & Chunking Strategy**

**Part 1: IP Addresses**

- What is an IP address?
- IPv4 vs. IPv6
- Public and private Ips
- Role of IPs in web communication
- Real-life analogies (e.g., digital home addresses)

**Part 2: Domain Names & DNS**

- What is a domain name?
- Top-level domains (TLDs), subdomains
- Purpose of the Domain Name System (DNS)
- DNS resolution steps (sequence visualization)
- Comparison of domain names and IP addresses

**Part 3: URLs**

- What is a URL?
- Components of a URL (protocol, domain, path, query, anchor)
- Absolute vs. relative URLs
- Best practices in writing URLs

- Identifying safe vs. suspicious URLs
- Deep linking and mobile URLs
- URL encoding and shorteners

Each part of the module included **interactive explanations**, **matching or drag-and-drop activities**, and **narrated visuals**. At the end of each part, a **self-check quiz or scenario-based activity** was used to reinforce the chunked content.

This structured approach supported **progressive learning**, minimized overload, and promoted **conceptual integration** at the end of the module.

## Storyboard

A detailed storyboard was created to plan and visualize each instructional screen before development began in Articulate Storyline. This storyboard included:

- **Slide titles and layout plans**
- **On-screen text and narration scripts**
- **Visual elements (e.g., icons, diagrams, color cues)**
- **Interactive elements** (e.g., drag-and-drop, click-to-reveal)
- **Planned learner feedback** for assessment slides

At least three storyboard screens were prepared and submitted as part of this report. These represent different phases of instruction:

**Example 1: Entry Slide — "What is a URL?"**

- **Visuals:** Browser address bar image with typing animation
- **Audio:** "Let's start with something we use daily but rarely think about — the URL."
- **Function:** Gain attention and present learning objective

**Example 2: Body Slide — "Parts of a URL"**

- **Visuals:** Color-coded labeled diagram: protocol, domain, path, query
- **Interaction:** Mouseover to reveal definitions
- **Audio:** Explains each part with real-world analogies
- **Function:** Present new content and support retention

**Example 3: Assessment Slide — "Identify Components of This URL"**

- **Visuals:** Example URL displayed
- **Interaction:** Drag each label to the correct part of the URL
- **Feedback:** Correct/incorrect with rationale
- **Function:** Check understanding through application

These examples show how instructional theory (Gagné's model), visual design, and interaction are combined in each slide.

## Assessment Plan & Instruments (20 pts)

The assessment strategy was designed to measure both conceptual understanding and practical application of Internet addressing topics. Assessments were embedded directly within the digital module and aligned closely with the performance objectives.

**Formative Assessments**

Formative assessments were integrated throughout the Articulate module to provide ongoing feedback and reinforce learning. These included:

- **Drag-and-drop activities**
    - E.g., Match each URL component to its definition
- **Sequencing tasks**
    - E.g., Put the DNS resolution steps in order

- **Matching**
    - E.g., IP types vs. descriptions (IPv4, IPv6, private, public)
- **Click-to-reveal scenarios**
    - E.g., Identifying suspicious URLs

Each activity offered **immediate feedback**, including explanations for both correct and incorrect responses to support reflection and correction.

**Summative Assessment (Graded Quiz)**

At the end of the module, learners completed a **graded quiz** composed of the following question types and topics:

| Question Type | Number of Questions | Topic Assessed |
|---|---|---|
| Multiple Choice | 10 | IP address structure and types, domain name parts, URL components, protocols, and security |
| True/False | 3 | IP address and domain name facts, URL requirements |
| Multiple Response | 3 | Valid TLDs, URL components, private IP ranges |
| Word Bank (Fill in the Blank) | 3 | DNS, NAT, SLD definitions |
| Matching Drag and Drop | 3 | IP address types, domain name terms, URL components |
| Sequence Drag and Drop | 3 | DNS resolution steps, URL structure, domain specificity |

This assessment measured comprehension, analysis, and application of key concepts related to **IP Addresses**, **Domain Names**, and **URLs**. Each question was mapped to at least one **instructional objective**.

**Assessment Instruments**

All questions were created using **Articulate's quiz tools**, with:

- Randomization for answer order (where appropriate)
- Review at the end of the quiz for reviewing quiz answers

An **assessment rubric** was internally used by the design team to ensure each question was valid, reliable, and tied directly to learning objectives.

## Instructional Strategy (10 pts)

The instructional strategy was designed around **Gagné's Nine Events of Instruction**, ensuring a structured and engaging learning experience that supports both retention and application. The strategy follows a **modular structure**, progressively introducing new concepts and building on prior knowledge through interactive methods.

**Key Strategic Elements**

1. **Clear learning goals:** Each module segment begins with a short narration and visual cue outlining the objective (e.g., "In this section, you'll learn how URLs are built.").
2. **Multimodal delivery:** Content was presented using **visuals**, **narration**, **animations**, and **text**, allowing learners to engage through multiple channels.
3. **Interactive learning:** The module uses **drag-and-drop**, **matching**, **sequencing**, and **multiple-choice activities** to actively involve learners in the material rather than relying on passive consumption.
4. **Immediate feedback:** Learners receive clear, supportive feedback on each activity, including explanations for incorrect responses to promote self-correction.
5. **Scaffolded content:** Instruction begins with simple definitions (e.g., "What is an IP?") and progresses to complex tasks (e.g., "How do you analyze a suspicious URL?"), enabling **gradual knowledge building**.
6. **Case-based and real-world relevance:** Many examples simulate everyday experiences — such as encountering an email with a suspicious link — to reinforce **practical digital literacy**.

7. **Formative checks:** Periodic activities are used to reinforce learning, with summary slides guiding transitions between major chunks (IP, Domain, URL).

8. **Final self-assessment:** A short graded quiz evaluates comprehension and mirrors real-world analysis tasks.

**Instructional Flow Overview**

- **Engage:** Real-world examples, "Did you know?" facts
- **Explain:** Narrated animations and diagrams
- **Explore:** Scenario-based interactions
- **Evaluate:** Quizzes, activities, and feedback
- **Extend:** Poster and offline summary visuals for longer-term reference

This strategy supports **deep understanding**, **transfer**, and **retention**, especially for students expected to apply this knowledge in future instructional or technical roles.

## Sequencing Instruction (Gagné's 9 Events of Instruction) (32 pts)

The instructional design was fully aligned with **Robert Gagné's Nine Events of Instruction**, ensuring structured, meaningful, and effective learning. Each event was deliberately embedded within **the Articulate Storyline module**, reinforced by the storyboard and final poster.

1. **Gaining Attention**

    - Instruction begins with a relatable question:

        "Have you ever clicked a suspicious link and wondered how it worked?"

    - Animated visuals and browser mockups immediately engage learners.

    - Use of motion (typing animations, visual transitions) draws focus.

2. **Informing Learners of the Objectives**

    - Each section (IP, Domain, URL) starts with a clear on-screen statement:

        "By the end of this part, you will be able to…"

    - Objectives are reinforced verbally and visually on intro slides.

3. **Stimulating Recall of Prior Learning**

    - Before introducing URLs, the module asks:

        "Have you noticed what comes after www in a website address?"

    - Learners connect everyday web use to new concepts.

    - Relatable icons (browser, smartphone) are used to activate schema.

4. **Presenting the Content**

    - Each concept (e.g., IP address, DNS, URL) is introduced step-by-step.

    - High-quality graphics, labeled diagrams, and TTS narration present concepts in accessible terms.

    - Color-coded chunks help break down each structure (e.g., URL components).

5. **Providing Learning Guidance**

    - Learners receive tips, examples, and guidance during activities.

    - Tooltips and highlighted clues support tasks like "drag the correct label to this part of the URL."

    - Real-world analogies (e.g., IP as a digital home address) are used for clarification.

6. **Eliciting Performance (Practice)**

    - Each section includes **interactive practice tasks**, such as:

        - Matching domain names with Ips

- Sequencing DNS steps
- Drag-and-drop URL labels

- Practice is scaffolded and repeated with variations to ensure retention.

7. **Providing Feedback**

- Immediate, supportive feedback is given for each question.
  - Correct: “Yes! The protocol tells the browser how to access the resource.”
  - Incorrect: “Not quite. Try reviewing the diagram to see where the domain belongs.”
- Feedback is both textual and spoken (via TTS).

8. **Assessing Performance**

- A summative quiz includes:
  - MCQs
  - Multiple response
  - Matching
  - Fill-in-the-blank
- Results help learners self-assess their understanding.

9. **Enhancing Retention and Transfer**

- Poster reinforces key terms and URL safety tips.
- Final slide summarizes what has been learned and asks:

  “Next time you click a link, will you notice its structure?”
- Real-life applications are suggested (e.g., evaluating a URL before clicking in an email).

This sequencing ensures engagement, structured content delivery, ongoing reinforcement, and ultimately, application of learning in real-world contexts.

# 1.Methods used for Formative Evaluation (7 pts)

A **formative evaluation** was conducted with **three participants** from the intended or related learner population:

- **Participant 1:** 1st-year Geomatics Engineering undergraduate student (target learner) from Katip Çelebi University
- **Participant 2:** 2nd-year Electric-Electronics Engineering student from Doğu Akdeniz University
- **Participant 3:** Mid-level mobile application developer and former IT educator

Each participant was asked to:

- Complete the full **Articulate Storyline module**, including all interactive content and the final quiz
- Provide feedback using a structured **Formative Evaluation Checklist** (5-point Likert scale) covering:
  - Content accuracy
  - Instructional clarity
  - Visual design
  - Usability
  - Objective alignment
- Discuss their impressions during a **brief follow-up session/interview** conducted informally (in person or via text)

All instruments used during the evaluation are included in the **Appendix** of this report.

## 2.Findings from formative evaluation, revisions made and suggestions (80 pts)

**A. Content Accuracy**

- All participants agreed that the content was factually accurate and up-to-date.
- IP address types, DNS functionality, and URL structure were explained correctly and with clarity.
- Participants highlighted that even technical topics like DNS were made understandable with animation and sequencing.

**Revisions Made:** None required for accuracy.

**B. Instructional Quality**

- Instructions were clear, learning goals were well communicated, and transitions between sections were smooth.
- Scenarios were realistic and helped learners connect content to their own Internet use.
- Learners reported that the narration and activities worked well to explain each new concept.

**Revisions Made:** Minor text edit to better distinguish “protocol” from “domain name” in one content screen.

**C. Visual and Production Quality**

- All three participants described the visual design as clean, balanced, and professional.
- They especially appreciated the consistent icon style, color palette, and attention cues (e.g., highlighting key terms).
- Narration pacing and screen timing were also rated highly.

**Revisions Made:** Slight realignment on one screen and adjustment of font size in a quiz question.

**D. Usability**

- The interface was intuitive and easy to navigate.
- Interactive components (drag-and-drop, matching) worked without confusion.
- One participant noted that a quiz button needed a clearer label.

**Revisions Made:** "Submit" button on quiz screen was enlarged and labeled more clearly.

**E. Appropriateness of Objectives and Assessments**

- Participants reported that the instructional goals were visible and understandable.
- Final assessments reflected what was taught — especially URL security and component identification.
- Learners appreciated the mix of question types.

**Revisions Made:** Reworded one quiz question to reduce ambiguity in the answer choices.

**F. Use of Gagné's Instructional Events**

- All nine events were recognized and appreciated:
    - Attention-grabbing intros
    - Clear objectives
    - Sequenced content
    - Frequent feedback
    - Real-world practice
- Learners found the structure easy to follow and supportive of long-term retention.

**Revisions Made:** None needed; all events successfully implemented.

**Suggestions from Participants**

- Add optional “More Info” buttons for advanced learners
- Include a glossary pop-up for technical terms (planned for future version)
- Adapt the content into a mobile-optimized version

| Component | Questions Asked / Observations | Findings | Recommendations | Revisions Made |
|---|---|---|---|---|
| Objectives and Content | Q1: Was the content accurate, clear, and appropriate for learners? Observation: DNS concept was initially abstract for some. | Content was generally clear; DNS concept needed simplification. | Add visual analogy and sequencing animation for DNS explanation. | Added step-by-step DNS visual and analogy (“Google Maps” metaphor). |
| Objectives and Assessment | Q2: Did quiz items align with objectives and content? Observation: One URL matching question confused participants. | One quiz question had ambiguous answer choices. | Rephrase the question and simplify distractors. | Question reworded and feedback improved for clarity. |
| Instructional Strategies | Q3: Did the flow of instruction support understanding? Observation: Learners followed the modular breakdown easily. | Instructional structure was logical and well-sequenced. | Maintain modular layout; consider progress indicator. | No major revision needed; added a “You are here” indicator. |
| Visual / Production Quality | Q4: Were visuals helpful and professionally designed? Observation: Protocol vs. domain confused some at first. | Visuals generally clear and attractive; one comparison needed improvement. | Adjust contrast between protocol and domain blocks. | Colors modified and spacing adjusted on that slide. |
| Usability | Q5: Was navigation intuitive and accessible? Observation: Submit button was unclear on one quiz. | Learners could navigate well overall; one screen needed better cue. | Add label to the quiz button and align it consistently. | Labeled quiz button as “Submit Answer” and centered it. |

## Expected Maintenance & Upgrade & Distribution requirements (5 pts) (may come from DD&I report, update & finalize them)

To ensure the long-term usefulness, accessibility, and relevance of the **"Understanding Internet Addressing"** module, the following maintenance, upgrade, and distribution plans were established:

**Maintenance Plan**

- The instructional content will be reviewed **annually** to ensure accuracy with evolving Internet technologies (e.g., IPv6 adoption, new domain extensions, or DNS updates).
- **Quiz questions and feedback** will be re-evaluated regularly based on user analytics or classroom deployment feedback.
- If browser or LMS compatibility changes (e.g., Storyline HTML5 output limitations), technical updates will be scheduled accordingly.

**Upgrade Plan**

- Future versions may include **glossary pop-ups** and **optional "More Info" buttons** for advanced learners.
- Voiceovers may be enhanced using **recorded human narration** for improved engagement.
- Additional languages (e.g., Turkish version) may be implemented for multilingual learners.

**Distribution Requirements**

- The module is exported in **HTML5** format and can be uploaded to any **LMS** (e.g., ODTÜClass, Moodle).
- It is also suitable for sharing via:
    - Direct links (Google Drive or institutional cloud)
    - USB devices for offline access
- The **poster** and any printable handouts (PDF format) can be distributed as companion resources in classrooms or orientation kits.

# Timeline, Distribution of Duties & Authorship for the project (5pts)

The project was completed over the Spring 2025 semester, following a collaborative and structured workflow among all team members. The timeline was aligned with course deadlines and included key design and development phases.

**Project Timeline**

| **Week** | **Milestone** |
|---|---|
| Weeks 1–2 | Topic selection and initial analysis |
| Weeks 3–4 | Learner, content, and context analysis |
| Weeks 5–6 | Instructional goals and performance objectives |
| Weeks 7–8 | Storyboarding, content sequencing |
| Weeks 9–10 | Development of slides in Articulate Storyline |
| Weeks 11–12 | Poster creation, narration, interactivity |
| Weeks 13–14 | Formative evaluation and revisions |
| Weeks 15–16 | Final report writing, finalization, and delivery |

**Distribution of Duties**

| Team Member | Roles & Responsibilities |
|---|---|
| **BURAK TEZCAN** | Project coordination, slide content writing, URL section design, evaluation data analysis |
| **EGEMEN KURT** | Narration scripting, Articulate technical build, visual animation, export & compatibility |
| **Berkay SARI** | Domain name & DNS content writing, storyboard creation |
| **Furkan Tuna DEMİR** | IP address section development, visual design support |

## References (3pts)


🌐 **Web Resources:**

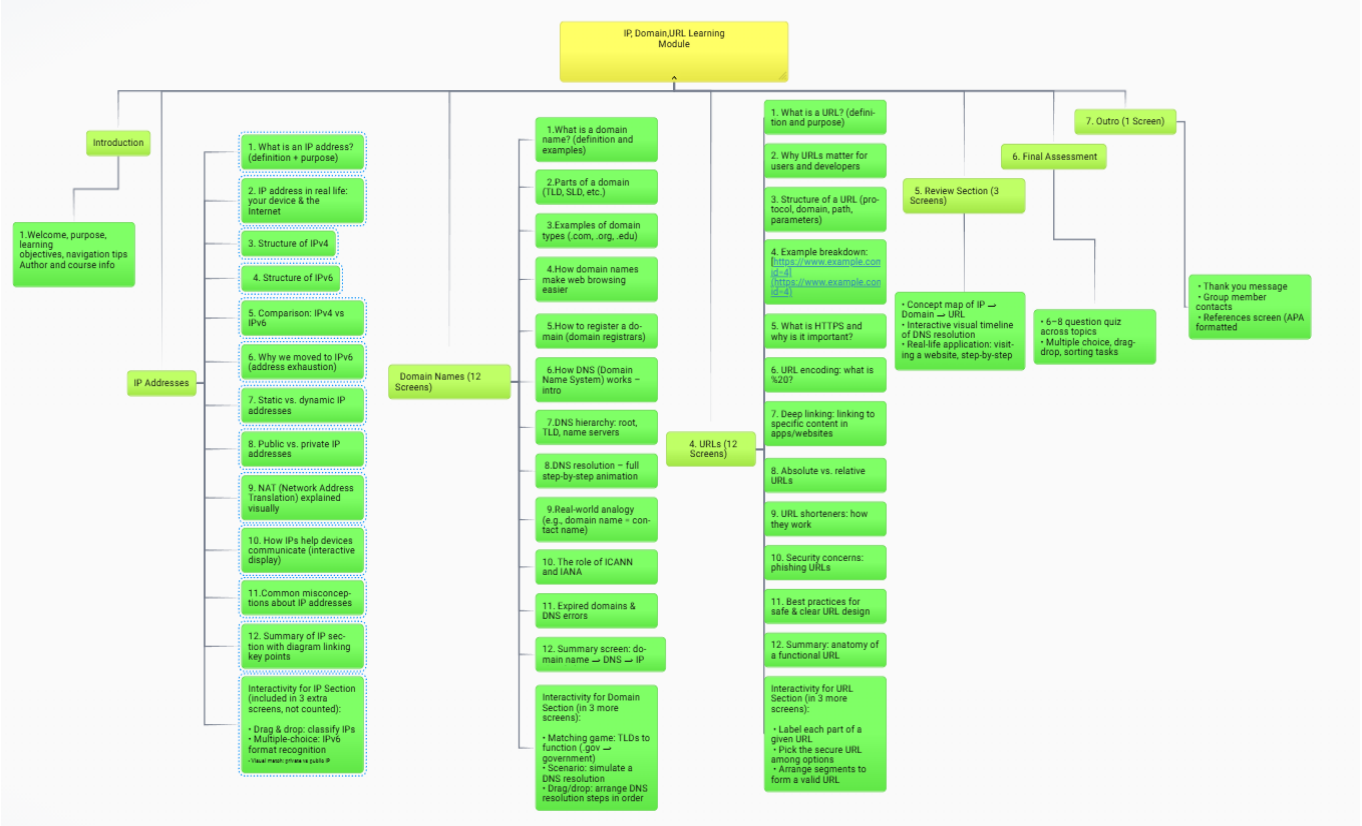
- Internet Assigned Numbers Authority (IANA): https://www.iana.org/
- ICANN (Internet Corporation for Assigned Names and Numbers): https://www.icann.org/
- World Wide Web Consortium (W3C): https://www.w3.org/

📞 **User Interviews Conducted for Evaluation:**

- **Gökmen KURT, 1st year Geomatics Engineering student** – gokmenkurt2005@gmail.com
- **Ahmed Faruk BARDAK, 2nd year Electric-Electronic Engineering student** - ahmedfarukbardak@gmail.com
- **Ali Çağatay ÜN, Mobile Application Developer –** acagatayun@gmail.com

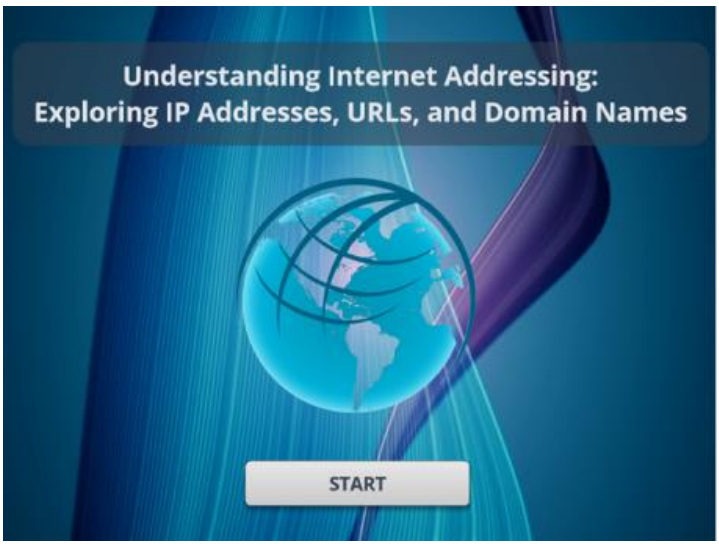
# APPENDICES

## APPENDIX A- Task/Content Analysis

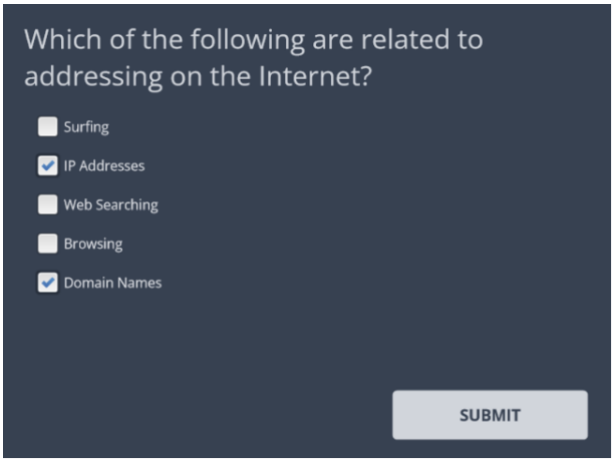


# APPENDICES

## APPENDIX B- Storyboards (25 pts)

<table>
<tr><td colspan="2">Screen for: Entry Slide<br>Screen title : Understanding Internet<br>Adressing: Exploring IP Adresses, URLs, and Domain Names</td><td>1st Slide</td></tr>
<tr><td>Links to: Introduction<br><br>Explanation: There is a question about internet addressing in order to create curiosity about the topic.<br><br>Instructional Strategy:-</td><td colspan="2" rowspan="3"> 
</td></tr>
<tr><td>Feedback: -</td></tr>
<tr><td>Assessment: -</td></tr>
<tr><td>Motivation Strategy: By creating curiosity about the topic with a entry question, we aimed to motivate learners and gain attention.</td><td colspan="2"></td></tr>
<tr><td>Audio: Text-to-speech<br><br>Interactivity: Learner starts the module by pressing “START”.</td><td colspan="2">Screen Description: There is a video plays at the background which implements this module is about technology.The header tells the topic of the module. The globe illustration with the network lines implements this module is about networkin. “START”button is replaced at the bottom of the slide to progress to next slide.</td></tr>
</table>

<table>
<tr><td colspan="2">Screen for: Introduction<br>Screen title : Introduction to the topic</td><td>2nd Slide</td></tr>
<tr><td>Links from: Entry Slide<br><br>Links to: Introduction Question<br><br>Explanation: This slide gives brief understanding about internet adressing and main topics.<br><br>Instructional Strategy: By animations and brief information about the topic we aimed to give a overall information with keeping the attention.</td><td colspan="2" rowspan="4"> 
</td></tr>
<tr><td>Feedback: -</td></tr>
<tr><td>Assessment: There will be a question about this on the next slide.</td></tr>
<tr><td>Motivation Strategy: With the content included in this slide, we aimed to give a perception about the abstract topics which is used by many people everyday but stays unknown which creates even more curiosity.</td></tr>
<tr><td>Audio: Text-to-speech<br><br>Interactivity: -</td><td colspan="2">Screen Description: There are various elements with proper animations to inform the learner about the module and the topics. The slide will automatically switches to next when timeline for this slide ends.</td></tr>
</table>

<table>
<tr><td colspan="2">Screen for: Question about introduction<br>Screen title: Introduction Question</td><td>3rd Slide</td></tr>
<tr><td>Links from: Introduction<br><br>Links to: Table of Contents Preview<br><br>Explanation: This slide contains a question about the information at introduction slide.<br><br>Instructional Strategy: The aim of the slide is keeping the learner up with the topics and enhance the engagement.</td><td colspan="2" rowspan="4"> 
</td></tr>
<tr><td>Feedback: When user gives the correct answer, text-to-speech elements congratulates the learner and skips to the next slide. When user gives a incorrect answer, text-to-speech element corrects the information about the answer and motivates the learner by saying ”Don’t worry! We still have a lot to learn!”</td></tr>
<tr><td>Assessment: Questions asks about what is related to internet addressing.</td></tr>
<tr><td>Motivation Strategy: Learners motivates either the answers correct or incorrect and module continues.</td></tr>
<tr><td>Audio: Text-To Speech<br><br>Interactivity: Learner picks the correct options and submits the questions with “SUBMIT” button.</td><td colspan="2">Screen Description: Text-to-speech element reads the question and waits for the learner to submit the answer. And there are two pages for correct and incorrect answer to provide feedback.</td></tr>
</table>

## APPENDIX C- Content Breakdown (5pts)

# 1. Introduction

1. Welcome, purpose, learning objectives, navigation tips
2. Author and course info

# 2. IP Addresses (12 Screens)

**Screen Breakdown:**

1. What is an IP address? (definition + purpose)
2. IP address in real life: your device & the Internet
3. Structure of IPv4
4. Structure of IPv6
5. Comparison: IPv4 vs IPv6
6. Why we moved to IPv6 (address exhaustion)
7. Static vs. dynamic IP addresses
8. Public vs. private IP addresses
9. NAT (Network Address Translation) explained visually
10. How IPs help devices communicate
11. Common misconceptions about IP addresses
12. Summary of IP section with diagram linking key points

**Interactivity for IP Section (included in 3 extra screens, not counted):**

- Drag & drop: classify Ips
- Multiple-choice: IPv6 format recognition
- Visual match: private vs public IP

# 3. Domain Names (12 Screens)

**Screen Breakdown:**

1. What is a domain name? (definition and examples)
2. Parts of a domain (TLD, SLD, etc.)
3. Examples of domain types (.com, .org, .edu)
4. How domain names make web browsing easier
5. How to register a domain (domain registrars)
6. How DNS (Domain Name System) works – intro
7. DNS hierarchy: root, TLD, name servers
8. DNS resolution – full step-by-step animation
9. Real-world analogy (e.g., domain name = contact name)
10. The role of ICANN and IANA
11. Expired domains & DNS errors
12. Summary screen: domain name → DNS → IP visual chain

**Interactivity for Domain Section (in 3 more screens):**

- Matching game: TLDs to function (.gov → government)
- Scenario: simulate a DNS resolution
- Drag/drop: arrange DNS resolution steps in order

## 4. URLs (12 Screens)

**Screen Breakdown:**

1. What is a URL? (definition and purpose)
2. Why URLs matter for users and developers
3. Structure of a URL (protocol, domain, path, parameters)
4. Example breakdown: https://www.example.com/index.html?id=4
5. What is HTTPS and why is it important?
6. URL encoding: what is %20?
7. Deep linking: linking to specific content in apps/websites
8. Absolute vs. relative URLs
9. URL shorteners: how they work
10. Security concerns: phishing URLs
11. Best practices for safe & clear URL design
12. Summary: anatomy of a functional URL

**Interactivity for URL Section (in 3 more screens):**

- Label each part of a given URL
- Pick the secure URL among options
- Arrange segments to form a valid URL

## 5. Review Section (3 Screens)

- Model Overview
- Concept Map
- Real-Life Application

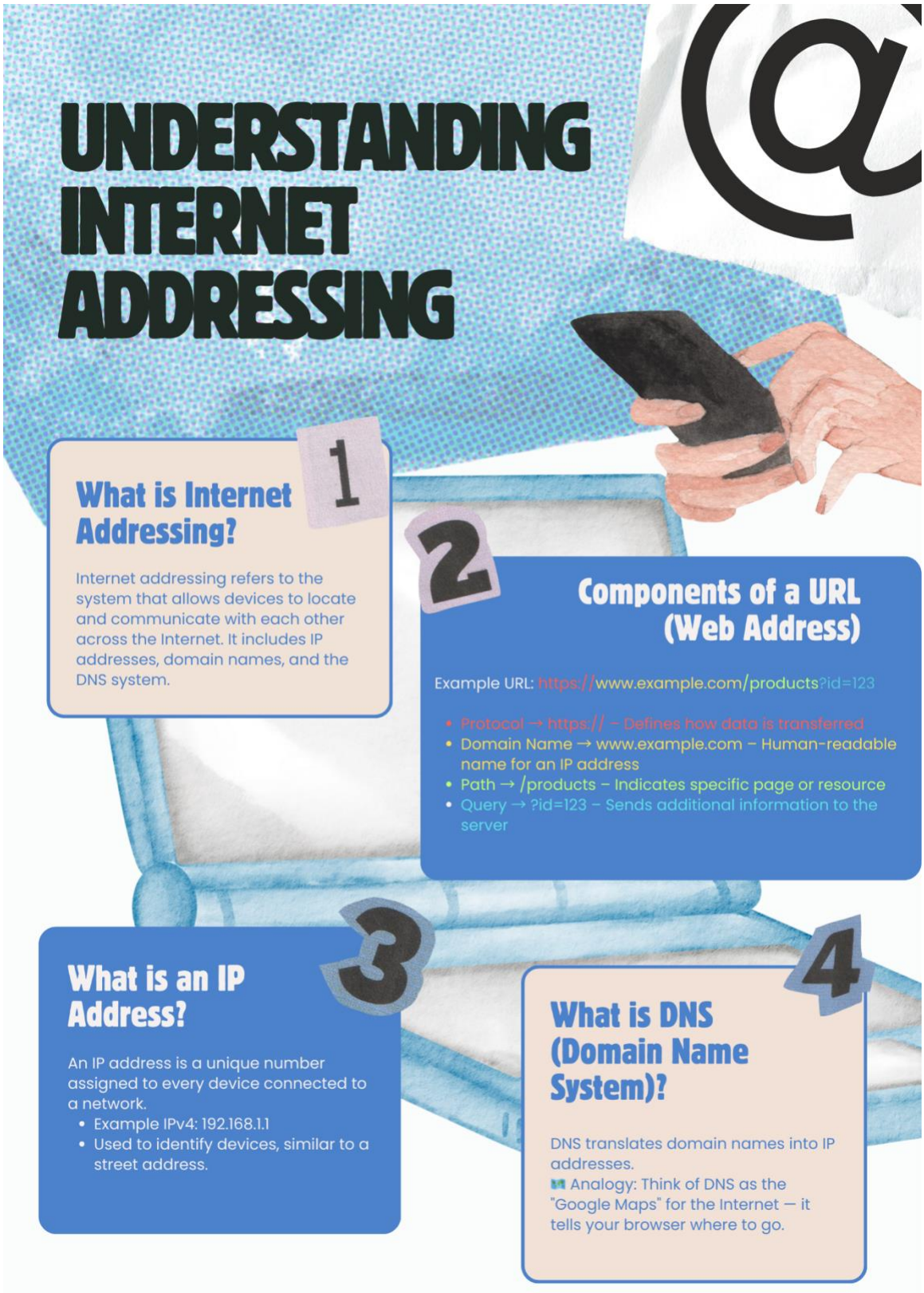
## 6. Final Assessment (3 Screens – without question pages)

- 25 questions quiz across topics
- Multiple choice, drag-drop, sorting tasks

## 7. Outro (1 Screen)

- Thank you message
- Group member contacts
- References screen (APA formatted)

## APPENDIX D- Visual Sketches of Additional Material (5 pts)



# APPENDIX E- Assessment Checklists/Rubrics (20 pts)

**Performance Rubric for Online Module (Articulate Storyline)**

| Objective Assessed | Assessment Type | Proficiency (Full Marks) | Partial Proficiency | Not Achieved (1 pt) |
|---|---|---|---|---|
| Identify components of a URL | Drag-and-drop | Correctly places all labels (protocol, domain, path, etc.) with no error | Labels 3–4 items correctly | Labels 2 or fewer items; major confusion |
| Differentiate IPv4 and IPv6 addresses | Multiple response | Selects at least 2 pros and 2 cons for each address type | Selects partial pros/cons with minor confusion | Incorrect selections; no distinction shown |
| Sequence DNS resolution steps | Ordering activity | All steps placed in correct order (Client → DNS → Resolver → IP) | Minor reordering error (1–2 items misplaced) | Steps significantly out of order |
| Recognize secure vs. suspicious URLs | Scenario-based multiple choice | Correctly identifies secure and malicious links across all items | Identifies most but shows some uncertainty | Misidentifies safe vs. unsafe links |
| Apply URL best practices to improve readability/safety | True/false + Fill-in-the-blank | Recognizes correct format (hyphens, HTTPS, clear paths) and writes own correct sample | Recognizes partially; misses 1–2 formatting principles | Chooses poor format or unsafe design |

**Final Grading Conversion Suggestion**

| Combined Score (out of 30) | Grade Level |
|---|---|
| 27–30 | Excellent |
| 23–26 | Good |
| 18–22 | Satisfactory |
| Below 18 | Needs Improvement |

# APPENDIX F- Instruments

### 1. Usability Observation Checklist

| Item | Observed (Yes/No) | Comments |
|---|---|---|
| **Learner locates and clicks the Start Module button.** | **[ ] Yes [ ] No** | _____ |
| **Learner navigates through IP, Domain, and URL sections smoothly.** | **[ ] Yes [ ] No** | _____ |
| **Learner engages with at least two interactions (e.g., drag/drop, quiz).** | **[ ] Yes [ ] No** | _____ |
| **Learner identifies all URL components in activity.** | **[ ] Yes [ ] No** | _____ |
| **Learner completes the graded quiz at the end.** | **[ ] Yes [ ] No** | _____ |
| **Learner watches/reads at least one DNS explanation slide.** | **[ ] Yes [ ] No** | _____ |
| **Learner uses the feedback messages to revise an incorrect answer.** | **[ ] Yes [ ] No** | |

### 2. Semi-Structured Interview Protocol

Use the following questions to gather feedback after learners complete the module:

1. What part of the module helped you understand Internet addressing the most?
2. Was there anything you found confusing or unclear (e.g., IP, DNS, URL parts)?
3. How did the visuals and narration affect your understanding?
4. Did you feel the interactions (drag-and-drop, quizzes) were useful and fair?
5. Did the quiz reflect what you learned in the module?
6. If you could improve one part of the module, what would it be and why?
7. Do you feel more confident identifying or evaluating a URL after this lesson?