# InsightHub – A Student Feedback System

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***Abstract*—InsightHub is a student feedback system designed for the CSE department at PSNA College of Engineering and Technology, focusing on analyzing feedback based on program outcomes. It collects structured responses from students regarding course effectiveness, faculty performance, and learning experiences, mapping them to predefined program outcomes. Using data analytics, InsightHub identifies trends, strengths, and areas for improvement, providing actionable insights for curriculum enhancement and faculty development. The system ensures transparency, facilitates continuous improvement in education quality, and helps align teaching methodologies with industry expectations and accreditation standards.**

***Keywords—Analyzing feedback, Course effectiveness, Faculty performance, Learning experiences, Data analytics, Curriculum enhancement.***

## I. INTRODUCTION

Student feedback is critical in measuring teaching effectiveness, curriculum quality, and faculty performance in contemporary learning institutions. Yet, conventional approaches—e.g., paper-based surveys or simple online instruments—are usually time-consuming and don't provide actionable analytics or real-time feedback (Ardalan et al., 2007; Kerman et al., 2024). Such systems also fail to connect feedback with Program Outcomes (POs), making them less effective in evaluating educational objectives. Evidence focuses on the advantages of electronic feedback systems. E-peer feedback, for example, increases student motivation, critical thinking, and teamwork (Guardado & Shi, 2007; Yang, 2011, 2015; Chong, 2019). Nevertheless, worries persist over student input accuracy and consistency, particularly when feedback is subjective or influenced by personal views (Lu & Bol, 2007; Laflen & Smith, 2017). In response to these problems, InsightHub provides a systematic, intelligent feedback system that real-time analyzes student responses and maps them to pre-defined POs. By integrating data analytics and visualization, the platform provides actionable intelligence for enhancing teaching practices and aligning academic practice with accreditation standards such as AICTE, NBA, and NAAC. This research examines the use of InsightHub in the CSE department at PSNA College of Engineering and Technology. It illustrates how designed predictive feedback systems can promote continuous improvement in instruction, increase student engagement, and aid in informed decision-making for institutions.

## II. LITERATURE SURVEY

With the popularity of computer technology, online peer feedback has become common in university writing classes. This paper reports an exploratory study of 22 English as a Second Language (ESL) students' experiences of online peer feedback in a sheltered credit course at a western-Canadian university. The present study explores 22 ESL students' experiences of online peer feedback based on analyses of the e-feedback they received, revisions they made as a result, and experiences they perceived. The present findings suggest that e-feedback, like traditional written feedback, offers a text-only environment that pushes students to write balanced comments with an awareness of the audience's needs [1]. This study examined the impact of collaborative filtering (the so-called recommender) on college students' use of an online forum for English learning. The forum was created with an open-source software, Drupal, and its extended recommender module. This study was guided by three main questions: 1) Is there any difference in online behaviours between students who use a traditional forum and students who use a forum with a recommender?; 2) Is there any difference in learning motivation between students who use a traditional forum and students who use a forum with a recommender?; 3) Is there any difference in learning achievement between students who use a traditional forum and students who use a forum with a recommender?. The results of the ANOVA procedure on the pre-test scores showed that there was no significant difference in pre-test scores between the experimental group ($M$ = 71.20, $SD$ = 11.79) and the control group

($M$ = 71.38, $SD$ = 11.26). In other words, the initial level of English performance for the two groups was close at the beginning, thus the covariate issue was not considered. Consequently, ANOVA tests were chosen to test group differences [2]. The increasing prominence of technology has given rise to new ways for writing teachers to give feedback electronically. Specifically, this article focuses on electronic written feedback (e-feedback) given to a group of English-as-a-Second-Language (ESL) community college students. The present study, which aims to shed light on this research gap and inform ESL writing teachers' feedback practices, investigates how feedback is given and attended to online by 93 students of an international community college in Hong Kong [3].

As students' problem-solving processes in writing are rarely observed in face-to-face instruction, they have few opportunities to participate collaboratively in peer review to improve their texts. This study reports the design of a reciprocal peer review system for students to observe and learn from each other when writing. A sample of 95 undergraduate students was recruited to construct texts with the support of web-based reciprocal peer review in the processes of modelling, coaching, scaffolding, articulation, reflection, and exploration. The results of the study revealed that these six processes helped students externalise and visualise their internal writing processes so that they could observe and learn from peers in writing as well as support peers in making text revisions [4]. Our study analysed data from 334 students in 16 courses at a medium, comprehensive private college to investigate the question: Does the rate at which students open attachments with instructor feedback differ if students can see their grades without opening the attachment? We compared two response methodologies: mode 1 made grades visible apart from feedback, and mode 2 required students to open attached feedback files to find their grades. The data for each mode was collected automatically by the LMS, retrieved, and retrospectively analysed. The results show that making grades visible separate from feedback significantly reduced the rate at which students opened instructor feedback files and that timing also impacted students' rate of access [5]. Many colleges have either begun or are contemplating using the web-based survey to gather student feedback on faculty teaching. Unlike the paper-based method, the web-based approach gives every student in the class the opportunity to provide feedback. Hence, the populations that participate in the web-based and paper-based methods may be quite different, and so may be the feedback. This paper compares the results of student feedback gathered through paper-based and web-based approaches. The results provide information to faculty and administrators on any differences they may expect as they make the transition from a paper-based to a web-based survey of faculty teaching [6]. The purpose of this experiment was to compare the effects of anonymous and identifiable electronic peer (e-peer) review on college student writing performance and the extent of critical peer feedback. Participants were 92 undergraduate freshmen in four English composition classes enrolled in the fall semesters of 2003 and 2004. The same instructor taught all four classes, and in each semester, one class was assigned to the anonymous e-peer review group and the other to the identifiable e-peer review group. The results from both semesters showed that students participating in anonymous e-peer review performed better on the writing performance task and provided more critical feedback to their peers than did students participating in the identifiable e-peer review [7]. A sample of 24 graduate students who studied English as a foreign language was grouped into experimental and control groups, 13 and 11 graduate students in each group. The results of this study reveal that integrating the three key elements of a CSCL system facilitated improvement in the experimental group's summary writing. Based on the three key elements, the graduate students in the experimental group made more local (i.e., grammatical) and global revisions (i.e., text development, organization, and style) on their own as well as their peers' summaries, compared with the graduate students in the control group. The effectiveness of online peer feedback on summary writing, in transforming and constructing academic knowledge [8]. Online peer feedback is an effective instructional strategy to enhance students' learning processes and outcomes. However, the literature lacks a comprehensive understanding of the influential factors that play a key role in the effective implementation of online peer feedback. This systematic review provides an overview of the current state of online peer feedback implementation in higher education contexts and explores the role of students' characteristics and online learning environments in their learning processes and outcomes [9]. Bypassing the conventional barrier Lyapunov function method, the constrained system is transformed into its unconstrained counterpart,

thereby obviating the need for feasibility conditions. A specially designed reinforcement learning (RL) algorithm, featuring an observer-critic-actor architecture, is deployed in an adaptive optimal control scheme to ensure the stabilization of the converted unconstrained system [10].

## III. DEVELOPMENT OF THE CONCEPTUAL MODEL

### *A. Conceptual Model*

The InsightHub project is an online student feedback system that aims to improve teaching assessment, faculty performance evaluation, and curriculum enhancement through systematic data collection and visualization. The system offers real-time processing of feedback, automated report generation, and program outcome (PO) mapping to support educational institutions in academic decision-making. The initial development phase is the setup of the system design and database architecture. This involves specifying the relational database schema in MySQL, designing tables for student answers, faculty evaluations, and PO mappings, and creating a responsive front-end interface with HTML, CSS, and JavaScript. PHP is utilized to execute backend logic, user authentication, and data retrieval operations.

After the system design is settled, the project progresses to the data collection and processing phase. The process here is to create dynamic web forms where students can offer structured feedback regarding faculty performance, course material, and overall learning experience. Data collected is safely stored in the MySQL database and accessed using PHP-based queries for analysis purposes.

The second stage is report generation and PO mapping. Automated reports are generated by PHP scripts that identify faculty performance indicators, student satisfaction levels, and areas of improvement. The system also has PO mapping features through which institutions can map student feedback with accreditation requirements (NBA, AICTE, NAAC).

For easy use, a dashboard-driven analytics system is integrated, enabling faculty and administrators to view insights using graphical displays, trends, and controlled summaries. Interactive data visualization is done using JavaScript, enabling easier interpretation of student feedback trends. Finally, the deployment and user training phase ensures seamless integration within educational institutions. Faculty members, administrators, and students are trained to use InsightHub effectively. A feedback validation process is also implemented to ensure data accuracy, helping institutions make informed academic decisions based on structured and reliable student input.

### *B. Hypothesis*

According to this conceptual framework, the following hypotheses inform the InsightHub project:

- H1: A systematic web-based feedback system enhances faculty evaluation accuracy.
  Through the use of a database-based methodology, InsightHub delivers standardized, objective, and accurate faculty performance ratings.
- H2: Visualization of real-time feedback enhances decision-making within academic institutions.
  The application of interactive dashboards and automated reports facilitates quicker identification of faculty strengths and weaknesses, allowing institutions to take proactive steps.
- H3: Automated PO mapping enhances curriculum alignment with accreditation standards.
  InsightHub systematically maps student feedback to program outcomes (POs), ensuring institutions comply with the requirements of NBA, AICTE, and NAAC accreditation standards.
- H4: A web-based feedback system decreases administrative workload.
  Automating feedback collection, processing, and reporting reduces the manual effort needed from faculty and administrative staff, resulting in increased efficiency in academic evaluation.
- H5: A user-friendly online feedback system enhances student participation.
  When submitting feedback is made easy, organized, and available on the web, students are encouraged to take a more active part, leading to more extensive and representative feedback information.

By probing these hypotheses, the research identifies how InsightHub enhances the efficacy, validity, and effect of student feedback analysis in schools. The work contributes to the design of improved academic assessment systems that improve teaching quality, staff performance, and institutional development.

## IV. METHODOLOGY

InsightHub is an intelligent feedback system that converts student feedback into actionable insights through data-driven analysis and outcome mapping. It facilitates transparency, accountability, and strategic decision-making by aligning teaching practices with student needs and accreditation standards.

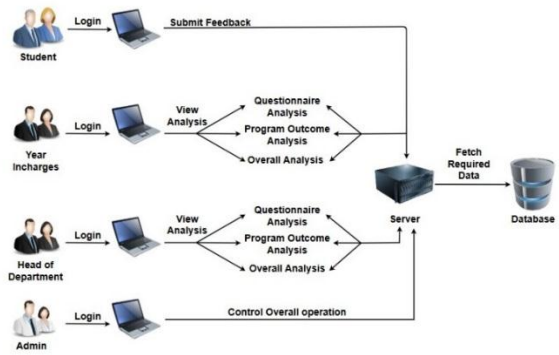


Figure 1. InsightHub System Workflow

InsightHub is an advanced, intelligent platform aimed at streamlining the student feedback process, guaranteeing quality teaching, effective curriculum implementation, and increased student satisfaction. Through the incorporation of primary stakeholders—students, coordinators, department heads, and administrators—it provides a central system driven by a secure database and server. Students enter the site via a secure login page, where they fill out standardized questionnaires on topics including teaching quality, faculty interaction, course presentation, and use of learning materials. The feedback, maintained confidentially to ensure honest responses, is saved in a database for subsequent analysis. The site uses an extensive three-step analysis process. The first phase, Questionnaire Analysis, finds patterns of student opinion and identifies areas for improvement among the faculty using statistical tools such as averages and trend analysis. The second phase, Program Outcome (PO) Mapping, maps the feedback to predefined learning goals like communication or problem-solving abilities and checks against accreditation standards like AICTE, NBA, and NAAC. The last phase, Overall Analysis, integrates findings into summary reports that provide an overview of teaching effectiveness, student learning experience, and faculty performance.

Role-based access facilitates customized insights for stakeholders at varying levels. Year In-Charges view reports related to their areas of responsibility, enabling them to resolve student concerns, improve teaching methodologies, and determine learning gaps. Heads of Departments (HoDs) leverage department-level analytics to enhance curriculum planning, plan syllabi, and schedule faculty mentoring sessions. At the topmost level, the Admin manages the platform, configuring system settings, maintaining data security, and viewing system-level reports for centralized monitoring and strategic planning.

In summary, InsightHub converts student feedback into actionable insights, driving continuous improvement, outcome-based education, and accreditation compliance. Its capacity to analyze real-time feedback and offer customized recommendations enables institutions to make informed decisions. By closing the loop between institutional growth and the voice of the student, InsightHub creates a smart, effective model for enhancing teaching practices, enriching learning experiences, and realizing strategic academic objectives.

## V. FEASIBILITY STUDY

### *A. Technical Feasibility*

InsightHub has a robust technical background, with data analytics and machine learning being used to analyze student feedback in an orderly fashion. Unlike traditional systems of feedback, which use manual handling of information, InsightHub uses an automated system to categorize and analyze responses, and the process becomes more efficient and meaningful. Furthermore, the system is constructed in a manner that facilitates scalability, and institutions can process high numbers of student feedback without performance lapses. Through the use of cloud-based storage and instant data processing, InsightHub provides a smooth experience for both administrators and faculty members.

### *B. Economic Feasibility*

Economic feasibility is determined for InsightHub based on its development cost and operational costs. The setup costs at the beginning are mostly database management, UI/UX design, and analytics tool integration. These are one-time costs involved in system deployment. On the other hand, operational costs include server maintenance, frequent software updates, and security improvements to maintain optimum performance and protection of data. With its capability to automate the feedback process and minimize manual workload, InsightHub is a cost-saving solution that provides long-term value for educational institutions.

*C. Operational Feasibility*

One of the major reasons InsightHub is a success is because of its user-friendly interface that is suitable for both students and teachers. The platform provides a simple feedback submission experience for students but also gives faculty members automated tools for data visualization, making feedback easier to interpret. Through the presentation of insights in an interactive, easy-to-understand way, InsightHub improves decision-making, making it possible for institutions to make prompt changes to the curriculum based on feedback from students in real time.

*D. Legal Feasibility*

As student feedback involves personal data, InsightHub is built according to data privacy standards to maintain the privacy and confidentiality of gathered feedback. It abides by ethical standards that avoid misuses of feedback data in a manner that allows fair and transparent assessment of instructor performance and course effectiveness. InsightHub maintains high data integrity and data privacy protection standards through data encryption and secure access controls.

*E. Feasibility Conclusion*

In summary, InsightHub is an economically viable, technically possible, and legally suitable system that elevates the standard feedback gathering mechanism to a methodology-based, data-driven one. Through facilitation of program results assessment automation as well as educational improvement through iterative processes, InsightHub helps institutions make data-centric decisions to support teaching excellence, curriculum development, and learning student experiences. Coupled with up-to-date data analytics methodologies, InsightHub finds itself a primary tool in furthering engineering institutional educational excellence.

## VI. RESULT/OUTCOME

Insight Hub is a complete, locally installed web application designed for schools and educational institutions to facilitate the process of gathering, handling, and analyzing student feedback and academic performance information. It incorporates several features like secure student login, program and course outcome assessment, feedback submission forms, password recovery, and analytical dashboards with detailed information. The platform is also meant to increase student engagement through offering user-friendly interfaces for inputting personal and academic information, as well as facilitating administrative users, such as Heads of Departments in tracking the quality of academic delivery. Through mapping feedback against targeted Program Outcomes (POs) and Program Specific Outcomes (PSOs), Insight Hub facilitates evidence-based decision-making for ongoing curriculum development and quality enhancement.

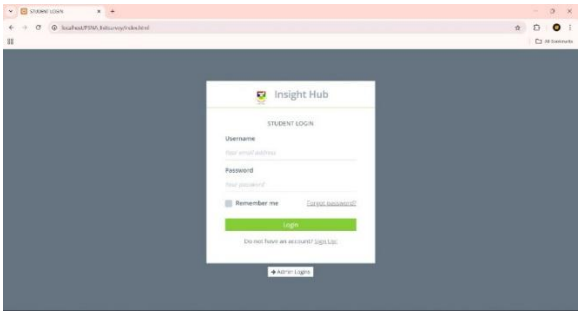


Figure 2. Student Login Page

Figure 2 is a student login screen of a web application called Insight Hub. The screen is viewed locally, as seen from the URL `localhost/PSNA_Exitsurvey/index.html`, which implies that it is either in the development or internal testing environment of a site, most probably of an educational institution like PSNA College. In the middle of the interface, the login form is displayed with a simple layout consisting of the institution's logo, the application name "Insight Hub," and the subtitle "STUDENT LOGIN." Users are asked to input their email address and password, with an optional "Remember me" checkbox for long-lasting login sessions. Other links like "Forgot password? " and "Sign Up! " offer password recovery and new user registration, respectively. A green "Login" button allows users to enter their credentials. There is also a "Admin Logins" button below the primary form, which is possibly a redirect to an independent login screen for administrator users. Figure 2 is the first entry point for students to log in and engage in the Insight Hub system, perhaps for uses such as exit surveys or academic support.

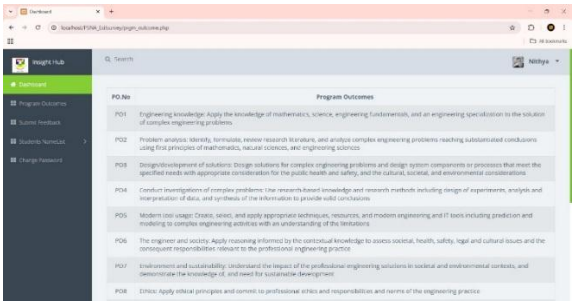


Figure 3. Student Program Outcomes (PO) View Page

Figure 3 shows the "Program Outcomes" area of the Insight Hub web application, which forms part of an educational institution's student academic management or feedback system. The screen is accessed locally through the URL `localhost/PSNA_Exitsurvey/prgm_outcome.php`.
To the left side of the page, a sidebar menu offers the navigation options Dashboard, Program Outcomes, Submit Feedback, Student Name List, and Change Password. The bulk of the section consists of an organized table where Program Outcomes (POs) are enumerated from PO1 to PO8. These outcomes are summaries of the fundamental skills and knowledge that engineering students are supposed to develop by the time they complete their program of study. These outcomes encompass a broad spectrum of skills such as engineering knowledge, problem-solving, design of solutions, investigation skills, application of modern tools, societal responsibility, environmental sustainability, and professional ethics. In the top-right corner, the logged-in user is defined as a student by the name of Nithya, ensuring that the content and features shown are appropriate for student usage.

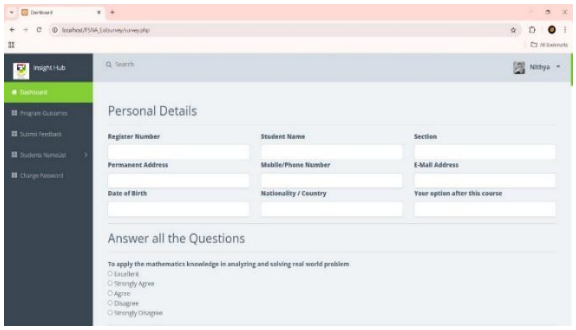


Figure 4. Student Feedback Survey Page

Figure 4 shows the student feedback survey interface of the Insight Hub app, available through local URL `localhost/PSNA_Exitsurvey/survey.php`. The page is intended for students to provide personal details and answer course-related questions. The interface provides input text boxes for Register Number, Student Name, Section, Permanent Address, Mobile/Phone Number, E-Mail Address, Date of Birth, Nationality/Country, and the student's choice after finishing the course. Below the section of personal details, students are asked to respond to survey questions regarding whether they can utilize knowledge in mathematics to analyze and solve real-life problems, using options from "Excellent" to "Strongly Disagree." In the left panel, there is a navigation menu offering links to pages like Dashboard, Program Outcomes, Submit Feedback, Student Name List, and Change Password. The page also indicates that the present login is of a student by the name of Nithya. The overall organization indicates that this feedback system is being managed and monitored by Shanthi, the Head of the Department, so that students can provide their academic experiences and results effectively.

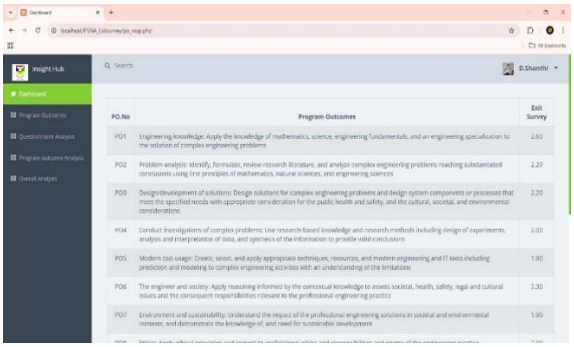


Figure 5. HOD Program Outcomes (PO) Management Page

Figure 5 shows the Program Outcomes (PO) mapping and exit survey results interface of the Insight Hub platform, accessed via the local URL `localhost/PSNA_Exitsurvey/po_map.php`. This specific interface is accessed by D. Shanthi, the Head of the Department, who oversees monitoring and assessment of academic performance indicators. The middle panel displays a table of different Program Outcomes (PO1 to PO8), each of which describes a particular educational objective or skill required from engineering students. For example, PO1 is about applying engineering knowledge, PO2 is about problem analysis, PO3 is about solution design, and so on. Alongside each PO is a column titled "Exit Survey," which records the average score or rating gathered from student feedback at the end of the course. The scores indicate the extent to which students feel they have met each program outcome, with ratings like 2.60 for PO1, 2.20 for PO2 and PO3, 2.00 for PO4 and PO8, and 1.90 for PO5 and PO7. The left menu bar offers access to additional analysis modules such as Questionnaire Analysis, Program Outcome Analysis, and Overall Analysis, enabling the Head of the Department to evaluate trends of feedback and academic performance in different dimensions. This integrated design facilitates decision-making based on evidence to improve the quality of education.

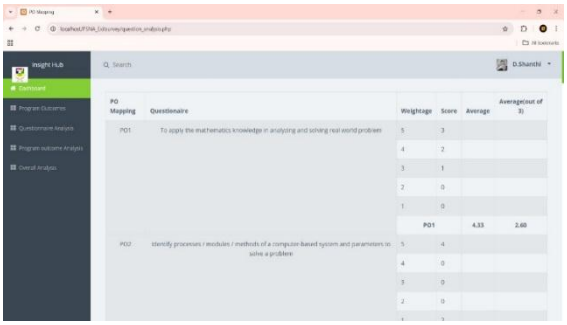

Figure 6. HOD Mapping Page

Figure 6 illustrates the Questionnaire Analysis page of the Insight Hub portal, which can be accessed using the local address localhost/PSNA_Exitsurvey/question_analysis.php`. This module is accessed by D. Shanthi, who is the Head of the Department, and is intended to analyze the relationship between student answers and the corresponding Program Outcomes (POs). The table shown shows a comprehensive breakdown of answers for PO1 and PO2 along with the related questionnaire statements. The questionnaire for PO1 concerns applying math knowledge in problem solving and analysis of real-world problems, while PO2 concerns locating processes, modules, or procedures of a computer system to resolve a problem. The columns in the table are Weightage, Score, Average, and the derived Average (out of 3), providing quantitative information on how students have assessed their abilities or achievements. For example, PO1 has a total weighted score of 4.33, which is equivalent to an average of 2.60 out of 3. The tabulated data facilitates the department in determining the strength and effectiveness of each learning outcome and areas where the curriculum can be further improved.

Figure 7. HOD Program Outcome Distribution – Pie Chart View

Figure 7 shows the Overall Analysis page of the Insight Hub platform, accessed via the URL `localhost/PSNA_Exitsurvey/overall.php`. This graphical overview gives insight into the evaluation of Program Specific Outcomes (PSOs) from survey responses. The information is presented in tabular and graphical forms to enable a complete understanding. The top table shows the response distribution for three PSOs. PSO1 addresses the capacity to design, analyze, and develop computing solutions based on core computer science and engineering principles, with diverse response across the scale. Under the table, a pie chart graphically displays the percentage breakdown of answers across five categories. The number of responses taken into account for analysis is 4, as mentioned at the bottom of the table.

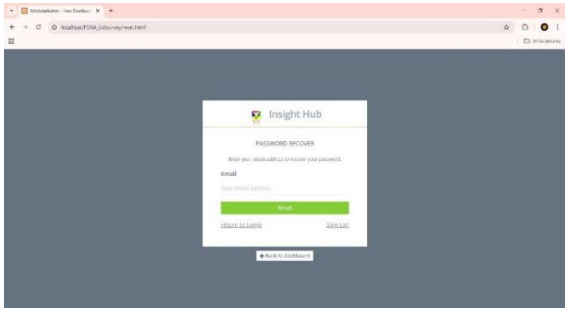

Figure. 8. Password Recovery Page

Figure 8 shows the Password Recovery window of the Insight Hub app, opened through the URL `localhost/PSNA_Exitsurvey/reset.html`. The window helps users in recovering their lost passwords. In the middle of the screen is a neatly designed password recovery form, asking users to provide their registered email address to start the process of resetting. After entering the email, users are able to click on the light green"Reset" button to go through password recovery steps. Besides that, there are two navigation links available below the reset button: "return to Login", which leads users back to the login page, and "Sign Up!", which presumably enables new users to create an account. Below the interface, a "Back to dashboard" button is offered for users who want to leave the password recovery page and come back to the main dashboard. The simplified and easy-to-use layout allows for functionality and is suitable for all kinds of users.

With its well-designed interfaces and strong analytical modules, Insight Hub provides a useful means for both students and teachers to engage in open academic feedback exercises. Not only does it empower departments to monitor and enhance learning outcomes but also plays an important role in teaching quality improvement, student satisfaction, and overall institutional performance.

## VII. DISCUSSION

### *A. Enhancing Literature and Methodology*

The creation of InsightHub necessitated a robust base in scholarly research to comprehend the prevailing issues within student feedback systems. Although previous research has scrutinized feedback mechanisms in teaching, there is still limited study on automated analysis of feedback, monitoring faculty performance, and improving curricula. This project seeks to fill this research lacuna by synthesizing a structured collection of feedback, data-driven information, and support for institutional accreditation.

The design methodology adopted for the development of InsightHub involved qualitative as well as quantitative processes, ensuring overall system design. The project utilized a multi-stage development cycle, including user-centered design concepts, iterative testing, and feedback mechanisms. Student and faculty surveys, accreditation guideline mapping, usability testing, and data visualization methods were some of the major methodologies involved, which all helped to improve the usability and effectiveness of the InsightHub platform.

*B. Project Phases*

InsightHub's creation was organized into several phases to facilitate a methodical and effective process. These phases were:

1. Stakeholder Identification and Ecosystem Mapping – The initial process was to identify major players, such as students, faculty members, administrators, and accrediting agencies. A collaborative framework was created to facilitate easy coordination among these players.
2. Service Scope and Functionalities Definition – During this stage, the system's primary functionalities, like automated faculty assessment, course feedback collection, program outcome (PO) mapping, and accreditation report generation, were detailed.
3. Legal and Ethical Requirements – Academic data privacy laws, user authentication mechanisms, and compliance at the institutional level were extensively reviewed to position InsightHub on par with the standards of the education sector.
4. User Needs Analysis and Testing – Student and faculty interviews and surveys offered insights into reporting preferences, usability issues, and expectations. Feedback was utilized to refine system features and enhance user experience.
5. Persona and Use Case Development – Different personas of users were developed to model student usage, faculty report generation, and administrator data analysis, ensuring the platform met actual-world needs.
6. Database and System Integration – The Technical architecture of InsightHub was established based on MySQL for database administration, PHP for backend processing, and JavaScript for interactive dashboards. The system was built to manage large volumes of student feedback data while supporting secure role-based access control.
7. Proof of Concept & Iteration – A first prototype of the platform was created and piloted in some academic institutions. Iterative improvements were made according to feedback from faculty and administrators.
8. Final Prototype & Deployment – A close-to-final version of InsightHub was piloted on a larger scale before being ready for institution-wide deployment.

*C. Stakeholder Participation and Collaboration*

InsightHub used a multi-stakeholder partnership approach, involving diverse sectors to support a balanced and realistic development strategy:

- Academic Institutions – Supplied information about faculty assessment metrics, course feedback systems, and accreditation standards.
- Technology Experts – Helped to create secure and scalable web-based platforms based on PHP, MySQL, and JavaScript.
- Faculty Members – Helped to determine assessment rubrics, data interpretation requirements, and reporting frameworks.
- Students – Contributed significantly towards testing, submitting feedback, and ensuring system usability validation.

Various stakeholders were proactively engaged throughout various phases of the project, with administrators overseeing compliance, faculty determining evaluation parameters, and students making usability better through ongoing feedback.

*D. Governance and Future Considerations*

Perhaps the most significant part of InsightHub's success is establishing effective governance policies and providing long-term sustainability. The system’s adoption requires well-structured data privacy policies, institutional compliance measures, and continuous improvements based on feedback. A major challenge in implementing InsightHub is

ensuring faculty evaluation transparency while maintaining anonymity in student feedback. Furthermore, automated performance monitoring and analytics should be linked to institutional goals without the addition of bias or discriminatory assessment factors. The monetary side is a factor too—the implementation of InsightHub across numerous institutions entails server infrastructure, system updates, and data security provisions. Nevertheless, the long-term payoffs of data-informed faculty development, streamlined accreditation procedures, and higher student engagement render it a worthy investment.

*E. Key Findings and Challenges*

Some of the most important findings and challenges were gleaned from our research and development efforts:

- User-Centric Design is Crucial – Students and instructors both preferred a simple, intuitive way of providing and receiving feedback compared to a complex, multi-step process.
- Data Privacy and Security must take Center Stage – Having secure role-based access, feedback encrypted storage, and compliance with institutional policies was critical in creating trust among users.
- Stakeholder Collaboration Fuels Success – Ongoing feedback cycles among students, faculty, and administrators significantly improved system usability and reporting accuracy.
- Iterative Development Increases System Reliability – Multiple cycles of testing helped refine faculty evaluation algorithms, automated reporting features, and accreditation compliance mappings.

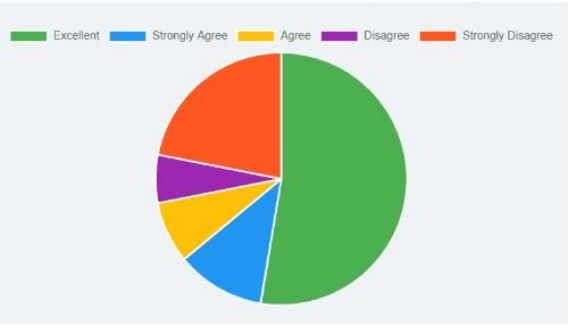


Figure. 9. PO Distribution Pie Chart

In order to further investigate the effectiveness of Program Outcome (PO) evaluations, a pie chart was prepared showing the break-up of PO mappings as reported by department heads. This visual understanding (see Figure 9) indicates the spread of the mapped outcomes on key learning criteria.

| PO Category | Percentage(%) |
|---|---|
| PO1: Knowledge | 20% |
| PO2: Application | 15% |
| PO3: Problem Solving | 25% |
| PO4: Communication | 10% |
| PO5: Ethics | 10% |
| PO6: Teamwork | 20% |

Table. 1. Program Outcome Distribution by Category

The detailed split in each category of outcome is depicted in Table 1, providing illumination on the proportional focus of each mapped program outcome. Finally, InsightHub has the potential to transform the management of student feedback into more efficient faculty evaluation, accreditation monitoring, and course development initiatives backed by data. Nonetheless, long-term success rests with sound governance strategies, moral data handling practices, and consistent engagement of stakeholders. Subsequent measures include growing system roll-out, streamlining analytical intelligence, and embedding future data visualization functionalities to enable effective decision-making across higher learning institutions.

## VIII. CONCLUSION

InsightHub is a notable innovation in student feedback systems, particularly for the CSE department of PSNA College of Engineering and Technology. Structured student feedback is gathered and analyzed systematically through the platform, mapping responses to designed program outcomes, providing a clear and data-based approach to assessing academics. Its analytics integration allows trends, strengths, and areas for improvement to be identified, thus enabling ongoing improvement in faculty performance and curriculum delivery. Although the prototype has shown great promise, additional enhancements—like user training, enhanced analytics, and integration with institutional systems—are necessary for wider adoption. Overcoming issues related to data privacy and system scalability will also be critical to its long-term success. With ongoing refinement and institutional support, InsightHub can be a valuable tool for aligning educational practices with accreditation standards, industry requirements, and student expectations, ultimately creating a culture of continuous academic improvement.

## DATA AVAILABILITY

InsightHub was built using publicly available educational frameworks, accreditation guidelines, and institutional feedback methodologies. No sensitive or proprietary student data was used in the development process. During testing, we ensured that all collected feedback followed strict academic privacy regulations and ethical data-handling standards. As we continue to improve InsightHub, any future data integrations will comply with institutional data protection policies to maintain user confidentiality and institutional trust.

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