



Surigao del Norte National High School

Senior High School, Surigao City



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Chapter 2

METHODOLOGY

This chapter discusses the research design, tools-materials-and software, research locale, and the data gathering procedures used in developing the E-tutor Learning Portal. It includes the planning, creation, and testing of the system, as well as the steps taken to gather data and analyze the results.

Research Design

The study utilized developmental research design, incorporating elements of Action Research, to systematically design, create, and evaluate an e-tutor learning portal intended as a supplementary learning resource for students and teachers in modular and online learning environments. This approach was chosen to allow for iterative cycles of design, implementation, and evaluation, ensuring that the final product effectively met the needs of the target users.

The independent variable was the availability and use of the e-tutor learning portal, and the dependent variables included student performance on post-tests and student ratings of satisfaction with the learning experience.



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The development of the portal was a collaborative effort by the researchers, who utilized mobile devices at home and applied basic web development technologies, including HTML, CSS, JavaScript, and php for backend coding to build a functional and user-friendly interface. The design was guided by principles of constructivism, emphasizing active learning and student engagement.

The development process involved three main stages: (1) a needs analysis to identify key learning challenges; (2) the design and creation of the portal's features and content; and (3) iterative testing and refinement based on user feedback.

This design allowed the researchers to observe how the target users interacted with the developed portal and ensured that the final output met their needs in terms of accessibility, functionality, usability, and relevance to modular and online learning. The iterative nature of the design also allowed for continuous improvement based on real-world user feedback.



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Tools—Materials and Software



Mobile Device The primary device used for the study was a mobile phone. It served as the main platform for coding, testing, and accessing files, providing both portability and convenience throughout the development process.



Internet A stable internet connection was essential for the study. It enabled access to online resources, tutorials, and references. Furthermore, it facilitated the uploading and synchronization of project files to online platforms.



Spck Spck, a mobile integrated development environment (IDE), was employed as the primary tool for writing and debugging code. It allowed the researchers to execute the development of the project by creating and



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modifying HTML, CSS, and JavaScript files directly through a mobile device.



HTML (Hypertext Markup Language): for creating the structure and content of the website.

CSS (Cascading Style Sheets): for designing and styling the layout to make it more presentable.

JavaScript (JS): for adding interactive features and making the project more dynamic.

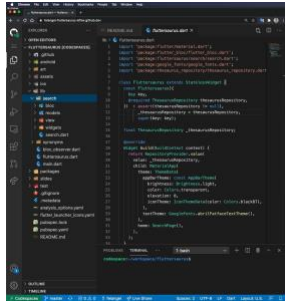


GitHub GitHub was used as a version control and code management platform. It provided a reliable repository where project files were stored, updated, and maintained. This tool ensured data security, organization, and accessibility among the members of the research team.



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Codespace The researchers also used GitHub Codespaces, a cloud-based development environment. It gave the researchers a full coding setup online where the researchers could test and run their project. This was especially helpful in making their workflow smoother and more collaborative.



Infinityfree For deployment, the researchers used InfinityFree, a free web hosting platform. This is where the researchers temporarily published their project to make it available online. It supported:



PHP (Hypertext Preprocessor): which the researchers used for backend functions and data processing.



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Research Locale

The research was conducted at Surigao del Norte National High School (SNNHS), located along Peñaranda Street in Surigao City, Surigao del Norte province. This institution operates under the supervision of the Department of Education (DepEd) and is recognized as one of the largest public secondary schools in the division, serving learners from diverse communities within the 2nd District of Surigao del Norte.

Surigao del Norte National High School is situated in an urban setting yet surrounded by greenery, providing a balanced atmosphere of accessibility and a conducive environment for learning. The school is equipped with classrooms, computer facilities, and other educational resources that support both traditional and technology-aided instruction. These facilities made it an appropriate setting for the development and testing of the E-Tutor Learning Portal, ensuring its relevance as a supplementary resource for modular and online learning.

The school's administration, teaching staff, and student body were instrumental in providing valuable feedback for the system's development. The coordinates of the research locale are approximately 9.78563° N, 125.49289° E, as determined using GPS. The location of the institution is illustrated in Figure 2.



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Figure 2. Map of Surigao del Norte

<https://maps.app.goo.gl/2sJJwepQrJtkQvSN8>



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Data Gathering Procedure

The data gathering procedure for this research focused on the systematic development of the e-tutor learning portal. The following steps were undertaken to ensure that the portal was properly planned, created, tested, and deployed:

Part I : Planning the Tools—Materials and Software

The researchers first identified the tools and software necessary for building the portal. Mobile devices were chosen as the primary workstations, while Spck was selected as the integrated development environment (IDE). GitHub and GitHub Codespaces were decided upon for version control and collaborative coding, while InfinityFree was chosen as the hosting platform.

Part II : Coding and Development

Using Spck on mobile devices, the researchers wrote and tested the source code. HTML was used to build the website's structure, CSS was applied for design and layout, JavaScript was added for interactivity, and PHP was utilized for backend processing. This step ensured that the website had both functional and presentable features.

Part III : File Management and Collaboration

The developed codes were uploaded to GitHub for safe storage, version tracking, and collaboration. GitHub Codespaces was also used as a cloud-based environment to run, test, and refine the project more efficiently. This allowed the group members to work together and update the portal simultaneously.



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Part IV : Deployment of the Portal

After the codes were finalized, the researchers deployed the website using InfinityFree. This free hosting service made the portal accessible online, enabling both teachers and students to visit and test its functions. This step was crucial for making the project available for pilot testing and evaluation.

Part VI : Testing and Feedback Collection

Once deployed, the portal was tested by selected teachers and students from Surigao del Norte National High School. Teachers uploaded sample learning materials, while students accessed these uploads. Feedback was collected through survey-questionnaires and observations, focusing on usability, accessibility, and the portal's potential as a supplementary learning resource.



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FLOW CHART AND GENERAL PROCEDURE

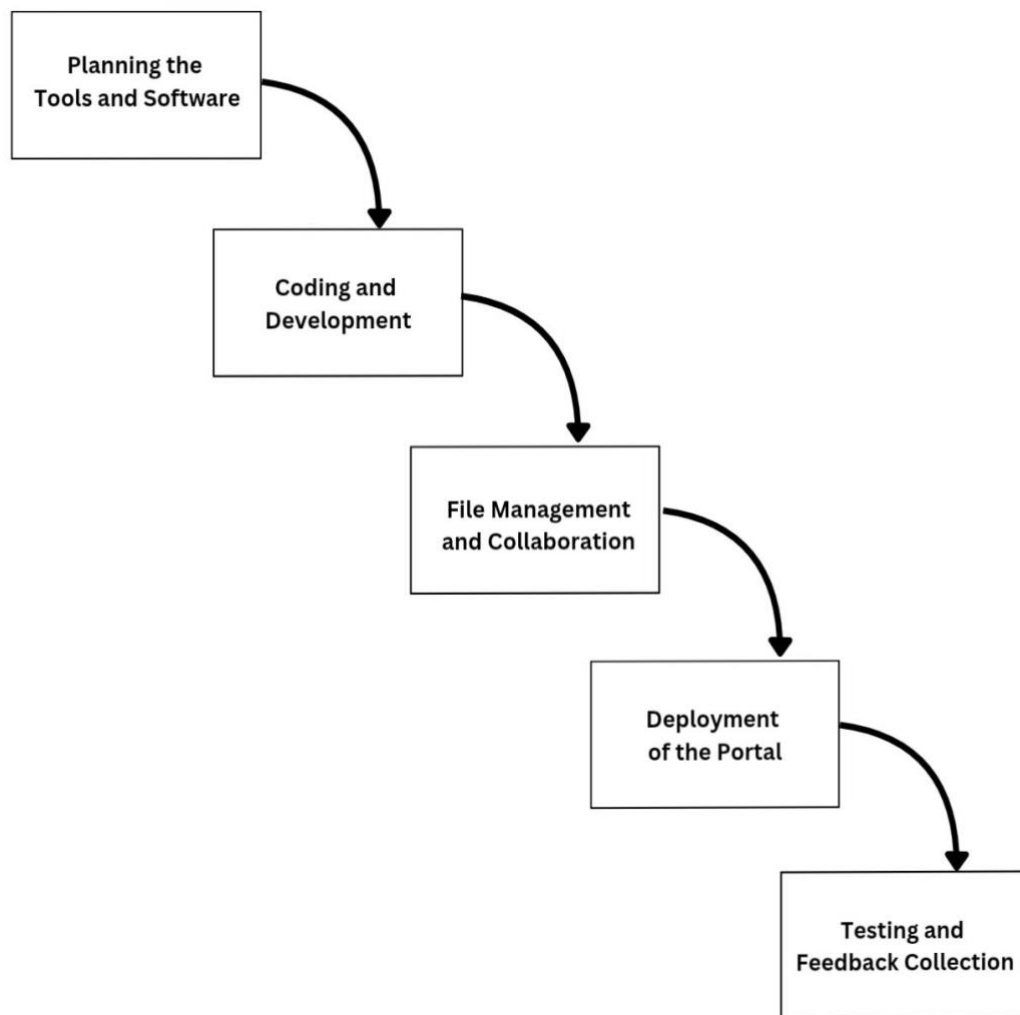


Figure 3. Flow Chart and General Procedure



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Data Analysis

To extract meaningful insights, the data from the E-tutor Learning Portal development study underwent systematic treatment and analysis. Student and teacher responses were meticulously processed, organized, and interpreted to ensure the accuracy and reliability of outcomes reflecting the portal's effectiveness and usability.

Mean and Standard Deviation

Statistical tools, including mean and standard deviation, were used to analyze the results, focusing on participant evaluations of the portal's usability, functionality, accessibility, and cost-effectiveness. The mean measured central tendency, while the standard deviation examined response variability. These tools provided insights into the consistency and reliability of user perceptions, ensuring the findings accurately represent the overall effectiveness of the E-tutor Learning Portal as a supplementary learning resource.