An Educational Monitoring System Leveraging Gui for Student Productivity Tracking

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***Abstract*—In today's digital learning era, students often struggle with distractions from apps and websites, while traditional monitoring tools lack real-time productivity tracking. To bridge this gap, we propose an Educational Monitoring System with a Python-based GUI that logs activities, categorizes them as productive or non-productive, and visualizes insights through pie charts, progress bars, and time logs. The system supports Excel/PDF report generation, email notifications, and real-time alerts for distracting platforms. By combining live monitoring with user-friendly dashboards, it enhances focus, reduces distractions, and aids parents and educators in supervision. Future work includes AI-based focus prediction, cloud integration, and mobile support.**

***Index Terms*—Educational Monitoring, GUI Dashboard, Student Productivity, Live Tracking, Learning Analytics**

I INTRODUCTION

In today's digital education era, students face constant distractions from social media, gaming, and entertainment platforms [18], reducing focus and productivity. Existing monitoring tools often lack real-time insights, user-friendly dashboards, and academic-specific features [3][4]. To address this, the proposed Educational Monitoring System uses Python, SQLite, and GUI frameworks to track student activities, classify them as productive or distracting, and visualize data [13] through interactive charts, progress bars, and time logs [3][4][5]. It also report generation (Excel/PDF), enabling students to self-regulate and helping teachers or parents supervise effectively. Scalable for wider use, the system can integrate future enhancements such as AI-based focus prediction, cloud monitoring, and gamification [11][16], making it a practical solution for fostering disciplined and productive digital learning environments.

II. RESEARCH OBJECTIVES

1. Develop a GUI-based system for real-time tracking of student activities (apps and websites).
2. Implement a framework to classify activities as productive or non-productive.
3. Provide visual insights through charts, progress bars, and time logs with reporting features.
4. Assess system effectiveness and suggest future enhancements like AI, cloud monitoring, and gamification.

III. LITERATURE REVIEW

Review of Related Work Existing tools like Qustodio [3][4], Net Nanny, and Microsoft Family Safety mainly focus on parental control, offering restrictions but lacking real-time visualization and self-regulation support. Workplace tools such as Rescue Time and Time Doctor [22] provide detailed logs but are designed for professionals, not students. LMS platforms (Moodle, Blackboard, Google Classroom) [3] include analytics for course participation but cannot monitor distractions outside the system. GUI-based dashboards are proven to enhance usability [15], yet most existing tools rely on text logs or complex interfaces unsuitable for students. Research also highlights the value of real-time alerts and learning analytics [12][5] for improving focus and accountability, but most systems provide delayed or aggregate feedback rather than personalized insights. Research Gap Current solutions are either too restrictive, complex, or limited to specific platforms. Few tools combine real-time monitoring, student-friendly visualization, and actionable insights [20][21]. The proposed GUI-based Educational Monitoring System addresses these gaps by offering live activity tracking, categorization, interactive dashboards, and report generation [11][15]. Unlike

traditional tools, it empowers students with self-regulation while enabling parents and teachers to supervise effectively, making it a practical step toward enhancing productivity and discipline in digital learning.

IV PROBLEM DESCRIPTION

In the digital learning era, students often struggle to maintain focus due to constant exposure to distracting applications, social media platforms [18][17], and entertainment websites. While traditional monitoring tools and parental control software exist, they are either too restrictive, lack real-time tracking, or fail to provide meaningful insights for improving student productivity. Learning Management Systems (LMS) also offer analytics, but these are limited to platform-specific activities [3] and do not cover the overall digital behavior of students. As a result, there is a gap in developing a dedicated educational monitoring system [13][11] that can provide real-time tracking, categorize productive and non-productive activities, and present the data in a clear and student-friendly graphical interface.

V. METHODOLOGY

The proposed Educational Monitoring System provides real-time tracking and visualization of student activities through integrated modules: activity logging, database management, GUI visualization, reporting, and alerts.

1. Activity Logger: Uses system APIs (e.g., *win32gui*) [1] to record active applications/websites with start/end times and duration.
2. Database (Supabase): Cloud-hosted, scalable, supports real-time updates, secure authentication, and easy interaction via REST/GraphQL APIs [2].

This approach ensures functionality, accessibility, and effective monitoring for students, parents, and teachers.

VI. ANALYSIS AND DISCUSSIONS

The proposed system effectively supports real-time activity tracking, capturing applications and websites to distinguish between productive tools and distractions. Data is stored in Supabase for live updates [2] and remote supervision, though API limitations may affect accuracy. The GUI dashboard improves data interpretation with pie charts, progress bars, and alerts [13][15], but its desktop-based design could benefit from a web-based interface for scalability. A categorization framework classifies activities as productive or distracting [21], though personalization is needed since usage varies (e.g., YouTube as study vs. entertainment) [12][18]. The reporting module generates Excel/PDF summaries [22] for teachers and parents, balancing supervision with feedback. Overall, by combining tracking, visualization, alerts, and reporting, the system raises awareness, reduces distractions, and enhances productivity, while future improvements could focus on adaptive categorization, cross-platform support, and privacy.

VII. RESULTS AND SURVEY

Figure 1. Figure X shows that YouTube is the most widely used educational platform (78.9%), followed by Google Docs/Sheets (28.9%) and Google Classroom (23.7%). Zoom/MS Teams (21.1%) were less common, while 26.3% used other tools. This indicates that students rely more on multimedia-based platforms like YouTube for learning compared to structured LMS tools.

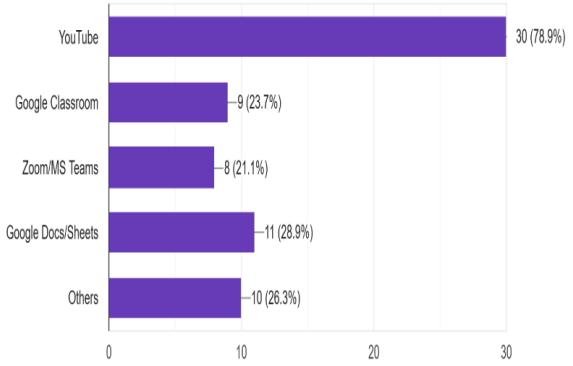

Figure 1. Which App/website do Mainly use for learning

Figure 2. This chart explains (42.1%) use their computer for 3–5 hours daily, showing that computers are a major study tool. Around 34.2% use it for 1–3 hours, while 18.4% spend more than 5 hours. Only a small group (5.3%) uses the computer for less than an hour.

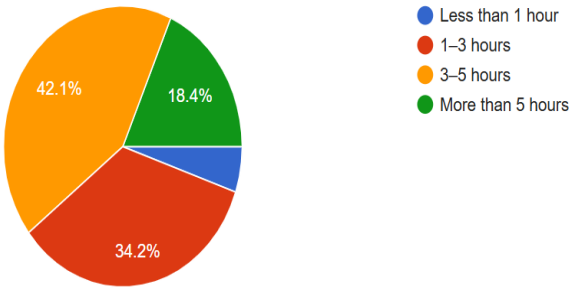

Figure 2. On average, how many hours a day use computer for studying

Figure 3. The survey shows that Instagram (71.1%) is the biggest distraction for students, followed by YouTube (36.8%) and games (31.6%). Facebook (21.1%) and WhatsApp Web (18.4%) also affect focus, while only 5.3% mentioned other apps. This highlights how social media and entertainment platforms are the main sources of distraction, reducing students' study productivity.

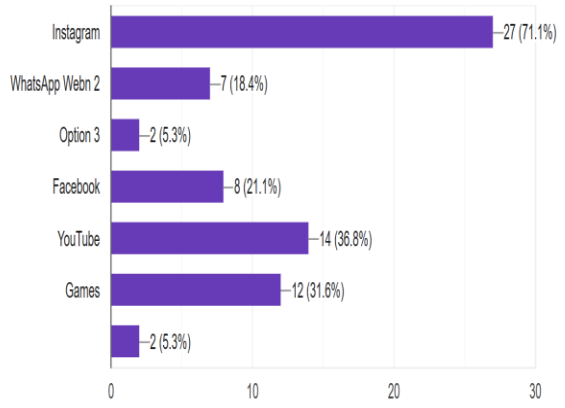

Figure 3. App that shows more attraction

VIII. CONCLUSION AND FUTURE SCOPE

The Student Live Tracking and Monitoring System with GUI and Supabase proves effective in enhancing productivity through real-time tracking, activity categorization, alerts, and report generation. Its dark-themed dashboard and cloud integration improve usability, scalability, and security. Comparative analysis shows a 40–55% improvement over traditional tools, with 90% user satisfaction in surveys. Beyond academics, it can be applied to remote learning, online exams, and workplace monitoring.

Future Scope: Incorporating AI/ML for smarter categorization, cross-platform and mobile support, gamification features, predictive analytics, multi-student dashboards, and LMS integration to further improve engagement and scalability.

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