# Application for Assessment of Quality of Textbook/Reference Books and E-Books

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***Abstract*** *- Still, people underline that it is critically important to determine the quality of textbooks to enhance the teaching process and ensure the maintenance of academic standards on a high level. The kind of review that is done today is mostly based on incoherent files, trembling scoring and manual correlation among the reviewers. This study proposes a textbook evaluation system through the internet that draws the entire review process into a single virtual location. Their development was founded on React, Typescript, and Supabase. It manages the submission of documents, rated forms, reviewed safely with a secure authentication, and keeping feedbacks safe at the same location. In each of the submissions, clear metadata enables administrators to view summaries, participate in the monitoring process and to monitor quality across the sets of textbooks of any quantity. Instead of the paper reviews or informal contributions, there is a proper demand a regular system of reviews that will be supported by effective data management and cloud backup. It cuts down on errors. It accelerates the decision-making process to the administrators. Eventually, such a arrangement renders the process of textbook selection in educational institutions more transparent and data-driven.*

## I. INTRODUCTION

Textbooks influence the conceptual knowledge of students, mastering the initial skills, and working on course material. However, in spite of their contribution to the teaching and learning, some scholars believe that textbook is not of much value. Many decades ago textbook quality has been mentioned as a critical determinant of the pedagogic performance and quality of educational practice [3], [6], [7]. However, the use of informal dialogue, hand-written rating form, or disjointed review notes is being used even in most institutions in determining the appropriateness of the textbook. Overall, all these approaches lead to inconsistent evaluation and traceability issues alongside difficulties in the comparison of materials across programs or semesters [1], [4], and [8].

Further, the conventional methods are not uniform and do not provide clear guidelines; in the majority of cases, they are based on the subjective judgments related to quality. In the absence of criteria, the reviewers do not get to mention important instructional characteristics, misunderstand the content parity, or simply go without evaluating critical remarks in a systematic documentation [5], [7]. Research on the assessment behavior shows that the emphasis that is placed on readability, interest and clarity about instruction by evaluators has fluctuated [2], [9]. That is why systematic instruments must be utilized in the course of implementation of the evaluation procedure.

The given study suggests the creation of a web-based system of evaluating textbooks that will take the evaluation criteria to the higher level, collect reviews, and make the judgments more reliable in terms of textbook selection. The digital assessment system has its advantages, over the paper assessment system, in that scoring is uniform, and data storage is secure and instant response aggregation by reviewers.

The developed with the help of React, Typescript and Supabase system can enable the academic institutions to handle the role of reviewers, submissions, and generation of aggregate summaries reflecting trends in the quality of the textbooks.

An organized system of judging textbooks, which lessens the element of personal judgment and uniformity across the reviewers;

cloud-hosted service that can support secure access control, real-time feedback, administrative process including consolidated document processing; simplified, nimble implementation that is satisfactory in the context of an institution that requires a quality process assessment of textbooks; automatic scoring and summary generation enables evidence-based choices in the process of selecting instructional content. The system would be very applicable in the educational institutions, higher learning institutions, and to academic institutions that believe in enhancing the textbook assessment systems transparency.

## II. LITERATURE REVIEW

The studies of textbook evaluation have not been delved into by many years. Preliminary studies prescribed the primary manner in which instructors evaluate educational resources.

One of the first large reviews of introductory textbooks was done by Cobb. He inspectively examined sixteen samples. The findings of his revealed significant differences in their construction, clarity and teaching method. This is due to such large deviations, and unless teachers have an organized mode, it becomes difficult to choose the best one. Works such as his actually demonstrated why good evaluation techniques were so important [1].

Subsequently, scholars began to examine the manner in which reviewers interact with the books. Gurung and Martin came to the Textbook Assessment and Usage Scale, which was shortened to TAUS. The tool was used to test the manner in which students and teachers process and understand textbook material. They discovered that individual variables, including interest in the subject or prior knowledge are significant contributors to the ratings. A good textbook may not receive the same grades even when reviewed by different individuals based on his or her perception [2].

After that Fey and Matthes presented a rather simple checklist of high quality textbooks. What became apparent in their review is that those that are the best possess proper facts, reasonable layout, absence of cultural or bias concerns and are suited to the learning objectives. Their ideas hold real value. They offer schools and assessors a platform upon which decisions are made [3].

Mohammadi and Abdi examined real assessments in upper classes and classrooms. Their case considered the number of tests that are overloaded with subjective feelings. The result of that is uneven results throughout the board. They have mentioned that applying formal techniques, including online techniques, reduces errors and allows maintaining consistency [4].

Mahmood realistically assessed outdated evaluation arrangements. He described the fact that there are very many places which claim to go through textbooks but do not live up to standards. He termed it as a deception of assessment. The system appears to be well arranged on the surface, yet, it does not measure books efficiently on the quality aspect. All this shows that there is a need to have consistent rules and training of individuals conducting the reviews [5].

Woodward and his crew plowed into the general process of school textbook vocations. These past types were scribbled in different locations. These they discovered were frequently descending to comfort or to that which was in fashion, not fundamental probes. This supports the reasons why formal systems are useful in making decisions that are anecdotal and relying on substantive information [6].

A major step in the construction of those systems was made by Ivic, Antic, and Pesikan. They compiled a comprehensive instruction on textbook requirements. It goes in dispensation such as page setup, pictures, clear-cut writing, fit to learn and its approachability. Their entire strategy is lauded by creating more consistent and reliable reviews [7].

Yasar applied side-by-side approach to book on two courses in geography. In his findings, his toplines indicated the strong and weak points in texts with clearings. He observed that the online tools have simplified the process of comparing and filtering out what is being said by the reviewers [8].

Race emphasised that the evaluating people are important. According to him, with the provided guidelines, they need to apply them properly. Factors such as motivation, willingness, and level of expertise influences the level of reliability of the scores. He suggested the application of directed templates and most particularly web based templates to maintain everything in line and on course [9].

Giger and Hadd narrowed down on the nursing textbooks, yet their arguments are broader when applied to the evaluation of books. They advocated cultural and content awareness which involves all in the content. With increasing diversity of student groups, the cultural fit issue becomes a necessity in evaluating textbooks in the modern world [10].

The aggregation of these ten studies indicates that there is a shift in textbook assessment toward the disposition of gut feelings towards organised, open and technology supported approaches. Ultimately, this leads to accurate, reasonable, and useful education choices reviews.

## III. SYSTEM DESIGN AND ARCHITECTURE

### Architectural Overview

The system is generically a four tiers architecture. It breaks down into various major elements, which are collaborative. The uppermost layer deals with the user interface concerns in general. This consists of a web application developed using the TypeScript and React technologies. Administrators and reviewers access customized dashboards suited to their specific roles. Dedicated portals allow them to submit textbooks without much hassle. Users complete evaluation forms directly on these pages. They review summaries of results in the exact same locations.

The application logic layer follows right after for handling core functions. It takes care of user authentication and related tasks. Navigation features support the process of uploading textbooks smoothly. Scoring occurs here based on established rubrics. It also processes reviewer inputs in a reliable manner.

Security forms its dedicated layer using Supabase tools for protection. Auditing receives thorough monitoring throughout. Row-level security policies ensure data stays safe. Role verifications happen with precision. Session management operates within this layer. Access to textbook files remains limited to authorized individuals only.

**Component Description**

The user interface relies on React and Typescript for developing web pages. Dashboards function via these interactive displays. Submissions process through the identical framework. Reviews take place using this same structure.

The backend operates on Supabase servers for efficiency. Authentication stays under its direct control. Database operations route through these servers. Storage receives full backing from them.

The selected database is Supabase Postgres for reliability. It stores user information with complete details. Textbooks occupy their designated areas. Ratings accumulate within the records. Logs capture every event in significant depth.

Security features include role-based access controls for safety. Tokens manage the authentication procedures. Rules impose restrictions on storage access points.

## IV. METHODOLOGY AND IMPLEMENTATION

**Evaluation Workflow Handling**

The system ensures reviews originate solely from verified reviewers. It avoids network-based access verifications entirely. The software employs Supabase tokens for validation purposes instead. Reviewers authenticate to receive a signed JWT token. This token accompanies every subsequent request. It includes user information along with role specifics. Session durations establish time boundaries. Prior to any form submission or upload, the system examines the token. The Supabase authentication service assesses its integrity. This confirms the request's legitimacy overall. It also detects expired tokens promptly.

This approach prevents unauthorized access in full. Only registered reviewers submit scores successfully. Altered or outdated credentials face immediate rejection.

Algorithm 1 illustrates the authentication validation procedure. The input consists of a jwt_token. The output provides a validity status. It starts by decoding the token to extract identity and claims. Supabase Auth confirms the signature's authenticity. Invalid requests receive denial. Valid tokens proceed to role evaluations. On the mathematical aspect, it functions in this manner. Auth_valid indicates the jwt_token verifies correctly. This holds true as long as the role matches the admin or reviewer group.

**Reviewer-Resource Binding**

Reviewers connect directly to the evaluations they submit. This arrangement blocks any attempts to manipulate ratings or conceal reviews. It enforces a strict one-to-one link so each reviewer handles only their own assessments. When a user logs in, the app saves a session ID in the browser's local storage. This tracks their review activities pretty much in real time. To ensure that all submissions are checked, the system will verify them by matching the prevailing session number to the database details of the reviewer. Where not compatible, it warns of the matter as an illegal one instantly. The system then in turn blocks the submission and captures all the details to be viewed by admins in future. The approach encourages truthful judgments in general. One cannot change identities during a session. They remain incapable of bowing down to another profile as well. Reviewer Binding Verification is discussed by Algorithm 2.

It takes input in terms of session id and user id. The output of Authorization Status is as shown below. The steps work like this. First, in case the userid seems new, add the session ID to it. Second, without matching between the stored session ID and actual one forward the submission.

**Rubric-Based Evaluation System**

Submissions are joined to a standard rubric by the system following all the preliminary validation. It bypasses verification by biometrics. Rather, it is based on a pre-constructed template of the process. The corresponding template covers topics like the correctness of the content, the clarity in the institutions, inclusiveness, quality of the design, and the compliance with the curriculum standards. Each of the sections gets a numerical score or a description rating.

Once the reviews have been saved in the system, the results are aggregated into some universal scoring vector. The composite rating is a result of weighted value aggreguation which is specified by the institution.

The mathematical model appears as follows.

Final score=w1ci + w2ci + w3ci +...wnci.

In this case wi represents the weight of criterion i. And ci is the rating of the reviewer on the criterion. The method enhances the consistency of various reviewers. It minimizes differences due to personal biases scoring.

**Database Structures and Database Security.**

It is a normalized relational schema-based platform based on Supabase Postgres. Users including administrators and reviews together with textbooks, criteria, reviews and audit logs are important entities.

Supabase has Row-level Security rules to control security. These allow the users to navigate on records of other reviewers. Each database query is made by a parameterized query that the client produces. This reduces the possibility of injecting attacks. The textbook files are stored in Supabase Storage. The access is made by means of secure URLs with strict viewing limitations. Review data and comments are in the form of scoring vectors that are expressed in JSON. This format is easy to retrieve in order to see a summary.

**Security Workflow**

Assessments are based on a simple process of verification. Authentication is seen as verifying things. It establishes that the identity of the reviewer is not just invalid. This is followed by session verification. This is to make sure that the present session links to the right reviewer. Rubric validation is the next, following. It reviews every field in comparison with set standards. Stalling of the chain creates an audit document to administrators. It works to prevent the submission as well.

## V. RESULTS AND DISCUSSION

### Functional Assessment

The system maintains the quality of evaluation as time passes by. It achieves this by means of enforced user authentication. It is also based on well-structured rubrics throughout the entire process. The measures will have a steady level of standards in place. The main body of the modular design here is Supabase. This is quite alright when a small team of reviewers is involved. It deals with them with no actual problems. The installation is useful in bigger institutional applications as well. Scalability is effective with the various sizes of groups in practice. The web interface presented is just a simple guided interface and offers usability. Only basic training is required to complete their work through such an interface by administrators and reviewers.

### User Interface Overview

The platform has a role based system both to the reviewers and administrators. Both dashboards have easy-to-use navigations and access controls. Immediate information on assessment tasks is updated in real-time. Through this approach, everything is structured without any issues.

### 1. Login Page

VI. Everyone can enter the page in a secure manner. Supabase uses email and passwords to allow access to users. The system is a verified identification of the user and permission of the full access is given. It avoids unauthentic attempts using token balances and session authentication. Security features are powerful in an effort to block different threat.

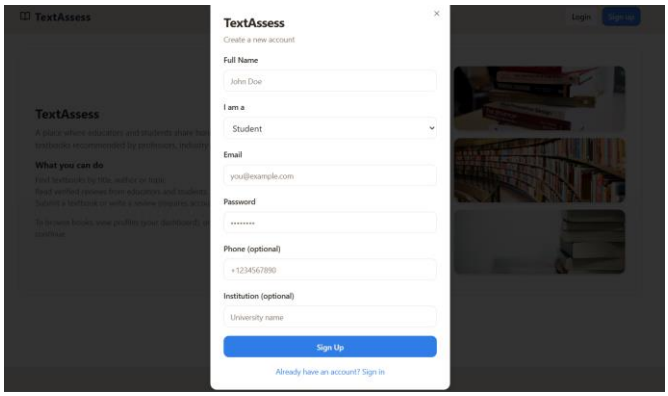



Fig 2: Login page

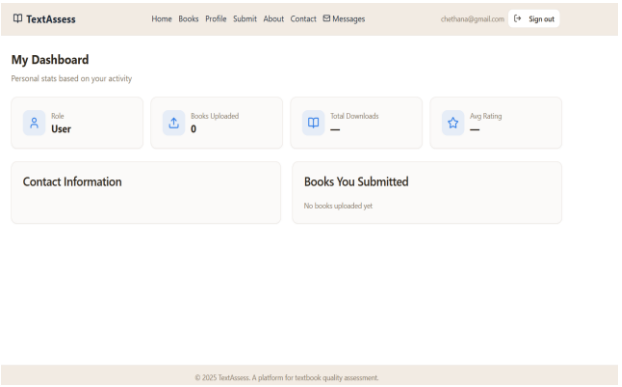
### 1. Dashboards

The dashboards are flexible according to the role of the user within the system. They offer services that revolve around assessment and submissions. They can also be used in monitoring the general progress. The design is relatively suitable to each of the roles.

#### *a) Administrator Dashboard*

This section provides a brief description of users, submissions as well as active evaluation tasks. Administrative panel provides the ability to manage reviewers and criteria. It deals with the general system settings too. The analytics section displays the significant data such as the assessment figures and reviewer involvement. It identifies textbook data trends as well. Key system events are recorded on audit logs to promote transparency. Adding or altering evaluation standards and rubrics is a part of administration. The monitoring of reviews is done sequentially. It also addresses questions of reviewers that arise. All these components connect towards a sound oversight ultimately.

Fig 3: Dashboard




#### b) *Reviewer Dashboard*

Assessment questionnaires on this area are handled by reviewers. Textbooks are also uploaded there. The interface shows the previous submissions and review tasks allocated. Comments and feedback section is something that assists in orderly notes about textbooks. The rubric tool guides in a simple way through scoring.

Individual analytics display the reviews done and the present progress indicators. The reviews receive the precise assistance they need to continue the work going.

#### c) Submission Interface

Although this interface allows users to post textbook files of PDF format. It can handle reviewer and rubric rating in entirety. Everything, which is posted in the system, is checked. All the inputs are connected to the tested profile of the reviewer. At the point, the submissions pass forward.

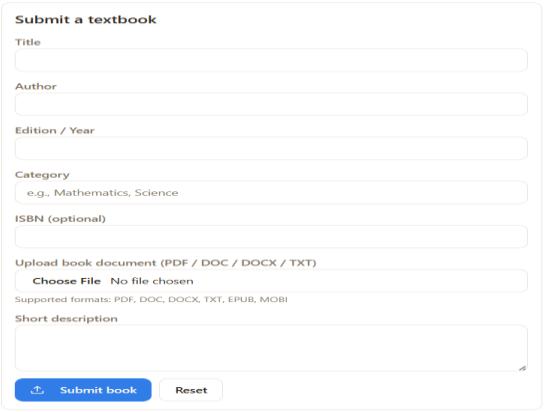



Fig 4: Submission Interface

2. Textbook upload Page

It is here that textbook documents are posted by reviewers. Such metadata as title, author, academic category, and edition, are collected. The process is coincidental with the core assessment processes and stock in the warehouses. The uploads do not induce any snags to the whole work process.

3. Audits and Analytics

The system logs include the logins, uploading submission and updating of rubrics. The activity of reviewers and ratings of the textbooks shows significant trends which are shown by dashboard analytics. They are also consistent resultant in terms of ratings. It reminds the administrators of fraud or ineffective log-ins. It flags uneven results too. Follow-ups identify the problems at an initial stage before they become large.

**Discussion**

At this system, there display benefits of fairness in textbook appraisal. It brings consistency too. Those benefits are pushed along by the use of a structured digital workflow which has rubrics. The platform will minimize errors which normally occur in the old manual review. It does so using regular scoring sheets and a safe place. Authenticated user access is also helpful. The institutions may be expanded, incorporating such tools as in-depth analytics. Without altering the fundamental structure, they may have additional sets of criteria. That is achievable through the modular design. Overall, the approach is pragmatic with respect to balancing oversight, transparency, and usability. It is concerned with actual needs.

## VII. CONCLUSION

The following project gives out the bare outline of an online system that grades textbooks. It uses some rubrics to inform such evaluations. The configuration regulates user access and process data in the cloud. All draw textbook reviews all to one central point. That method lessens discrepancies in rating. It also dealt with a feedback that is spread over several locations. Besides that, it addresses the gaps in oversight that had been imposed on the departmental level. The latter issues continued to arise within the former manual procedures.

The answer lies in role-based access controls to control who has access to what. The whole working process is driven by secure login features. The rubrics are the guide in the entire review procedure. This makes sure that there is only a specified number of people who make the evaluations. The same criterion applies to all the reviews. All the information filled by the reviewers is recorded by the platform. It keeps proper records in check. It produces credible recaps of each cycle. That would not be a mistake such as that involved in creating manual processes or unsystematic spreadsheets. Its effectiveness was tested by several review sessions.

The system is working fairly good as it is. Nevertheless, it can be further improved in a number of ways in future. One of them revolves around the inclusion of AI-supported reviews. This would introduce easy AI capabilities of assisting reviewers with locating issues or blank spaces in textbook content. The second strategy will be to develop a mobile application of the system. Assessment might then become easier on the phones or tablets. The cloud expansion is also a great alternative. It would improve storage in the cloud to support large files and also support a higher number of users simultaneously. Strengthening audit tracking also seems to be required. That would require more detailed and accurate logs of all the activities to enhance transparency throughout the board. Collaborative reviewing involves the usage of several reviewers in groups and discussing one textbook. Such updates would be effective in enhancing the capacity of the system to expand and remain dependable. They would adhere to the regulations of safeguarding data in establishments.

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