Digital Literacy

S.L.O. # 7
Sub Topics: 3 Total SLO: 8
MCQ: (4) 4 Marks CRQ: (0) 0 Marks ERQ: (0) 0 Marks

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7.1 Introduction to Digital Literacy

SLO	Students should be able to	Cognitive Level
7.1.1	describe digital literacy and its importance;	U
7.1.2	explain the role of digital literacy in academic and everyday life;	U

SLO 7.1.1 U

describe digital literacy and its importance;

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Digital Literacy and Its Importance;

SLO 7.1.1 U

- Digital Literacy refers to the ability to effectively and critically use digital technologies, tools, and resources to find, evaluate, create, and communicate information.
- It involves skills such as using computers, smartphones, and the internet, understanding digital content, staying safe online, and adapting to new digital environments.

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Digital Literacy and Its Importance;

SLO 7.1.1 U

Importance of Digital Literacy:

1. Access to Information: Digital literacy enables individuals to access a vast amount of information quickly and efficiently through the internet.
2. Effective Communication: It allows people to communicate and collaborate through digital platforms like email, social media, and video calls.
3. Workplace Competency: In most modern jobs, digital skills are essential for productivity, data management, and remote working.
4. Critical Thinking and Evaluation: It helps users critically evaluate the credibility of online information, avoiding misinformation and fake news.
5. Digital Safety: Being digitally literate promotes awareness of online security, privacy protection, and ethical use of technology.
6. Empowerment and Inclusion: Digital literacy bridges the digital divide, providing more people with equal opportunities to participate in the digital economy and society.
7. Lifelong Learning: It supports continuous learning by enabling individuals to access online courses, tutorials, and resources.

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SLO 7.1.2 U

explain the role of digital literacy in academic and everyday life;

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Role of Digital Literacy in Academic

SLO 7.1.2 U

1. Access to Educational Resources: Digital literacy allows students to efficiently find and use online libraries, academic journals, e-books, and learning platforms, greatly expanding their research capabilities.
2. Effective Learning and Collaboration: Students can participate in virtual classrooms, online discussions, group projects, and use educational software, enhancing engagement and collaboration regardless of physical location.
3. Critical Evaluation of Information: Digital literacy teaches students to assess the reliability and credibility of online sources, helping them avoid plagiarism and misinformation.
4. Skill Development: Many academic tasks require digital skills such as creating presentations, using spreadsheets, and typing essays, which are all part of digital literacy.
5. Preparation for Future Careers: Being digitally literate prepares students for the demands of modern workplaces where digital tools and communication are fundamental.

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Role of Digital Literacy in everyday Life

SLO 7.1.2 U

1. Communication: Digital literacy enables effective communication through emails, social media, messaging apps, and video calls, helping maintain social connections.
2. Access to Services: It facilitates access to online banking, shopping, government services, healthcare information, and other essential services available digitally.
3. Information and Entertainment: People can easily access news, entertainment, educational content, and hobby-related information on digital platforms.
4. Managing Daily Tasks: Digital skills help with organizing schedules, setting reminders, and using smart devices for home management.
5. Safety and Privacy: Digital literacy helps individuals recognize online scams, protect personal data, and navigate privacy settings on various platforms.
6. Empowerment: It enables participation in digital communities, advocacy, and lifelong learning opportunities that improve quality of life.

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7.2 Introduction to Advanced Search Techniques

SLO	Students should be able to	Cognitive Level
7.2.1	describe advanced search techniques and their importance;	U
7.2.2	differentiate between basic and advanced searches;	U

SLO 7.2.1 U

describe advanced search techniques and their importance;

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Advanced Search Techniques

SLO 7.2.1 U

- Advanced search techniques are specialized methods and tools used to improve the accuracy and efficiency of finding information on the internet or within databases.
- These techniques go beyond simple keyword searches to filter, narrow, or expand results effectively.

Advanced Search Techniques

SLO 7.2.1 U

Common advanced search techniques include:

- Boolean Operators: Using AND, OR, NOT to combine or exclude keywords (e.g., "cats AND dogs" finds pages with both terms).
- Quotation Marks: Searching for an exact phrase by enclosing it in quotes (e.g., "climate change effects").
- Wildcard and Truncation: Using symbols like * or ? to find variations of a word (e.g., educat* finds educate, education, educator).
- Site-Specific Search: Searching within a particular website using site: (e.g., site:edu searches only educational domains).
- File Type Search: Finding specific file formats using filetype: (e.g., filetype:pdf).
- Using Minus Sign (-): Excluding terms (e.g., jaguar -car to exclude car-related results).Search Filters: Applying date ranges, language preferences, region, or usage rights.
- Proximity Searches: Finding words that appear close to each other, supported in some databases.
- Using Metadata: Searching through titles, URLs, or authors specifically (e.g., intitle:technology).

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Advanced Search Techniques: Importance

SLO 7.2.1 U

- Efficiency: They save time by quickly narrowing down to the most relevant information without sifting through irrelevant results.
- Precision: Help users find exactly what they need, especially when researching complex topics or specific data.
- Better Research Quality: Enables deeper, more comprehensive searches critical in academic, professional, and technical fields.
- Avoiding Misinformation: Helps in filtering out unreliable sources by targeting trusted domains or file types.
- Customized Results: Tailors search results to the user's exact needs, such as recent updates, certain formats, or specific websites.
- Maximizing Search Engines and Database Capabilities: Utilizes the full power of search engines beyond simple queries, unlocking hidden or specialized information.

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SLO 7.2.2 U

differentiate between basic and advanced searches;

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Basic vs Advanced Searches

SLO 7.2.2 U

Feature	Basic Search	Advanced Search
Complexity	Simple and intuitive, suitable for general queries.	Requires understanding of operators and filters.
Precision	Broad, general results with less specificity.	Highly refined results tailored to specific needs.
Efficiency	Can be time-consuming due to irrelevant results.	Saves time by narrowing down results quickly.
Operators Used	None or very minimal (e.g., spaces between words).	Use of Boolean operators, filters, and syntax.
Knowledge Required	Minimal digital literacy knowledge required.	Requires higher digital literacy and search skills.
Result Quality	May include unreliable or irrelevant sources.	Targeted and often more reliable, specific results.

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7.3 Designing Data-Collection Approaches

SLO	Students should be able to	Cognitive Level
7.3.1	describe the following data collection methods: a. qualitative, b. quantitative;	U
7.3.2	discuss the use of prototypes and simulations in data collection, including their purpose and advantages;	E
7.3.3	design a data-collection plan using qualitative interviews by: a. formulating research questions, b. developing interview guides and protocols;	C
7.3.4	create surveys for quantitative data collection by: a. writing clear and unbiased survey questions, b. selecting appropriate survey platforms and tools.	C

SLO 7.3.1 U

describe the following data collection methods:

a. qualitative,
b. quantitative;

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Data Collection Methods

SLO 7.3.1 U

- Data collection is a crucial part of research, and it is typically classified into two broad categories: qualitative and quantitative methods.
- Both methods have distinct approaches and are used for different purposes, depending on the nature of the research and the type of data needed.
- Qualitative methods are particularly valuable for exploring complex phenomena, emotions, and social contexts, while quantitative methods are ideal for measuring variables, identifying patterns, and making statistical generalizations.

Data Collection Methods

SLO 7.3.1 U

a. Qualitative Data Collection

- Definition: Qualitative data collection refers to the process of gathering non-numeric data, often used to understand concepts, experiences, or phenomena in a deeper, more descriptive way. It is exploratory and focuses on capturing the richness of human experiences, behaviors, and social interactions.
- Example: A researcher studying student experiences in online education may conduct interviews with a small group of students to understand their personal challenges, perceptions, and emotional responses to virtual learning.

Data Collection Methods

SLO 7.3.1 U

a. Qualitative Data Collection

- Characteristics of Qualitative Data:
  - Descriptive and Detailed: Involves collecting data that provides a rich, deep understanding of a particular topic.
  - Open-ended: Responses are often unstructured or semi-structured, allowing participants to express themselves freely.
  - Subjective: Data often involves individual perspectives, emotions, and interpretations, which can vary greatly between participants.
  - Small sample sizes: Typically involves smaller, more focused samples, often chosen purposively.
  - Contextual Focus: The emphasis is on understanding the context in which behaviors or phenomena occur.

Data Collection Methods

SLO 7.3.1 U

a. Qualitative Data Collection

- Methods of Qualitative Data Collection:
  - Interviews: One-on-one or group interviews where participants provide detailed responses to open-ended questions. Can be structured, semi-structured, or unstructured.
  - Focus Groups: A group discussion where a moderator guides participants through a set of open-ended questions to explore perceptions, attitudes, and ideas.
  - Observations: The researcher observes subjects in their natural environment, noting behaviors, interactions, or conditions relevant to the study.
  - Case Studies: An in-depth examination of a specific case (individual, group, event) to gather detailed information and insights.
  - Content Analysis: Analyzing the content of media (e.g., texts, videos, social media posts) to identify patterns, themes, and meanings.

Data Collection Methods

SLO 7.3.1 U

b. Quantitative Data Collection

- Definition: Quantitative data collection refers to the process of gathering numeric data that can be quantified and subjected to statistical analysis. It focuses on measuring variables and drawing conclusions based on numerical comparisons, relationships, or trends.
- Example: A researcher studying the effectiveness of a new drug may use a controlled experiment with two groups: one receiving the drug and the other a placebo. After a defined period, the data is collected on the health outcomes (such as blood pressure or cholesterol levels) and analyzed statistically.

Data Collection Methods

SLO 7.3.1 U

b. Quantitative Data Collection

- Characteristics of Quantitative Data:
  - Numeric and Measurable: Data collected is in numerical form, allowing it to be analyzed mathematically or statistically.
  - Objective: The data is typically seen as more objective, as it aims to minimize researcher bias and subjectivity.
  - Large Sample Sizes: Often involves large, random samples to ensure the results are generalizable to a larger population.
  - Structured: Uses fixed, pre-defined instruments (like surveys or tests) to collect data in a standardized way.

Data Collection Methods

SLO 7.3.1 U

b. Quantitative Data Collection

- Methods of Quantitative Data Collection:
  - Surveys/Questionnaires: A set of standardized questions with predefined response options, such as Likert scales (e.g., strongly agree, agree, disagree). Can be administered online, via phone, or in person.
  - Experiments: Controlled experiments in which variables are manipulated to observe their effect on other variables. This can be done in a lab setting or in the field.
  - Observations (Structured): Unlike qualitative observations, quantitative observations are highly structured, with predefined categories to count or measure specific behaviors or events.
  - Tests/Assessments: Standardized tests or assessments used to collect data on academic performance, health outcomes, etc. Examples include IQ tests or medical diagnostic tests.
  - Secondary Data Analysis: Using existing numerical data from sources such as government statistics, census data, or financial reports for research purposes.

SLO 7.3.2 E

discuss the use of prototypes and simulations in data collection, including their purpose and advantages;

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Use of Prototypes and Simulations in Data Collection

SLO 7.3.2 E

- Prototypes and simulations are increasingly being used in data collection processes across various fields like product design, engineering, healthcare, education, and social sciences. Both methods provide a way to gather data in controlled, repeatable, and often safe environments, allowing researchers to test hypotheses, collect feedback, and analyze outcomes before full-scale implementation or real-world application.

Prototypes in Data Collection

SLO 7.3.2 E

- Definition: A prototype is an early version or model of a product, system, or process that is created to test its design, functionality, and usability. Prototypes can be physical models (e.g., in product design) or digital representations (e.g., in software development or web design).
- Purpose of Prototypes in Data Collection:
  - Test Usability: Prototypes allow researchers to observe how users interact with a product or system and gather data on usability issues.
  - Assess Design Feasibility: They provide an opportunity to test the viability of a design before investing in full-scale production.
  - Gather User Feedback: Prototypes are used to collect qualitative data from users, stakeholders, or potential customers on features, design preferences, and functionality.
  - Identify Problems Early: Prototypes help identify issues early in the development process, reducing the cost of fixing problems later.

Prototypes in Data Collection

SLO 7.3.2 E

- Advantages of Prototypes in Data Collection:
  - Realistic Feedback: Provides tangible feedback from users or stakeholders by allowing them to interact with a working version of the product.
  - Cost-Effective Testing: Testing with a prototype is often cheaper and quicker than making changes to a fully developed product.
  - Iterative Improvement: Prototypes enable iterative testing and refinement, leading to continuous improvement based on real data and insights.
  - Better Decision Making: Helps teams make informed decisions about design, features, and market fit by providing empirical evidence from prototype testing.
- Example: In software development, creating a prototype of an app allows developers to collect data on user interface (UI) interaction, identify bugs or design flaws, and adjust features before developing the final version.

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Simulations in Data Collection

SLO 7.3.2 E

- Definition: A simulation is a technique that replicates real-world processes or systems to study their behavior under various conditions. Simulations are often used in contexts where real-world testing is too risky, expensive, or impractical. They can be mathematical models, computer-based representations, or physical setups designed to imitate the system being studied.
- Purpose of Simulations in Data Collection:
  - Replicate Complex Systems: Simulations allow researchers to replicate real-world processes or phenomena, such as economic models, traffic flow, or clinical outcomes.
  - Test Hypotheses Under Controlled Conditions: They help researchers test different scenarios and variables in a controlled environment without real-world consequences.
  - Predict Outcomes: Simulations can be used to predict future behavior or outcomes by modeling various input variables and observing the results.
  - Train and Educate: In fields like healthcare and aviation, simulations are used to train individuals in high-risk environments (e.g., surgeries or flying an aircraft) without endangering anyone.

Simulations in Data Collection

SLO 7.3.2 E

- Advantages of Simulations in Data Collection:
  - Risk-Free Testing: Simulations allow researchers to explore scenarios that would be dangerous, expensive, or impossible to recreate in the real world.
  - Cost-Effective: In fields like aviation or military training, simulations can reduce costs by providing realistic training without the need for physical resources (e.g., aircraft or military equipment).Controlled Environment: Researchers have full control over variables, which makes it easier to isolate specific factors and observe their effects.
  - Real-Time Data Collection: Simulations can provide real-time feedback, allowing researchers to make immediate adjustments and analyze outcomes instantly.
  - Scalability: Simulations can handle large amounts of data and test multiple scenarios simultaneously, which would be challenging or impractical in real-world experiments.
- Example: In urban planning, simulations are used to model traffic patterns, assess the impact of new roads or public transportation systems, and predict traffic congestion in various scenarios.

SLO 7.3.3 C

design a data-collection plan using qualitative interviews by:

a. formulating research questions,

b. developing interview guides and protocols;

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Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

- Designing a data collection plan with qualitative interviews involves carefully formulating research questions and developing interview guides and protocols.

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Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

a. Formulating Research Questions

The first step in designing a data collection plan is to develop research questions that guide the qualitative interviews. These questions should be open-ended, exploratory, and designed to collect rich, in-depth data. The research questions will vary depending on the topic, but they should focus on understanding participants' experiences, opinions, and perceptions.

- Example Research Topic: "The Impact of Remote Learning on Student Engagement During the COVID-19 Pandemic“

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

a. Formulating Research Questions

- Research Questions:
  - How has your experience with remote learning during the COVID-19 pandemic affected your level of engagement with the coursework?
  - What challenges did you face while participating in remote learning, and how did they impact your motivation?
  - Can you describe any strategies or methods that helped you stay engaged during remote learning?
  - What differences do you perceive in your learning experience between traditional in-person classes and remote learning?
  - How do you feel about the future of education post-pandemic? Do you think remote learning will remain a viable option?
  - What kind of support (technical, emotional, academic) would have helped you stay more engaged during remote learning?
  - These research questions are designed to explore students' subjective experiences, emotions, and behaviors related to remote learning, focusing on engagement and motivation.

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols

An interview guide is a flexible framework for conducting interviews, while an interview protocol includes detailed instructions for the interviewer. Both tools are essential for ensuring consistency, clarity, and the effective gathering of data.

1. Interview Guide

The interview guide provides a list of questions, organized by themes or topics, to ensure the interview covers all relevant areas. The guide allows the interviewer to maintain flexibility in the conversation, adapting to each participant's responses.

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 1. Interview Guide

- Example Interview Guide:
  - Introduction:
    - Greeting & Explanation: "Thank you for participating in this interview. We're exploring the impact of remote learning during the COVID-19 pandemic. Your insights will help us understand the challenges and benefits you experienced. This interview will last about 30-45 minutes, and your responses will remain confidential. "
    - Informed Consent: "Before we start, I'd like to confirm that you are comfortable with the interview being recorded for research purposes."

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 1. Interview Guide

- Example Interview Guide:
  - Interview Questions:
    - Theme 1: General Experience with Remote Learning
      - How would you describe your overall experience with remote learning during the pandemic?
      - Can you tell me about a specific moment or experience that stands out to you during remote learning?
    - Theme 2: Engagement and Motivation
      - How would you rate your level of engagement with coursework during remote learning?
      - Can you explain why you feel that way?
      - What factors contributed to you feeling more or less engaged in remote learning?
      - Can you describe any strategies or habits that helped you stay motivated?

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Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 1. Interview Guide

- Example Interview Guide:
  - Interview Questions:
    - Theme 3: Challenges
      - What were the biggest challenges you encountered with remote learning, and how did you handle them?
      - Did you experience any difficulties with technology, such as access to a stable internet connection or required devices?
    - Theme 4: Support and Resources
      - What kind of support, either academic, emotional, or technical, would have helped you during remote learning?
      - Were there any resources provided by your institution that you found helpful? How could they have been improved?

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 1. Interview Guide

- Example Interview Guide:
  - Interview Questions:
    - Theme 5: Future of Education
      - Looking ahead, do you believe remote learning should remain a part of education after the pandemic?
      - Why or why not?
      - What recommendations would you offer to educators or institutions to improve remote learning experiences in the future?

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols

2. Interview Protocol

The interview protocol outlines detailed procedures to ensure interviews are conducted in a consistent, ethical, and systematic manner. It includes guidelines for preparing, conducting, and closing the interview.

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 2. Interview Protocol

Example Interview Protocol:

- Pre-Interview Preparation:
  - Recruit Participants: Ensure that participants meet the study criteria (e.g., enrolled in remote learning during the pandemic).
  - Obtain Consent: Email the participants a consent form to review, sign, and return before the interview.
  - Set up the Interview Environment: If conducted remotely, check technical equipment (audio, video) beforehand. For in-person interviews, ensure a quiet, private setting.

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 2. Interview Protocol

Example Interview Protocol:

- Conducting the Interview:
  - Introduction (5 minutes):
    - Greet the participant and introduce yourself.
    - Explain the study's purpose, confidentiality, and the voluntary nature of participation.
    - Obtain informed consent for recording and using the data.

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 2. Interview Protocol

Example Interview Protocol:

- Conducting the Interview:
  - Main Interview (25-35 minutes):
    - Begin with easy, open-ended questions to build rapport and ease the participant into the conversation.
    - Ask the questions as written in the interview guide, allowing room for follow-up questions based on the participant's responses.
    - Use active listening to ensure full understanding and avoid interrupting.
    - Use prompts like "Can you elaborate on that?" or "What was that experience like?" to encourage deeper reflection.

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 2. Interview Protocol

Example Interview Protocol:

- Conducting the Interview:
  - Closure (5 minutes):
    - Thank the participant for their time and valuable input.
    - Ask if they have anything else to add or any further thoughts they wish to share.
    - Reiterate the confidentiality of their responses and assure them that they can contact you for any follow-up questions.

Data Collection Plan Using Qualitative Interviews

SLO 7.3.3 C

b. Developing Interview Guides and Protocols 2. Interview Protocol

Example Interview Protocol:

- Post-Interview:
  - Transcription: Transcribe the interview as soon as possible, capturing the exact words used by the participant.
  - Data Management: Store all data securely, ensuring that only authorized individuals have access.
  - Follow-Up: Contact participants if additional clarification or information is needed for data analysis.

SLO 7.3.4 C

create surveys for quantitative data collection by:
a. writing clear and unbiased survey questions,
b. selecting appropriate survey platforms and tools.

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Survey for Quantitative Data Collection

SLO 7.3.4 C

- To create a robust quantitative survey, it is important to follow specific steps to ensure that the questions are clear, unbiased, and appropriate for the data collection objectives. Additionally, selecting the right survey platforms and tools is essential for reaching your target audience and efficiently collecting the data.

Survey for Quantitative Data Collection

SLO 7.3.4 C

a. Writing Clear and Unbiased Survey Questions

Survey questions must be designed carefully to ensure that they are clear, focused, and unbiased. Each question should have a specific purpose in gathering data and should be phrased in a neutral tone to avoid leading respondents toward a particular answer.

- Example Survey Topic: "Customer Satisfaction with Online Shopping Experience"

Survey for Quantitative Data Collection

SLO 7.3.4 C

a. Writing Clear and Unbiased Survey Questions

- Key Principles in Writing Questions:
  - Clear and Simple Language: Use simple and straightforward language that can be easily understood by all respondents.
  - Avoid Leading Questions: Ensure questions are neutral, not pushing respondents toward a certain answer.
  - Avoid Double-Barreled Questions: Do not ask two different questions in one (e.g., "How satisfied are you with the product quality and delivery time?").
  - Balance the Scale: Use balanced Likert scales with both positive and negative options.

Survey for Quantitative Data Collection

SLO 7.3.4 C

b. Selecting Appropriate Survey Platforms and Tools

Choosing the right survey platform depends on factors like your target audience, budget, and the type of data you want to collect.

- For Small-Scale Surveys: If you're conducting a small survey with basic needs, Google Forms or Microsoft Forms are great, cost-effective options.
- For Customization and Professional Use: If you need to create detailed surveys with advanced features and logic, consider using SurveyMonkey, Typeform, or Qualtrics.
- For High-Engagement Surveys: If you want your survey to be more visually engaging and interactive, Typeform is an excellent choice.

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