



Design and development of an Online College Portal for effective information management

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Abstract— College online portals have become increasingly popular in recent years as more and more colleges and universities have shifted to online learning and remote operations. They provide a convenient and user-friendly way for students and faculty to access important information and resources from anywhere, at any time. A college online portal is a web-based platform that provides students, faculty, and staff with access to various services and resources offered by an institute. A digital board is an innovative and dynamic communication solution that leverages digital technology to display information, announcements, and multimedia content in various settings. It replaces traditional static notice boards with vibrant digital displays, providing enhanced engagement and flexibility. A digital notice board offers a modern and dynamic approach to communication, revolutionizing the way information is shared and consumed. It combines technology, design, and interactivity to create visually appealing displays that capture attention, promote engagement, and enhance the overall communication experience. Using Apache server, we are implementing an offline server to build a basic database and divide it into different sections for different data using MySQL. The portal's frontend is implemented using HTML and CSS with JavaScript for client-side validation and the Backend uses PHP, SQL, XML, and Ajax. The portals typically offer a centralized location for students to access information related to their coursework, grades, schedules, and financial aid. Some of the common features of a college online portal include Course registration and schedule management. Access to course materials such as syllabi, assignments, and lectures. Online submission of assignments and assessments. Access to grades, transcripts, and academic records. Financial aid and billing information. Campus news and events. Library resources and databases. Career services and job postings. Personal profile management and account settings.

Keywords — Online paper evaluation, Online Attendance management, Online Assignment, College Management, API-based setup.

PESCEglobe facilitates us to scrutinize the numerous activities happening in the institute, distinct records and queries are induced based on assorted choices related to pupils, batch, courses, faculty, examinations, semester, certifications, and all the amenities needed for the institute. Portals are designed to enhance the overall learning experience and streamline administrative tasks for everyone involved in the institute community. A college online portal typically requires users to log in with a unique username and password, which ensures that only authorized individuals can access the system. Once the user logs in, then the user can approach a collection of features and tools, such as Course materials. Students can view course syllabi, assignments, and other materials related to their courses. Communication tools: Users can communicate with each other and with faculty members through email, chat, discussion forums, or video conferencing. Grading and feedback: Students can view their grades and feedback on assignments, quizzes, and exams. Registration and scheduling: Students can register for courses, view their class schedules and make changes to their enrolment status. Billing and financial aid: Students can have a look at their account balances, pay their bills and apply for financial aid. Overall, a college online portal provides a convenient and centralized platform for students, faculty, and staff to access and manage academic and administrative tasks. Gone are the days of manually pinning up notices or printing out announcements. With digital notice boards, info will be instantly updated and displayed in a visually appealing manner. In institutions, the educational organization uses circular and boards for delivering info to the pupils and the staff. This approach takes increased amount of time for revising and because of that many of the pupils might not be knowing about the info shown on boards due to non-eye catching circulars. A Digital board is one of the ways of displaying circulars or notices by which the notices or texts are shown on an LCD Display Screen. They can be updated dynamically. The step is to type the notice on an arduino IDE or either the php interface and submit and send those notices for displaying on the LCD screen. The LCD screen and the System setup are connected with the help of



distinct mechanisms. Also, one more gain is that more than one notice is displayed on the screen as the notices scroll across screen.

I.LITERATURE SURVEY

- Online college portals rely heavily on technology to deliver course materials, assessments, and communication tools. Therefore, the usability and accessibility of the portal interface and features are crucial for student satisfaction and success (Chen et al., 2015).
- Factors that may influence the impact of online portals on student performance include the type of course, the level of student interaction, and the quality of instruction and feedback (Allen et al., 2016).
- According to a study by Kao and Lin (2021), online portals are perceived as useful tools for learning and communication. They found that students appreciated the convenience provide communication tools to facilitate student-teacher communication and the accessibility of online portals, which allowed them to access course materials, grades, and other important information from anywhere and at any time.
- A study by Hu and Gao (2020) found that the utilization of an online portal was associated with higher student achievement in a business statistics course. They suggested that the portal helped students to better organize and review course materials, as well as to communicate with the instructor.
- Despite the many benefits of online college portals, there are also challenges and limitations. For instance, a study by Hailey H. Babb and Paul A. DE Palma (2019) found that students may experience technical difficulties or have difficulty navigating the portal, which can negatively impact their experience.
- Implementation and Design of a Digital Notice Board using Power Line Communication. Author: R. Pudumai Nayagi, R Seethalakshmi. The paper proposes one such application for automating an educational institution by replacing manual notice boards or circulars with digital notice boards. With a centralized database, frequent updating is easily possible.
- Android Controlled Digital Notice Board (May 2016) Prof. Madhavi Repe, Akshay Hadoltikar, Pranav Deshmukh, and Sumit Ingle. This paper presents a model of an advanced wireless noticeboard. The model is made around an ARM controller, Raspberry-pi which is most important in this system. The display is obtained on an LCD monitor display. The main intention of this is to design a wireless LCD board that can receive and display messages and notices sent from the user or the admin.

II.PROPOSED SYSTEM

- Course management: The system allows instructors to create and manage course content, assignments, and assessments. It will also allow students to access course materials, submit assignments, and track their progress.
- Communication: The tools for communication between students and instructors, such as email, chat, and discussion forums is offered.
- Student management: It allows administrators to manage student records, including enrolment, grades, and attendance, to facilitate student-teacher and student-to-student communication.
- Financial management: Students are allowed to view their financial aid and tuition information, pay their tuition online and track their financial transactions.
- Career services: The resources for career development, such as job postings, and resume-building tools.
- Mobile compatibility: The portal is mobile-friendly and accessible on both desktop and mobile devices.
- Analytics: The analytics and reporting features to track student engagement, performance, and progress is provided.

A. Stakeholders in the posed System:

First of all, after analysing the current system user registration activities includes all graduate and undergraduate pupils, teachers, university, and academic affairs. Considering numerous users and wide coverage analysis, the users are distinguished into five categories:

- **Student:** It deals with graduate and undergraduate students who explore about online courses and complete course registration and other steps to generate a personal registration table.



- **Teacher:** It deals to the users who delivers courses and course materials, checks the status of online course registration, update's the student's attendance and progress, upload the documents, etc.
- **Administrator:** It refers to the user who controls the course registration process, updates the detailed information of online courses according to the real-time registration status, and complete administrative tasks in the background.
- **Parents/Guardians:** Parents or guardians of students will have access to the information on their child's academic progress, attendance, and every detail and aspect associated to the institute, etc.
- **Alumni:** Alumni can access their transcripts, academic reports, and other relevant information.

B. Working methodology:

1) Student:

I) Firstly, a student will create an account on the system, and her/his profile is forwarded to the admin for acceptance. The admin verifies if the student is really studying at the university or not. Correspondingly, the admin sends an affirmation mail to the student's mail Id.

II) Later by opening the affirmation link mailed by the admin, the student is systematically directed to her/his profile window. The student re-channels to this page after every login.

III) Then students can have a glimpse at their updated attendance and can view their marks which will be synced after every assessment or test. If any notification is sent, that respective notification will appear on the notification bar of the portal.

IV) Thereafter, the student can view his/her personnel information and can revise their respective profile from time to time.

2) Faculty:

I) Faculty's profile is then created by admin. The admin further allots classrooms, periods and courses accordingly to each professor.

II) The faculty profile page contains paper viewing, student attendance details, and the various course material documents that the faculty transmits.

III) Faculty can also update the attendance of the students from his/her profile.

3) Admin:

I) Admin can take a look at the paper and other document uploads, pending verification of students, and can also update the existing profiles or addition of new ones.

II) The Admin then transmits the answer booklets for evaluation and allocates them to respective faculty according to the course and sections.

III) Then the admin also adds notifications on the taskbar of faculty and pupils. These circulars and notices are visible to all the people using the portal system. These notifications can be can be changed as per the admin's requirement.

Working methodology of Digital notice board:

The methodology for developing a digital notice board can be outlined as follows:

Selecting the appropriate hardware components for notice board, such as Node MCU 1.0 for connecting to the internet, a 16x2 LCD display for displaying messages, and an alarm buzzer for notifications. Ensure that the connections are correct and the components are properly powered. Writing the embedded C code to control the hardware components. This involves initializing the Node MCU, configuring the LCD display, and implementing functions to display and update the notices.

Using PHP to develop the user interface for managing the notices. Creating web pages that allow users to add, edit, and delete notices. Establish a communication protocol between the Node MCU and the PHP interface. Performing thorough testing of the hardware and software components. Verifying that the notices are displayed correctly on the LCD, the alarm buzzer functions as expected, and the web interface interacts properly with the hardware.

Once the digital notice board is fully functional and tested, deploy it in the desired location. Monitor its performance and address any maintenance or update needs that may arise.

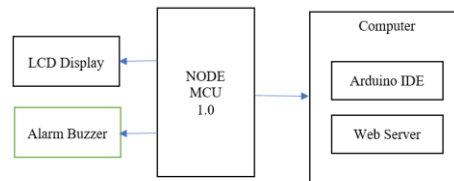


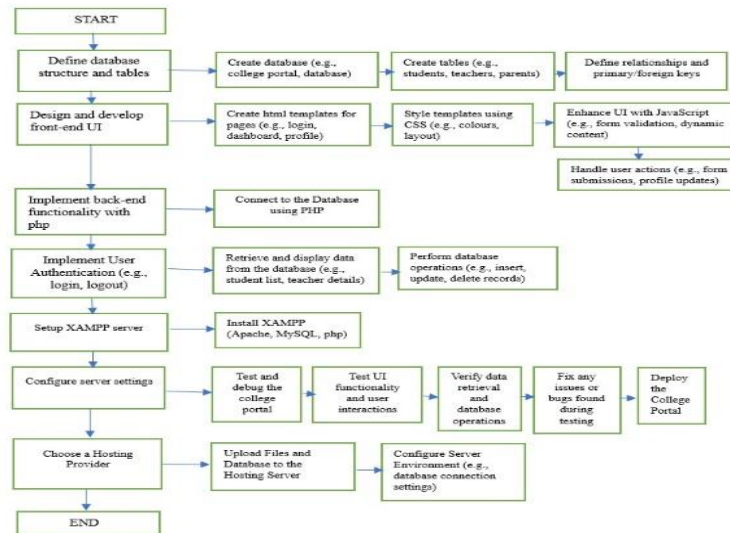
Fig.1: Block diagram of Digital notice board.

C. Web Application:

The web application of the portal is applicable for all kinds of mobile phone users, laptops and will support both IOS and Android screens. The online college portal is a collective attempt to rejuvenate and digitalize the way of data storage in institutes and universities. The portal has enormous possibilities and it can be beneficial to all the institutes. It will not only cut down the physical workload but also upgrade the present condition of data management exemplars equipped at various Institutes.

Using digital notice boards, information can be instantly updated and displayed in a visually appealing manner. Whether it's displaying important company updates, promoting upcoming events, sharing news and alerts, or showcasing multimedia content, digital notice boards provide a dynamic platform to captivate audiences and convey messages effectively.

Technical Architecture:



- Of Online college portal

The design of the portal involves majorly coding of the various programming interfaces. Which consists of five categories those are student, faculty, admin, parents and alumni. Each represents a particular module or a separate window. Each of those modules are divided into sub-modules. Each sub-module is written by using different codes which consists a.html, a.css, a.js page, and a.php page. These a.pages stand for a page written by using HTML, CSS, JS, PHP, SQL, and there is also a master page which contains aspects which are common in all the five modules and behind that language there also exists an asp.net page with a code; these common aspects include various banners and sidebars, which are again common in all of the modules. Codes are written for the creation of master page too. All programming languages employed in this project functions in carrying out the actualization of the project.



- Of Digital notice board

Connect the display device to a computer that will drive the content. Ensure a stable internet connection for remote content management. Install a suitable operating system on the computer, such as Windows. Download page on the Arduino Official website. The Arduino automatically draws power the USB connection to the computer. The power source is selected with a jumper. Check that it is on the two pins closest to the USB port. Connect the Arduino board to computer using the USB cable. The green power LED (labelled PWR) should glow. After your Arduino IDE software is downloaded, Double-click the icon to start the IDE. Once the software starts, we have two options: Create a new project. And the code is written. To avoid any error while uploading our program to the board, we must select the correct Arduino board name, which matches with the board connected to our computer. Go to Tools → Board and select the board → Select the serial device of the Arduino board. Go to Tools → Serial Port menu. The two work in tandem to run a complex operating system. Code → Compile → Upload → Run. After writing the code in the IDE we need to upload it to the Arduino. Clicking the Upload button, will compile the code and upload it if it is passed compilation. Once the upload is complete, the program will start running automatically and the message will be displayed on LCD screen only if it is typed on serial monitor conversely if we need to display the message through the web page then the serial monitor in Arduino needs to be cancelled. After the message/Notice is typed and submitted the alarm buzzer beeps and after few seconds the notice will be displayed on LCD monitor.

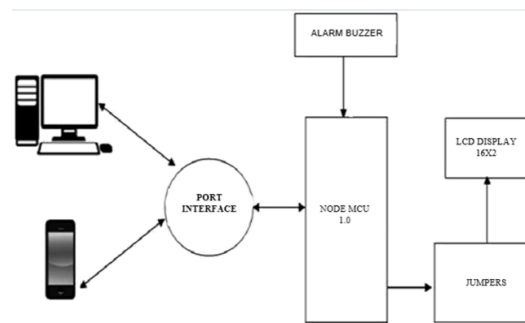


Fig.2: Flowchart of College portal and Block diagram of LCD notice board

D. System designs: Fig 3 shows the database construction of the portal.

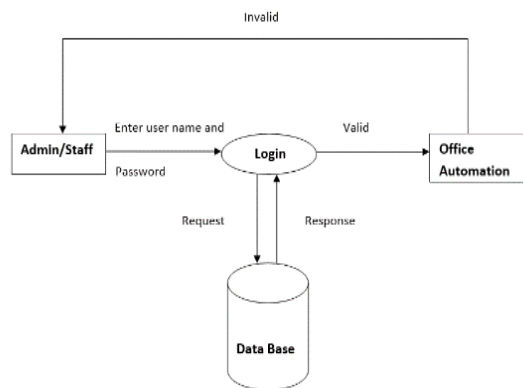


Fig.3: Storage to login framework

Fig.3 reveals that the login infrastructure of a page consists of an admin (he/she) who will log in and access the accounts through their unique username and password. After signing up the students, faculty, parents, and admin can log in using email and password. Once the users are signed up they require approval from the admin for login. After the login the student is directed to the student panel, the faculty is guided to the faculty panel, and the admin is orderly directed to the admin panel.

E. Screenshots /Outcomes of proposed systems: Apache server is built and divided into different sections for different data's using MySQL

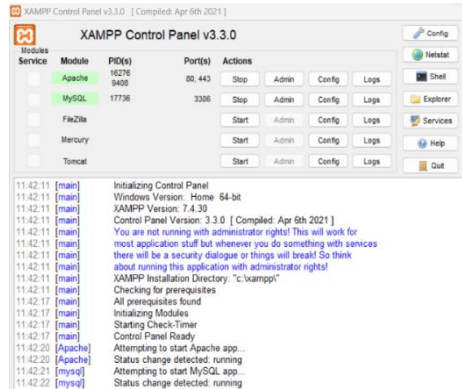


Fig.4: XAMPP Server

Fig.4 shows that an offline XAMPP server has been created using an Apache server. There are various types of servers such as XAMPP(cross-platform, apache, mysql, php, and Perl), WAMP(windows, apache, MySQL, and PHP), MAMP(Macos, Apache, MySQL, PHP or Python), LAMP(Linux, Apache, MySQL and PHP). Using an open-source XAMPP server the SQL is activated for database support where the database is divided into different sections for different data using Mysql, and the look and feel of the portal is updated using various coding implementations.

- Developed a New Portal Site name to host the portal using the local host

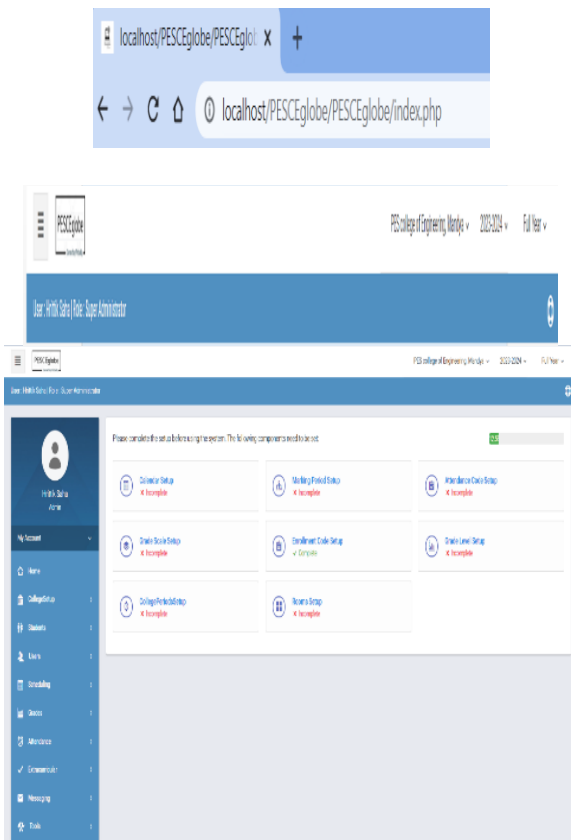


Fig.5: Icon and portal site name.



Fig.5 depicts that after the front-end and back-end are implemented, we host the website using the local host. Developing a New Portal Site name to host the portal using a local host. URL stands for Uniform Resource Locator. A URL is nothing more than the address of a given unique resource on the Web. The URL path for the PESCEglobe portal is http://localhost/my_folder/index.php. If URL path is kept as [.in](http://localhost/my_folder/index.php) for the portal then it can be used in India and if kept as [.com](http://localhost/my_folder/index.php) then can be used globally. As of now, we are not implementing cloud so it can only be used by the local host but later once published it can be used across the world. The icon appears in the address bar. Each portal will have a different icon.

- Updated the Look and Feel of the Portal using coding implementation (HTML, CSS, JS)

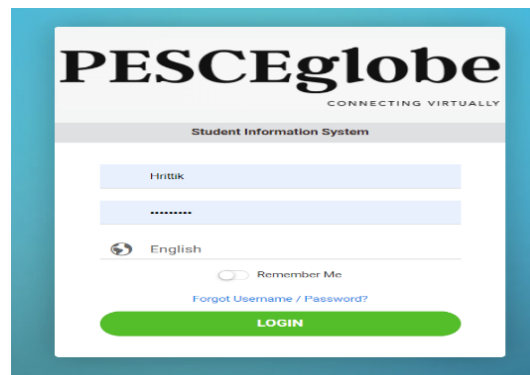


Fig.6: Login and Home page.

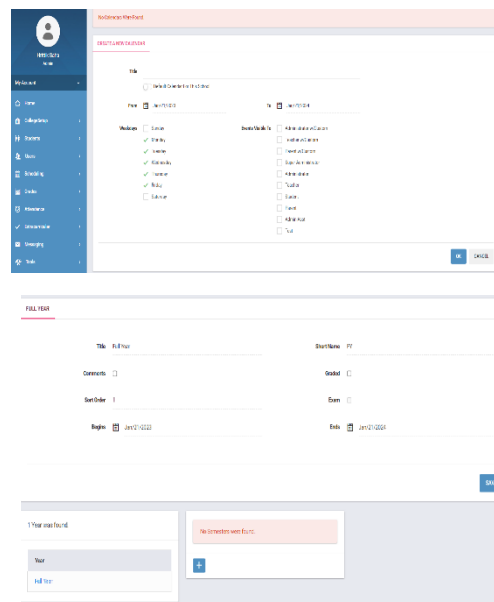


Fig.6 shows that the front end has been implemented using HTML, CSS, and Javascript. HTML is where the website is structured, and CSS- is used to change the look, text styles, and sizes. Javascript- allows the client to interact with the user. The back end is implemented using SQL, PHP, XML, and Ajax where SQL- is used for accessing and manipulating databases, PHP- is for server-side scripting which will be embedded in HTML, XML- is for file storing and transmitting, Ajax- is to create the client-side web application. Then the user can log in using the username and login password. A custom home page is something that the student, faculty, and administration see when they log in.



- Developed enrollment and attendance page

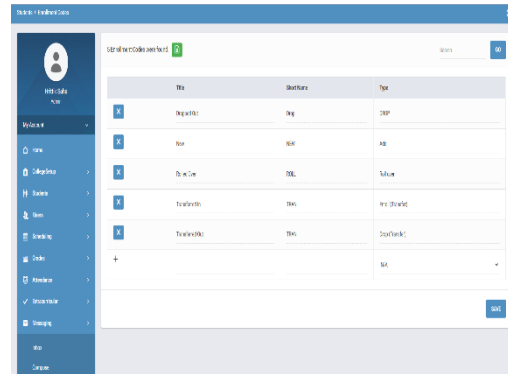


Fig.7: Enrolment and Attendance page in the portal.

Fig.7, describes both the enrolment and attendance pages where the enrolment page has few features which describe student activity like if a particular student is passed or has a backlog, or has been detained for a particular year. Faculty can directly take attendance through the portal via phone in the class instead of having the burden of a physical file system and updating them.

- The calendar and period page has been set up in the navigation bar.

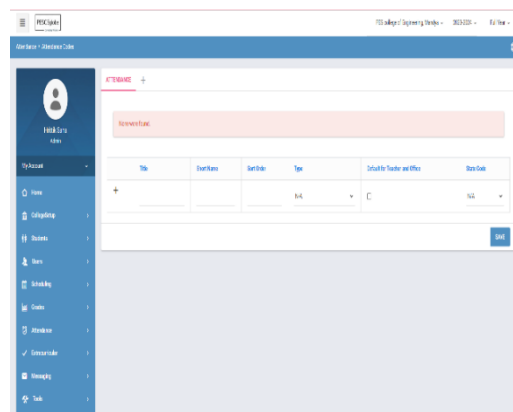


Fig.8: Calendar and period page.

Fig.8 describes the setup of both the calendar and period tabs. The calendar gives us information about events occurring at the college, timetable, lesson plans, and notifications related to the college. The period page is created for students and faculty to allocate their timetable or class hours.

- Developed a digital notice board, Node MCU 1.0, a 16x2 LCD display, and an alarm buzzer are used as the hardware components.

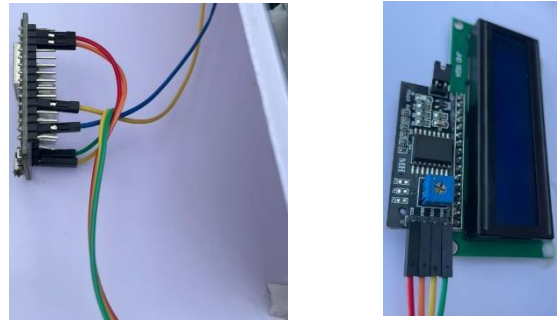


Fig.9: Front side and back side of digital notice board.

Fig.9, shows both the front side and the back side of a connected digital notice board display where the front side consists of a 16*2 LCD display is connected to a Node MCU 1.0 on the back side which is also connected to an alarm buzzer. The program written in the php interface and the arduino ide will start running automatically once uploaded and the message will be displayed on LCD screen only if it is typed on serial monitor conversely if we need to display the message through the web

Page then the serial monitor in Arduino needs to be cancelled. After the message/Notice is typed and submitted the alarm buzzer beeps once it gets the input and after few seconds the notice will be displayed on LCD monitor.

- Developed the UI to write the notice that user wants to display and the text message is displayed on LCD Screen.



Fig.10: UI interface of digital notice board and the text messages displayed.



Fig.10, shows the UI interface which was employed using php as a programming language, Using PHP to develop the user interface for managing the notices. Creating web pages that allow users to add, edit, and delete notices. Establish a communication protocol between the Node MCU and the PHP interface. Verifying that the notices are displayed correctly on the LCD, the alarm buzzer functions as expected, and the web interface interacts properly with the hardware. Once the digital notice board is fully functional and tested, deploy it in the desired location.

III.CONCLUSION

An online college portal provides numerous benefits for students, faculty, and administrators in managing education. It allows for greater accessibility, flexibility, and convenience, as well as streamlining communication and administrative tasks and improving student engagement and learning outcomes. With the increasing trend towards online and hybrid learning, an online college portal has become an essential tool for colleges and universities to provide an efficient, effective, and engaging educational experience. However, it is important to note that an online college portal is not without its challenges and limitations, and a well-designed and implemented system is necessary to maximize the benefits and minimize the drawbacks. Overall, an online college portal is a valuable tool for providing a high-quality education in the digital age. A digital notice board presents a modern and dynamic solution for effective communication and information dissemination. They enhance engagement, capture attention, and improve the overall communication experience. With the ability to customize the content, schedule displays, and gather audience feedback, digital notice boards offer a powerful tool for efficient and impactful communication. Embracing digital notice boards enables organizations to stay connected, informed, and visually engaging in an increasingly digital world.

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