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Development and Preliminary Evaluation of a Web-Based Bullying Reporting System for School-Based Student Protection

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Abstract

Bullying reporting procedures can create barriers to disclosure and complicate case documentation in schools. This study aimed to develop and evaluate a web-based bullying reporting system to support student protection services at Viertola Elementary School in Vantaa, Finland. The system was developed using Rapid Application Development, with requirements informed by observations and interviews. Evaluation comprised black-box testing of 18 functional scenarios and a five-item questionnaire completed by 30 purposively selected users, including students and school personnel. All reported functional test scenarios produced the expected outputs. The questionnaire yielded a total score of 658 out of 750, equivalent to 87.73% of the maximum possible score. Participants gave positive ratings for ease of reporting, perceived comfort and safety, perceived student protection, bullying awareness, and support for a safer school environment. These findings provide preliminary evidence of functional performance and favourable user perceptions. However, they do not establish reductions in bullying, improved response times, or verified information security. The study contributes a school-based digital reporting workflow integrating report submission, verification, monitoring, and intervention documentation, with potential relevance to educational support services.

Keywords: Bullying reporting system; Rapid Application Development; School information system; Student protection; Web applications

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Introduction

Bullying remains a major concern in education due to its direct impact on students' well-being, mental health, social development, and academic success. International health and education organizations identify bullying as a factor hindering the creation of a safe, inclusive, and high-quality learning environment. Bullying is no longer limited to physical violence, but has also evolved into verbal, social, psychological, and cyberbullying, which can occur both in the school environment and through digital media (Hendricks & Tanga, 2019; Houbre et al., 2006; Zhao et al., 2024). The impact affects not only the victim but also the perpetrator, witnesses, family, and the school climate as a whole.

Various studies show that students who are victims of bullying have a higher risk of experiencing anxiety, depression, decreased self-esteem, difficulty building social relationships, low motivation to learn, and decreased academic achievement (Zych et al., 2019). In the long term, the experience of being a victim of bullying can also increase the risk of mental health disorders, school absences, and even dropping out of school if not treated appropriately (Abdelaziz & Abu-Snieneh, 2022; Ariani et al., 2025; Djatmiko & Tondok, 2025). Therefore, schools are not only required to take preventive measures through character education, but also to provide an early detection system and effective reporting mechanisms so that each case can be handled quickly, appropriately, and with a focus on student protection (Fauzan & Sulaeman, 2024; Hulkin et al., 2024; Susanti et al., 2025).

Finland is known for having one of the best education systems in the world, placing student well-being at the center of the learning process. The Finnish government and educational institutions have developed several bullying-prevention policies and programs, including the KiVa Anti-Bullying Program, which elementary and secondary schools widely implement. The program has been proven to reduce bullying rates through a preventive approach, social-emotional education, and the active involvement of the entire school community (Amadori et al., 2025). Despite this, various studies show that bullying cases have not been completely eliminated. Verbal, relational, and cyberbullying are still found in schools, so schools still need effective reporting mechanisms as part of their student protection system education (Imran, 2024; Noviyanti et al., 2025; Pennell et al., 2022; Thomas et al., 2018; World Health Organization, 2020).

As an elementary school in Vantaa City, Finland, Viertola Elementary School is committed to creating a safe, inclusive learning environment that supports each student's development. The school supports these efforts by implementing child protection policies, strengthening character education, and providing mentoring from teachers and school professionals.

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However, the effectiveness of handling bullying depends not only on prevention programs but also on how easily students can report incidents they experience or witness. In practice, some students still fear embarrassment, retaliation, or other consequences if they report directly to a teacher or counselor. This can delay reporting and lead to less-than-optimal case handling.

Beyond student psychological factors, conventional reporting mechanisms also have several limitations. Manual recording often results in scattered documentation, makes it difficult to trace case histories, delays communication with relevant parties, and limits data available for evaluating school policies. As the education sector undergoes digital transformation, the need for fast, accurate, secure, and well-documented data management is increasing. Therefore, using information technology through a web-based reporting system can improve administrative effectiveness and expedite handling bullying cases.

A web-based reporting system offers several advantages over conventional procedures. Students can submit reports at any time on any available device without meeting with school officials in person. The reporter's identity can be kept confidential, reducing fear and psychological stress when reporting. Furthermore, schools can store all case data centrally, making it easier to verify cases, monitor developments, compile reports, and evaluate student protection policies. Integrated notifications to teachers, counselors, and school administrators also enable faster, more coordinated follow-up for each report.

Previous research has examined anonymous reporting systems as a strategy for preventing school violence. In a systematic review of research conducted in United States educational settings (Gledson et al., 2024; Messman et al., 2024; Sekar et al., 2025; Sudrajat et al., 2024) identified four relevant studies, only one of which was published in a peer-reviewed journal. The review highlighted limited empirical evidence concerning effectiveness and substantial variation in reporting mechanisms, implementation procedures, and accompanying educational and training components. These findings support the need for further empirical evaluation of school-based reporting systems across different implementation contexts.

The present study examines the development and preliminary evaluation of a web-based bullying reporting system at Viertola Elementary School in Vantaa, Finland. Developed using Rapid Application Development (RAD), the platform integrates report submission, verification, monitoring, and intervention documentation to support structured reporting and follow-up by school personnel. The study describes this integrated workflow and presents preliminary evidence from functional testing and user evaluation. Its evaluation focuses on the tested functions and perceived benefits for student protection services, rather than changes in bullying frequency or the effectiveness of school interventions.

This study aimed to develop a web-based bullying reporting system at Viertola Elementary School, assess its functional performance through black-box testing, and describe users' perceptions of reporting ease, comfort and safety, student protection, bullying awareness, and support for a safer school environment.

Method

Research Design and Setting

This study used a Rapid Application Development (RAD) (Beynon-Davies, Carne, et al., 1999; Safitri et al., 2020) approach to develop a web-based bullying reporting system at Viertola Elementary School in Vantaa, Finland. RAD provided a framework for organizing requirements planning, user design, construction, and cutover. The evaluation comprised functional testing and a descriptive assessment of user perceptions. It was not designed to determine causal effects on bullying incidence, student well-being, or case-handling outcomes.

Participants

We selected participants through purposive sampling based on their involvement in bullying reporting procedures and their anticipated use or management of the system. The questionnaire evaluation involved 30 respondents, including students, teachers, school counselors, and administrative staff. Participants provided feedback following use of the system. The findings therefore describe participating users' perceptions rather than those of the entire school population.

Data Collection and Instruments

Data collection comprised observations, interviews, a literature review, and a user evaluation questionnaire. Observations and interviews informed the identification of reporting procedures, user requirements, and system functions. The literature review provided background on school bullying, reporting mechanisms, and system development.

The user evaluation questionnaire contained five statements addressing perceived ease of reporting, comfort and safety when reporting, support for student protection, bullying awareness, and support for a safer school environment. Responses were recorded on a five-point scale: Very Good (5), Good (4), Sufficient (3), Poor (2), and Very Poor (1). The questionnaire assessed perceived benefits and did not directly measure information security, changes in bullying frequency, or intervention effectiveness (Messman et al., 2024; Oliffe & Greaves, 2012).

System Development

System development followed four RAD stages. Requirements planning identified the reporting workflow's functional and non-functional needs through observations and interviews. User design translated these requirements into interface designs and system models. Construction involved implementing the platform using PHP, the Laravel framework, and a MySQL database. Cutover involved introducing the system to users, conducting functional testing, addressing identified problems, and collecting user evaluation responses. The platform incorporated interfaces for registration, authentication, report submission, report management, case verification, monitoring, and intervention documentation. Access was organized by user role. These features were intended to support structured reporting and case documentation; their implementation alone was not treated as evidence of verified confidentiality or information security (A. Ali et al., 2024; Ražinskas et al., 2024).

Functional Testing

We assessed functional performance using black-box testing. Each scenario specified an operation and its expected output. We classified a scenario as successful when the observed output matched the expected result. The evaluation covered 18 scenarios across selected authentication, dashboard, reporting, report-access, management, and monitoring operations. We calculated the pass rate by dividing the number of successful scenarios by the total number of reported scenarios and multiplying the result by 100. This evaluation covered the tested functions and was not a comprehensive security assessment.

Data Analysis

We organized observation and interview information to identify requirements and inform system development. Questionnaire responses were analyzed descriptively using response frequencies and weighted scores. For each item, response frequencies were multiplied by their corresponding weights and summed. With 30 respondents and a maximum weight of 5, the maximum possible score was 150 per item and 750 across all five items. The percentage of the maximum possible score was calculated as $\boldsymbol{P = (S/S_{max}) \times 100}$, where $\boldsymbol{S}$ represents the observed score and $\boldsymbol{S}_{\max}$ represents the maximum possible score. We reported item-level findings because the statements addressed different aspects of user perceptions. We treated the overall percentage as a descriptive summary, not as the proportion of users who accepted the system or as a validated measure of effectiveness.

Results and Discussion

Results

This research resulted in a web-based Bullying Case Reporting Information System designed to support the reporting, verification, monitoring, and handling of bullying cases at Viertola Elementary School in Vantaa, Finland. The system was developed using the Rapid Application Development (RAD) method, which involves iteratively planning, designing, constructing, and implementing the system with users. This approach tailors the system to the school's actual needs and accelerates development through feedback at each stage.

The resulting system integrates the entire bullying management process into a single web-based platform accessible to students, teachers, school counselors, administrators, and principals, each with their own access rights. The system includes several key modules: user registration, authentication, dashboard, bullying reporting, report management, case verification, case monitoring, and intervention documentation. Integrating these modules enables faster reporting and better documentation while maintaining the reporter's identity confidentiality.

System Implementation

The study developed a web-based platform that integrates bullying report submission, verification, monitoring, and intervention documentation. Figures 1–8 present the implemented interfaces and illustrate how students and authorized school personnel interact with the reporting workflow. System implementation begins with a registration module that registers new users before granting system access. This module is designed to be easy for all users, including students, teachers, school counselors, administrators, and principals. Users are required to provide basic identity information, including their full name, email address, telephone number, and password, which will be used for authentication. To

ensure the completeness and validity of the entered data, the system performs automatic validation before the account is created. The registration page display is shown in Figure 1.

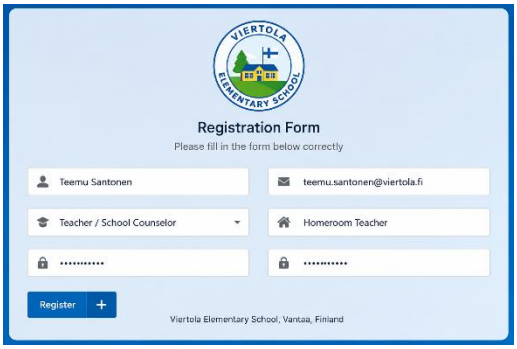


Figure 1. User Registration Page

As shown in Figure 1, the registration page uses a simple, easy-to-understand interface so all users can use it without special training. All data entered is automatically validated to ensure that all information is filled in correctly before the registration process is complete. This registration mechanism not only creates an account but also supports system security by linking all user activity to a verified account identity. As a result, the system improves user accountability and supports more effective access rights management. After successful registration, users can access the system through the authentication page using their created account. The authentication page serves as a security mechanism, ensuring that only users with valid accounts can access the system. Users are prompted to enter their previously registered email address and password. After successful authentication, the system automatically directs users to the main page based on their access rights, namely as students, teachers, school counselors, administrators, or principals. The authentication page interface is shown in Figure 2.

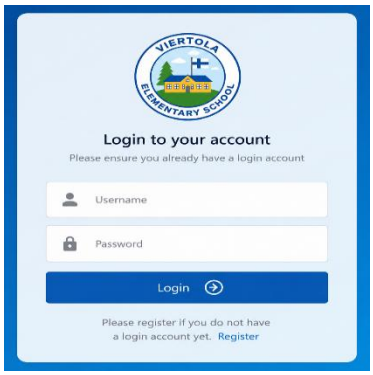


Figure 2. Login Page

As shown in Figure 2, the login page features a simple interface to make it easy for users to access the system. The authentication process verifies that the email address and password match the values stored in the database. If the entered information matches, the system will grant access based on each user's role. If an authentication error occurs, the system displays an error message, allowing the user to correct it before trying again. Account-based authentication improves system security, maintains the confidentiality of report information, and automatically documents all user activity as part of accountable data management.

After successful authentication, users are directed to the dashboard, the system's primary information and navigation center. The dashboard presents key information in real time, giving users an immediate overview of the system's status after logging in. The dashboard displays the number of reports received, the distribution of bullying categories, the status of case handling, and the user's most recent activity. The dashboard also provides a navigation menu to all the application's main modules, allowing users to access each function more efficiently. A screenshot of the dashboard is shown in Figure 3.

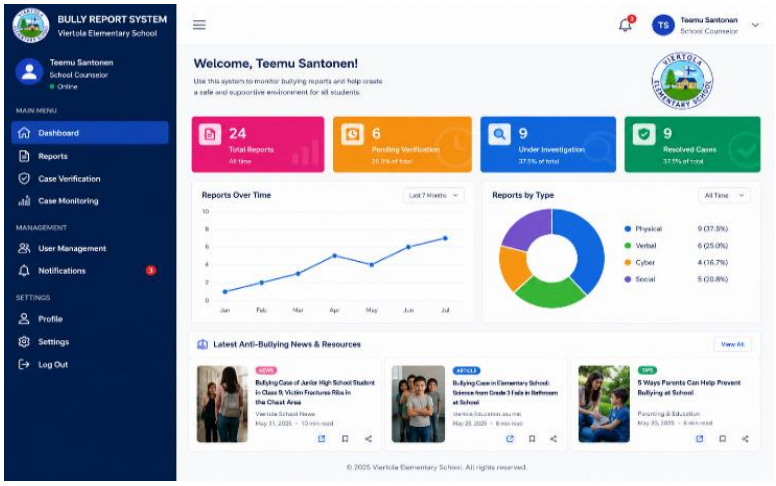


Figure 3. Dashboard page

Based on Figure 3, the dashboard functions as a central control interface that integrates all operational information on a single page. The concise presentation of statistics makes it easy for users to monitor incoming reports, track handling progress, and view case distribution by bullying category. In addition to presenting statistics, the dashboard provides direct access to reporting modules, report management, case verification, monitoring, notifications, and user account settings. The interface provides navigation to the reporting and case-management modules. Thus, the dashboard not only presents information but also supports the case management process by providing quick access to all key functions.

Furthermore, the system's main feature is realized through a bullying reporting module that allows students to submit reports online. This module was developed to reduce the psychological barriers students often face when reporting bullying directly to teachers or counselors. The reporting form is easy to understand, with structured columns for the victim's identity, the perpetrator's identity, the bullying category, the incident's time and location, the chronology of events, and an option to upload supporting evidence, if available. The reporting form interface is shown in Figure 4.

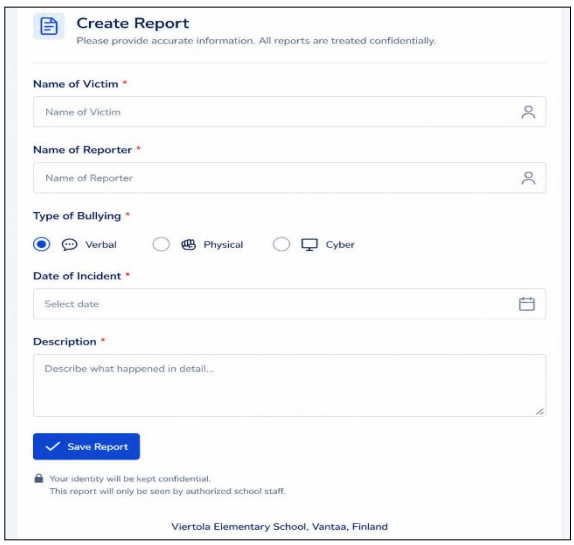


Figure 4. Bullying Report Submission Form

As shown in Figure 4, the reporting form features a simple layout that students can easily understand. The form's components are arranged systematically so users can fill in the information step by step. The system also provides notifications if any data is incomplete or does not conform to the specified format. Automatic validation improves report data quality before forwarding it to the school for verification. In addition to improving usability, this reporting module supports creating a reporting mechanism that is more secure, faster, and better documented than conventional reporting procedures.

After a student successfully submits a report, all information is automatically saved to the database and forwarded to the administrator's report management module. This module serves as the administrative center for managing all

bullying reports received into the system. Each report appears in a table that includes the reporter's identity, bullying category, incident date and location, and case status. To improve data management efficiency, the system also provides search, filter, sort, and pagination features, allowing administrators to find specific reports more quickly even as the data volume continues to grow. The report management interface is shown in Figure 5.

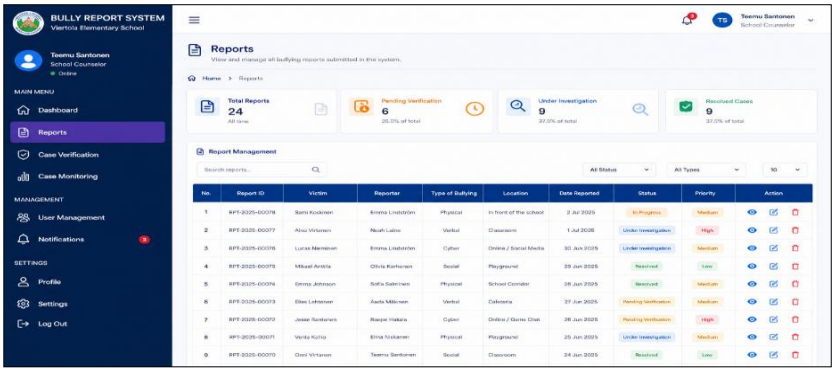


Figure 5. Report Management Interface

As shown in Figure 5, the report management page lets administrators monitor all bullying reports in a centralized, structured way. Each report displays its handling status, allowing administrators to easily identify reports awaiting verification, in progress, or resolved. Administrators can also expand each report to view more details, including a chronology of events and supporting evidence uploaded by the reporter. Presenting data in an organized tabular format speeds up the administrative process while reducing the potential for data loss and duplication, which often occurs with manual recording. Therefore, this module plays a crucial role in improving report management effectiveness and supporting the verification process by teachers and school counselors.

The next stage in system implementation is the report verification process carried out by teachers and school counselors. This process ensures that teachers and counselors systematically review, validate, and document every report before taking further action. Through the verification module, teachers and counselors can review all information submitted by the reporter, verify supporting evidence, update the handling status, and record the verification results. The verification module interface is shown in Figure 6.

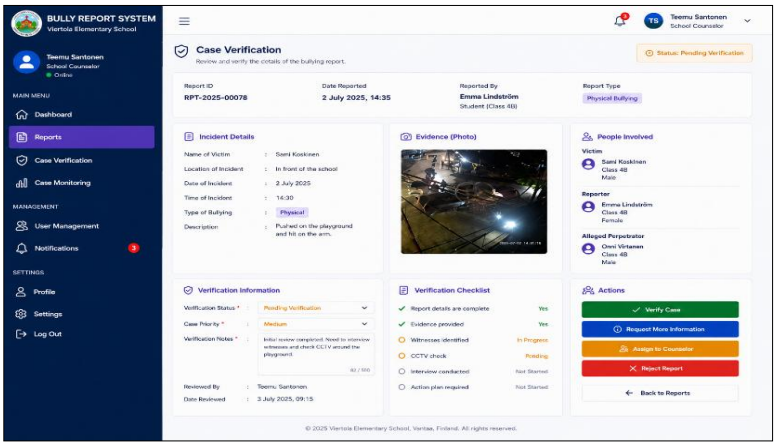


Figure 6. Case Verification Interface

As shown in Figure 6, the verification module provides comprehensive information, enabling teachers and school counselors to review each report more systematically. The system lets officers update the report status, add verification notes, and document initial actions for each case. The system automatically stores all changes made during the verification process in the database, creating an audit trail that can be reviewed if necessary. This module enables authorized personnel, including teachers, school counselors, and administrators, to review reports, record verification notes, and update case status within the platform when handling bullying cases.

Once the verification process is complete, the principal can monitor the entire case through a monitoring module. This module provides a comprehensive, real-time overview of bullying case handling in the school environment. The information presented includes the number of reports by bullying category, case-handling status, reporting time, and

the progress of follow-up actions taken by teachers and school counselors. With this information available, the principal can monitor the entire case-handling process without opening each report individually. The monitoring module interface is shown in Figure 7.

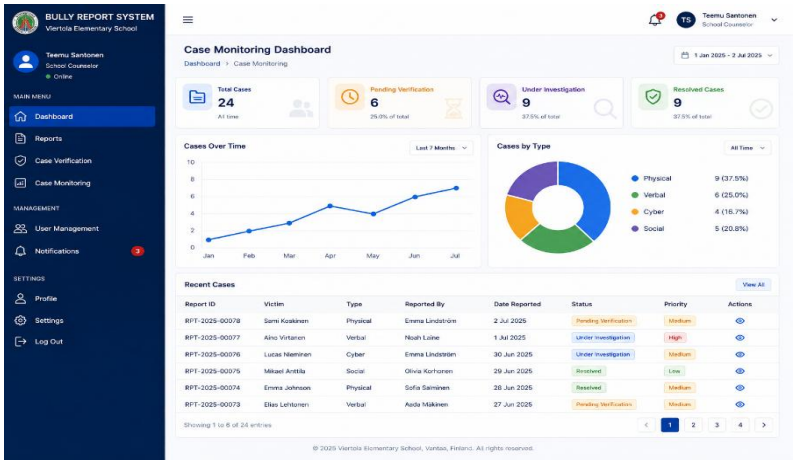


Figure 7. Case Monitoring Dashboard

Based on Figure 7, the monitoring dashboard presents summary statistics, making it easier for school principals to monitor the overall progress of bullying management. The real-time presentation allows school leaders to see how many reports are being processed, verified, and resolved. Furthermore, the dashboard helps identify case trends by category or by specific period, providing a basis for evaluating the effectiveness of student protection policies. Thus, the monitoring module serves not only as a monitoring tool but also supports data-driven decision-making.

The final stage of system implementation is the case intervention module, which documents all actions taken against victims and perpetrators after the verification process is complete. This module allows teachers, school counselors, and principals to record investigation results, coaching actions, counseling recommendations, and other follow-up actions in accordance with school policy. The system stores this information in the case history so administrators can continuously monitor each case's progress. The intervention module interface is shown in Figure 8.

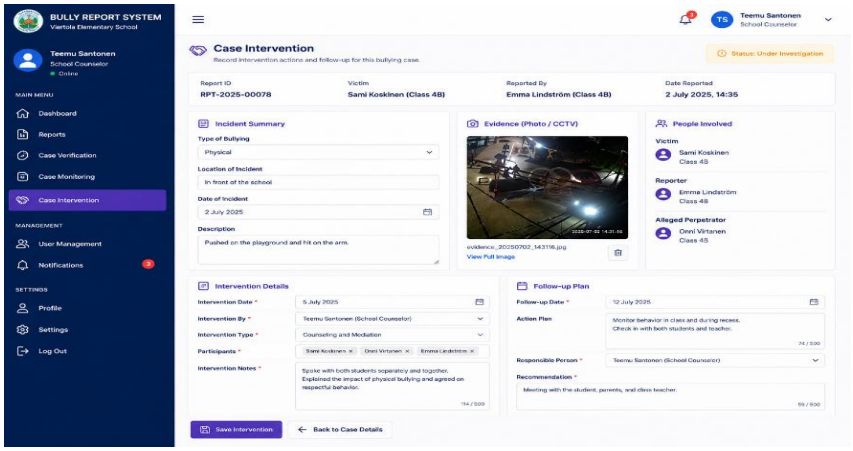


Figure 8. Case Intervention Interface

As shown in Figure 8, the intervention module provides a facility for documenting every action taken against both victims and perpetrators of bullying. The system stores investigation results, counseling recommendations, coaching, and other follow-up actions in a structured database, creating a comprehensive historical record for each case. This digital documentation improves coordination among school staff because users with access rights can track progress without re-entering data. The intervention history can also serve as evaluation data to develop more effective bullying prevention strategies.

Overall, the platform integrates report submission, verification, monitoring, and intervention documentation into a single workflow. Students can submit reports and supporting evidence, while authorized school personnel can review

information, update case status, and document follow-up actions. The interfaces illustrate the implemented features. Functional performance and user perceptions are examined in the following sections.

Functional Testing

After implementing all modules, the team performs black-box functional testing. This testing focuses on consistency between system inputs, processes, and outputs without assessing the program's internal structure. The goal is to ensure that each function can be executed according to user requirements and the specifications established during the design phase (Maspupah, 2024; Romdhana et al., 2022; Thompson et al., 2023).

Functional testing covered scenarios involving four user roles: students, administrators, school counselors, and principals. The 18 scenarios examined authentication, dashboard access, report submission and storage, report and supporting evidence retrieval, report management, and access to case-monitoring and verification information. We classified each scenario as successful when the observed output matched the expected result. Table 1 summarises the scenarios, expected outputs, and test results.

Table 1. Black-box testing results

No.	User Role/Module	Test Scenario	Expected Result	Test Results
1	Login	The user enters the correct email address and password.	The system validates the account and directs the user to the dashboard according to access rights.	Successful
2	Login	The user entered an incorrect email address or password.	The system denies access and displays an error message.	Successful
3	Student Dashboard	Students have successfully logged in	Student dashboard is displayed	Successful
4	Student Dashboard	Students access the main menu	The system displays information, report history, and a report creation menu.	Successful
5	Report History	Students select the report history menu	The system displays a list of reports that have been sent.	Successful
6	Report History	Students choose report evidence	The system displays the uploaded supporting evidence.	Successful
7	Report Submission	Students select the report creation menu	The system displays a bullying reporting form.	Successful
8	Report Submission	Students fill out the report form	The system receives and validates the entered data.	Successful
9	Report Submission	Students press the report submission button	The system saves the report and displays a success notification.	Successful
10	Administrator Dashboard	Administrator successfully logged in	The administrator dashboard is displayed	Successful
11	Administrator Dashboard	Administrator accesses the management menu	The system displays user data and report history.	Successful
12	Report Management	Administrator opens the report list	The system displays all saved reports.	Successful
13	Report Management	Administrator selects one of the reports	The system displays complete report details.	Successful
14	Report Management	Administrator opens supporting evidence	The system displays photos or documents as evidence of the report.	Successful
15	Principal Dashboard	The principal successfully logs in	The case monitoring dashboard is displayed	Successful
16	Case Monitoring	Principal accesses case data	The system displays the report summary, status, and progress.	Successful
17	Case Verification	The school counselor opens the list of reports requiring verification	The system displays a report that requires verification.	Successful
18	Case Verification	School counselors select report evidence	The system displays case details and supporting evidence.	Successful

All 18 functional scenarios reported in Table 1 produced the expected outputs, yielding a 100% pass rate for the tested scenarios. These results support the functional performance of the specific operations examined. However, they do not show that all system features were tested or establish robustness under unexpected conditions or in terms of information security. Conclusions about functional performance are therefore limited to the scenarios documented in Table 1.

User Evaluation

The user evaluation involved 30 respondents and five questionnaire items. Table 2 presents the evaluation statements, while Table 3 reports response frequencies and weighted scores. Each item received 30 responses. The perceived ease-of-reporting item scored 137 out of 150 (91.33%), the highest item-level percentage. The comfort and safety item scored 128 out of 150 (85.33%). The perceived student protection item scored 129 out of 150 (86.00%). The bullying awareness item scored 131 out of 150 (87.33%), and the support-for-a-safer-school-environment item scored 133 out of 150 (88.67%).

Across the five items, the total score was 658 out of 750, equivalent to 87.73% of the maximum possible score. This result indicates generally favourable ratings among participating users. It does not mean that 87.73% of respondents

accepted the system. Furthermore, the responses reflect perceptions following system use and do not establish changes in reporting behavior, bullying awareness over time, bullying incidence, or objectively verified safety.

Table 2. User Evaluation Statements

No.	Evaluation Statement
1	The system makes it easier for me to report cases of bullying that I experience or witness.
2	I feel more comfortable and secure using this system compared to reporting in person.
3	The system helps students feel more protected from bullying at school.
4	This system helps raise students' awareness of the importance of preventing and reporting bullying.
5	The system supports creating a safer school environment.

Table 3 presents the response frequencies and weighted scores for the five questionnaire items completed by 30 respondents.

Table 3. Results of the respondent questionnaire

Evaluation Statement	Answer					Amount
	SB	B	C	K	SK	
The Bullying Case Reporting Information System makes it easier for me to report the bullying cases I experienced.	19	9	2	0	0	137
I feel more comfortable and safer using this system compared to reporting bullying cases directly.	12	14	4	0	0	128
This system helps students feel more protected from bullying at school.	16	7	7	0	0	129
This system helps me and my friends raise awareness about the importance of preventing and reporting bullying.	14	13	3	0	0	131
I feel this system helps create a safer school environment by reducing bullying.	17	9	4	0	0	133

Based on the results in Table 3, the total score was 658 out of 750, yielding a feasibility level of 87.73%. This value is in the Very Good category, indicating that the system has achieved a high level of user acceptance. The first indicator, ease of reporting bullying cases, achieved 91.33%, the highest score among all indicators. These results indicate that the system provides a simpler, faster, and documented reporting mechanism, making it easier for students to report bullying. The second indicator, comfort and safety in reporting bullying, scored 85.33%. This score indicates that most respondents felt more comfortable using the system than reporting in person. The web-based reporting feature and structured data storage mechanism provide users with a sense of security when submitting reports. The third indicator, student protection from bullying, scored 86.00%. These results indicate that users believe the system can help schools provide better protection through a systematic, documented process of reporting, verification, and follow-up.

The fourth indicator, increased awareness of the importance of combating bullying, scored 87.33%. This finding suggests that the system not only serves as a reporting tool but also encourages students to be more concerned about bullying prevention efforts by providing easily accessible information and reporting processes. The fifth indicator, the system's contribution to creating a safer school environment, scored 88.67%. This score indicates that respondents believe the system can help schools handle bullying cases more quickly and in a structured, documented manner, supporting a safer, more conducive learning environment. Overall, the evaluation results indicate that the web-based Bullying Case Reporting Information System at Viertola Elementary School, Vantaa, Finland, has an excellent user acceptance rate of 87.73%. These results indicate that the system is suitable for use as a digital reporting tool that can improve ease of reporting, user safety, student protection, bullying awareness, and the effectiveness of case management within the school environment.

Discussion

This study developed and conducted a preliminary evaluation of a web-based bullying reporting system at Viertola Elementary School in Vantaa, Finland. The platform integrates report submission, verification, monitoring, and documentation of interventions. All 18 black-box testing scenarios produced the expected outputs, while 30 respondents completed the five-item questionnaire, yielding 658 of 750 possible points (87.73%). Together, these findings provide evidence of functional performance within the tested scenarios and favourable user perceptions of the evaluated aspects.

RAD provided the framework for organizing the development process. (Beynon-Davies, Came, et al., 1999; Marques et al., 2024; Sinha & Lee, 2024; Theodorakopoulos et al., 2024) examined RAD through seven project case studies, illustrating the importance of considering its application in actual development contexts. In the present study, RAD structured requirements planning, user design, construction, and cutover activities. However, the study does not show that RAD was faster or more effective than alternative development approaches because it did not evaluate development

time, costs, or comparative performance. Its contribution should therefore be understood as the development framework used in this project.

The ease-of-reporting item received the highest score, at 91.33% of the maximum possible item score. This finding suggests that participating users perceived the reporting process positively. The platform enables report submission and access to reporting information through a common interface, providing a plausible explanation for this favourable assessment. Nevertheless, the study did not independently measure task completion time, reporting success rates, or performance compared with existing procedures. The result supports perceived ease of reporting rather than a demonstrated improvement in reporting efficiency.

The comfort and safety item scored 85.33%. This result reflects users' assessments of the reporting experience, rather than an objective evaluation of information security. (Messman et al., 2024) examined anonymous reporting systems as a school violence prevention strategy and identified limited empirical evidence concerning their effectiveness. Their review provides relevant context for considering reporting arrangements, but the present platform requires user accounts and should not be described as anonymous unless it explicitly implements anonymity. Account authentication, confidentiality, and anonymity are distinct features. The presence of authentication and role-based access alone does not demonstrate that sensitive information is protected under all conditions.

The student protection item scored 86.00%, suggesting that respondents perceived the platform as potentially supportive of school-based protection services. Integrating report review, status updates, and intervention documentation gives school personnel a way to organize case information. However, the evaluation did not measure the quality of follow-up actions or changes in student protection outcomes. A useful distinction is therefore required between providing functions that support case management and demonstrating that their use improves protection in practice.

The bullying awareness and safer-school-environment items scored 87.33% and 88.67%, respectively. These ratings indicate favourable perceptions, but they do not establish increased awareness over time or reductions in bullying. In their study of KiVa implementation in 15 Finnish primary schools, (Elshan et al., 2022; Herkama et al., 2022) identified program-related, organizational, and contextual facilitators and barriers to sustainability and emphasized the importance of organizational factors. In the present context, this supports considering how a reporting platform is incorporated into school procedures, rather than assuming that making the technology available is sufficient to produce sustained benefits.

The platform's educational contribution lies in its potential to support student protection services through structured reporting and case documentation. Its practical value depends on how school personnel review reports, communicate with students, document interventions, and coordinate follow-up. Drawing on the implementation considerations examined by (Astuti et al., 2026; Henry et al., 2025; Herkama et al., 2022) a reasonable practical implication is that introducing the platform should be accompanied by clear responsibilities and procedures for its use. This is an implementation implication, not an outcome demonstrated by the present evaluation.

The study also illustrates the distinction between functional performance, favourable perceptions, and demonstrated effectiveness. The limited evidence of effectiveness (Messman et al., 2024) identified reinforces the importance of evaluating outcomes beyond the availability of reporting functions. However, differences between anonymous reporting systems in United States educational settings and the account-based platform examined here limit direct comparisons. The present findings contribute a preliminary evaluation of a specific school-based workflow; they do not establish superiority over other reporting arrangements.

Several limitations should be considered. The evaluation involved one school and 30 purposively selected respondents, limiting generalisability. The study combined responses from students and school personnel, although their roles and experiences may differ. The questionnaire's validity and reliability require adequate documentation, and the combined score should be treated as a descriptive summary of the five items. Functional testing covered 18 reported scenarios and did not establish comprehensive feature coverage, security, or robustness. The reported evaluation also provides no baseline, comparison-group, or longitudinal outcome data from which to determine changes in bullying, reporting behavior, or case-handling time. Further research should address these limitations through role-specific evaluations, appropriate instrument assessment, broader system testing, and follow-up measures of educational service outcomes.

Conclusions and Suggestions

Conclusions

This study developed a web-based bullying reporting system integrating report submission, verification, monitoring, and intervention documentation at Viertola Elementary School in Vantaa, Finland. All 18 reported functional test

scenarios produced the expected outputs. A five-item questionnaire completed by 30 respondents yielded 658 out of 750 possible points, equivalent to 87.73%, indicating favourable user perceptions of the evaluated aspects. These findings support preliminary functional performance and perceived relevance to school-based student protection services. They do not establish reductions in bullying, improved reporting or response times, or verified information security. The study contributes an integrated digital reporting workflow, but its educational value requires further evaluation of implementation, measurement quality, security, and student protection outcomes.

Suggestions

Further research should evaluate the platform across multiple schools and report findings separately for students and school personnel. The questionnaire should undergo appropriate validity and reliability assessment, with items suitable for each participant group. Evaluation should include broader functional coverage, access-control and security testing, and direct measures of reporting-task performance and case-handling time. Longitudinal studies are needed to examine reporting behaviour and student protection outcomes. Further development should prioritize documented user needs and integration with school safeguarding procedures.

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Author Contributions

Teemu Santonen and Syahrul: Conceptualization, methodology, software, investigation, formal analysis, visualization, writing-original draft, and project administration. Bokun Zlatko: Methodology, validation, supervision, and writing – review and editing. All authors have read and approved the final version of the manuscript.

Research Ethics and Informed Consent

The school administration granted permission to conduct the research at Viertola Elementary School in Vantaa, Finland.

Conflict of Interest

The authors declare no financial, personal, or professional conflicts of interest related to this study.

Data Availability Statement

Participant-level data are not publicly available because they contain sensitive information concerning minors and school-based bullying. Any disclosure is subject to applicable consent, confidentiality requirements, and institutional authorization.

Declaration of Generative AI Use

The authors used ChatGPT to improve language and clarity and to assist with drafting and revising portions of the manuscript. All AI-assisted text was reviewed and verified by the authors, who take full responsibility for the accuracy, originality, and integrity of the final manuscript.

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