Wix and Design of a online certification program for lab course

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Abstract: *This article outlines the development of a web-based certification module designed to complement both blended instructional formats and traditional lab-based teaching. The program was specifically applied to a Physics practical course, utilizing the online tools available on the WIX platform. The core objective was to foster independent learning among students and to offer a viable approach for managing laboratory instruction for large student cohorts with limited teaching staff. It is important to note that this digital resource is meant to* ***enhance****, not* ***replace****, standard lab experiences. The module was effectively deployed over the course of one academic semester, targeting first-year undergraduate participants.*

Key Words: *laboratory course, Online learning, e-learning, Self-learning, Wix platform*

INTRODUCTION

Hands-on laboratory work has been an integral part of science education for over 100 years, playing a vital role in shaping scientific understanding and investigative skills. Even in modern education, practical experimentation remains essential in enabling students to apply theoretical principles in real-world contexts. Through lab-based activities, learners explore natural phenomena, interact with physical tools and instruments, interpret data, and apply scientific reasoning to develop deeper comprehension of abstract concepts.

With the evolution of digital tools and computational technology in the 21st century, the landscape of science instruction is undergoing significant transformation. Innovative methods such as digital learning platforms, mobile learning applications, and simulation-based environments are now part of regular instructional strategies. For instance, in places like Nigeria, mobile apps have been introduced in elementary classrooms to enrich educational delivery. One major advancement is the creation of virtual laboratories—digitally replicated environments that mimic traditional lab setups—where students can engage in virtual experiments, manipulate variables, and collect data, thereby enhancing their conceptual clarity.

To promote the acquisition of laboratory skills among students, a structured certification module was proposed using the WIX platform as a delivery system.

Module Framework

The online module was structured around an Applied Physics practical course. The curriculum includes twelve distinct laboratory tasks, all scheduled for completion within a single academic semester. Typically, learners are expected to perform one experiment weekly. Associated tasks such as data plotting, performing calculations, and drawing conclusions are completed either during lab hours or outside of class.

Each laboratory activity was reimagined as an independent "certificate course" within a dedicated WIX website, taking advantage of the platform's ability to host public and private learning tracks and offer monetization options. A specialized website was created exclusively for this support module.The structure of each digital lab session was divided into eight components. To deliver content effectively, the platform integrates a mix of PDFs, video tutorials, and interactive quizzes. WIX's "Courses" application was leveraged to build each individual experiment. This tool comes with a built-in syllabus designer, supports diverse instructional formats, and includes features to engage learners. The system allows educators to embed a combination of text, media, and assessments within a single lesson, providing flexibility in content delivery. Accordingly, each practical task from the Applied Physics lab was translated into a stand-alone digital learning segment on WIX.

To enrich the interactive experience, the WIX online program features a dynamic quiz builder with options such as multiple-choice, descriptive responses, and file submission. Educators can set passing thresholds for quizzes and evaluate open-ended answers along with uploaded student work.

Certification and Student Progress Monitoring

Upon finishing a course, learners receive completion certificates automatically generated by the Wix platform. These digital credentials can be tailored using pre-designed layout options. The system supports sequential learning by enabling a feature that locks the progression path, requiring students to follow each section in order without skipping. The interface layout includes a sidebar to the left for navigation, while the right panel displays the lesson details and learning content. A progress tracker updates in real time, helping students keep tabs on their advancement. Users can switch between lessons using either the sidebar or the "Complete Step" button located at the bottom of each lesson.

Wix's Online Programs module includes a fundamental analytics dashboard that provides an overview of course enrollment and average completion metrics. Instructors can also check how far individual learners have progressed. However, the system lacks in-depth analytics for things like question-level quiz analysis, video watch rates, and time-on-task metrics. Nonetheless, this level of detailed engagement data—such as time spent on video content, PDF reading duration, or quiz attempt history—can be retrieved through alternative tools and features not immediately visible in the standard interface.

Instructional Materials and Stepwise Course Design

Content for various sections like objectives, required equipment, experimental theory, and procedures was formatted in Microsoft Word and converted into PDF files for upload. Instructional videos demonstrating how to conduct each experiment were created by educators using smartphone cameras. Supplementary video clips were also made to show students how to plot sample data graphs.

The digital course structure divides each experiment into eight parts:

Section 1: Objectives & Required Tools
Learners begin by reading a document that outlines the aim of the experiment and lists the necessary apparatus. This information must be manually copied into their lab notebook.
Section 2: Theoretical Background
A detailed explanation of the concepts is given through a PDF. Students are instructed to read and extract the most important points into their observation records.
Section 3: Instructional Video
A tutorial clip demonstrates how the experiment should be performed in a lab setting. Students

are encouraged to jot down relevant steps and notes while watching.
Section 4: Methodology
Students study a PDF outlining the exact experimental procedure, then record each step by hand into their lab notebook.
Section 5: Observations Template
Circuit diagrams and data tables are provided, which students must replicate as part of their documentation process.
Section 6: Calculations & Data Visualization
Sample computations and graph plotting instructions are available in video and PDF formats. Students are expected to recreate the model graph in their notebooks after understanding the method.
Section 7: Quiz Section
A test is included with both objective-type and short-answer questions, most of which simulate typical viva voce prompts. Students must submit answers to complete this segment.
Section 8: Uploading Lab Results
Participants are required to scan and upload pages from their previous week's lab notebook, including results, calculations, and any generated graphs.

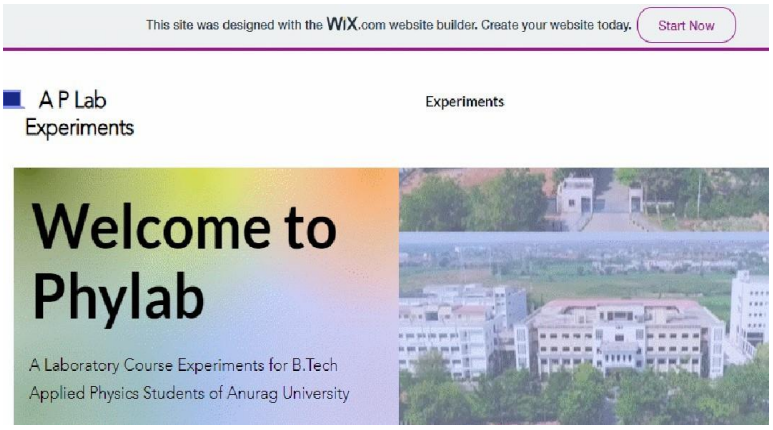
Final Certification and On-Campus Integration

Once all eight components of an experiment are completed, the system issues a confirmation certificate to the student. This document serves as evidence that the learner has met all pre-lab requirements. Students are expected to present this certificate when they arrive at the lab the following week as per their schedule. The instructor cross-checks the certificate, answers questions, and then grants permission to proceed with the experiment.

During the in-person session, students perform the hands-on experiment and document their findings in the observation book. Teachers provide assistance as needed and verify the accuracy of recorded measurements. Remaining tasks like calculations, plotting results, and drawing conclusions are completed by students during their own study time.

Results

The home page of the Wix website will be typically as shown in fig.1 below. The button Experiments takes to program which contains all the experiments.



The typical programme list with all the experiments will be displayed on the screen as shown in fig.2. Each course will display the name of the experiment, number of the participants, whether it is a paid course or not (in present case, it shows Free as no payment has to be made) and a view button. The image for the experiment is optional. This was presented in Fig.3.

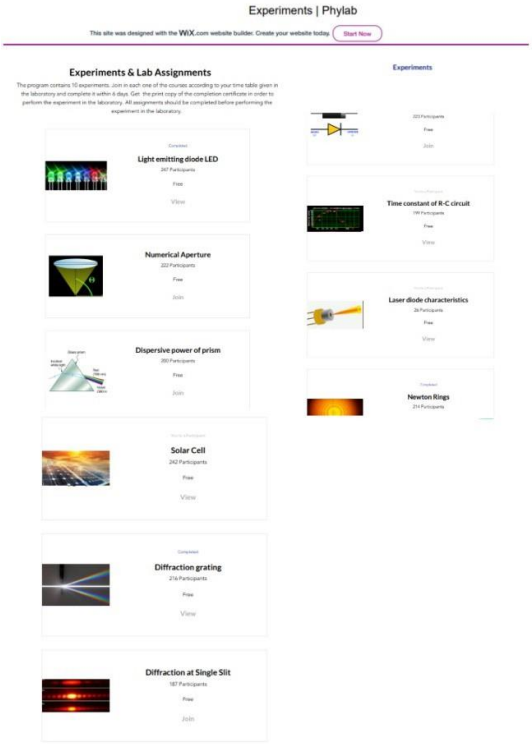


Fig.2. Screenshot of all the courses/experiments

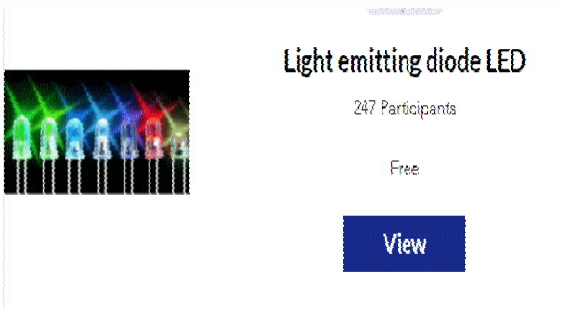


Fig.3. Display of representative course

Typical structure of each experiment and steps involved as shown in fig.4. They include Previous week, Experiment introduction, Aim and Apparatus, Theory to be known, Equipment needed, procedure to be adapted, Model readings, Model graph and Model calculations and Quiz or descriptive question.

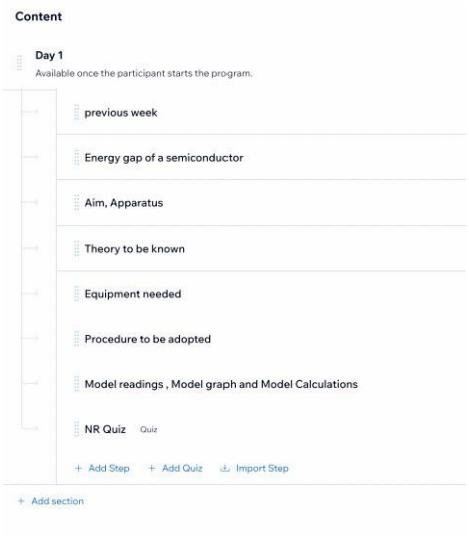


Fig.4. Steps involved in each course

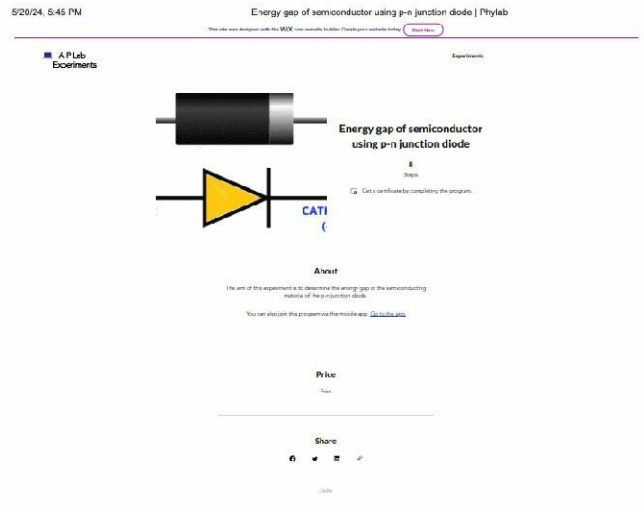


Fig.5. Initial login for each course

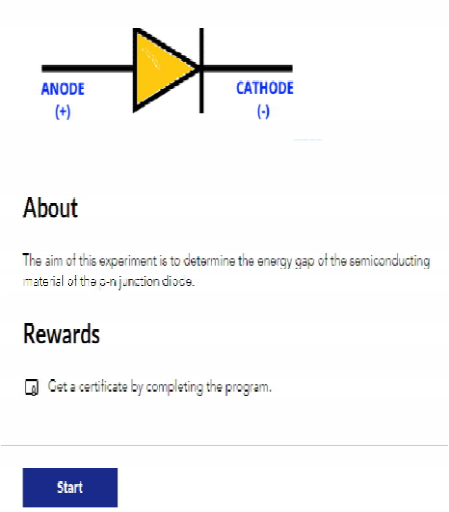


Fig.6. Start page of the course

The screen shots of all the steps involved to complete the course were presented in Fig.7. The step navigation will be displayed on the left and the contents related to that step will be displayed on the right. The contents were included as text, PDF files, video links and file uploads , descriptive questions or Quizzes.

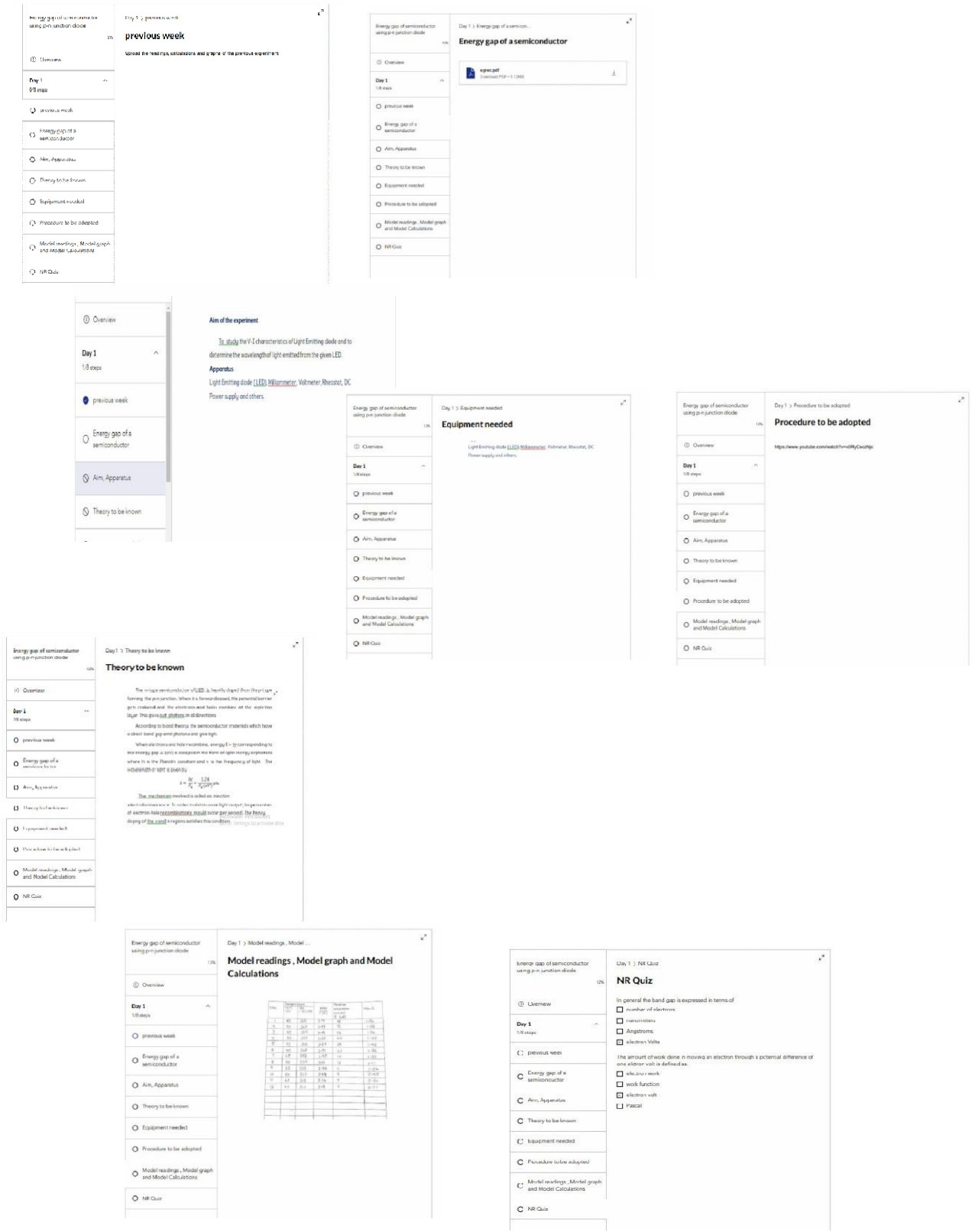


Fig.7. Screenshots of each step involved in the course/experiment

Fig.8. The certificate of completion

Conclusions

The WIX platform provides a versatile tool for developing digital certification courses suitable for both traditional classroom environments and remote learning models. Educators have the flexibility to design structured, sequential modules tailored to specific academic goals. Facilitators can be included in the program to offer mentorship, promote learner independence, and foster collaborative learning environments.

To make the courses more interactive and enriching, features such as embedded quizzes can be utilized to assess knowledge, maintain student engagement, and encourage continuous learning. Through the WIX dashboard, administrators have access to user-friendly tools for managing learners, tracking their academic journey, and communicating directly when needed. Filters help streamline participant oversight and progress evaluation. In conclusion, WIX serves as a reliable platform for hosting and administering structured online certification programs with ease and efficiency.

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