


Article

An Expert Usability Evaluation of a Specialized Platform for Designing and Producing Online Educational Talking Books

Mohamed Elsayed Ahmed ^{1,*} and Shinobu Hasegawa ² ¹ Instructional Technology Department, College of Specific Education, South Valley University, Qena 83523, Egypt² Center for Innovative Distance Education and Research, Japan Advanced Institute of Science and Technology, Nomi 923-1292, Ishikawa, Japan; hasegawa@jaist.ac.jp

* Correspondence: mohamed.mohamed@sed.svu.edu.eg

Abstract: Educational institutions are increasingly using audio-based learning resources and technologies nowadays, especially for students who are auditory learners and visually impaired. The ability to design and create online educational talking books with a pedagogical foundation has become essential for students studying instructional and information technology in the age of digital learning. With the need to enhance such skills to target students in higher educational institutions, instructional and information technology students have no specialized platform for designing and producing an online educational talking book without web programming challenges. This study suggests a new specialized, web-based platform that can assist students in developing online educational talking books. In this study, fourteen instructional technology experts evaluated the proposed platform's usability. An online questionnaire was utilized to gather data, applying qualitative and quantitative methodologies. The results show that the proposed platform is appropriate for creating and developing an online educational talking book for the intended audience of students. Furthermore, the suggested platform's current version had a workable design that was appropriate for helping students acquire the necessary abilities.

Keywords: specialized web-based platform; supportive ICT teaching tool; distance learning; online educational talking books; instructional and information students



Citation: Ahmed, M.E.; Hasegawa, S. An Expert Usability Evaluation of a Specialized Platform for Designing and Producing Online Educational Talking Books. *Appl. Syst. Innov.* **2024**, *7*, 74. <https://doi.org/10.3390/asi7050074>

Academic Editor: Teen Hang Meen

Received: 20 July 2024

Revised: 13 August 2024

Accepted: 21 August 2024

Published: 26 August 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Recent increases in the usage of instructional technology applications in schools and universities have made the development of new specialized educational software necessary to support teachers in providing greater support to their students [1]. Developing and implementing specialized digital educational tools help modernize the teaching and learning process and would contribute to students acquiring sufficient learning capabilities. As a result, the proportion of high-quality learning would increase in educational institutions, particularly in higher education.

Audio-based digital learning refers to designing, developing, and using digital audio recordings to target students as E-learning content and feedback. There are numerous options for audio-based digital learning, including audio feedback, audio courses, educational talking books or audiobooks, audio lectures, and educational podcasts. A variety of aspects of the learning process were positively impacted by audio-based digital learning forms: audio feedback improved learning and students' engagement in the process [2,3], audio courses assisted students in improving their listening skills [4], educational audiobooks served as an effective tool for improving pronunciation skills [5], audio lectures enhanced learning performance [6], and educational podcasts positively impacted university students' learning process [7].

Educational talking books or audiobooks are considered an audio-based digital learning form that can empower learning. Essentially, the utilization of educational talking

books or audiobooks offers several advantages [8]: It provides a comfortable approach to increasing vocabulary and word exposure, it provides a dual stimulus for learning as a form of reinforcement, it is a beneficial tool for students who struggle with memory, and it is considered an assistive technique for dyslexic and visually impaired pupils and promotes independent learning. Recent studies have confirmed the multiple positive effects of audiobooks or digital talking books on learning [9–14]. Also, previous studies demonstrated a positive, significant impact on learning in target students regarding improving their ability to write a narrative text [15], their listening skills [16], and their speaking achievement [17]. In this research, an online educational talking book (online ETB) is a digital course or book with an audio narration delivered over the internet, where it is listened to, and the playback speed is controlled according to the student's learning speed. In addition to the text in the educational talking book, students listen to descriptions of pictures, graphics, and silent videos. Therefore, developing a specialized online educational talking book platform would facilitate the development of specialists and integrate this new ICT tool into future education.

One of the most significant issues facing specialist students in instructional and information technology departments in the age of electronic education is the need for new specialized educational software that enables them to design and produce online ETBs for future auditory and visually impaired learners. However, the developed platforms currently lack specialized features to enable instructional and information technology students to easily design and produce online ETBs.

This study proposes a specialized web-based platform tool named Educational Talking Book Platform (abbreviated to ETBP) to assist instructional and information technology students in designing and producing online ETBs for any domain. The proposed platform adopted new specialized tools for developing online ETBs, such as the ETB designer tool and ETB creator tool. It also involved some educational principles regarding microlearning [18], E-learning theory [19], cognitive apprenticeship [20], self-paced learning approach [21], and dual coding theory [22]. We conducted a usability evaluation for the proposed platform over the experiment focused on instructional technology expert review to assess the proposed platform's importance in teaching skills of designing and producing online ETBs, the usefulness of the platform's functions for students, and the quality design of the proposed platform. According to the usability evaluation findings, instructional technology experts concurred that the specific proposed platform might assist students in designing and producing online ETBs. Additionally, the current version of the proposed ETBP was an acceptable design suitable for learning students' target skills. The proposed platform is anticipated to positively affect education sustainability by encouraging the development of environmentally friendly digital talking books, reducing paper waste, enhancing information accessibility, fostering inclusivity for individuals with disabilities, and saving on costs.

This research aimed to develop a web-based platform suitable for designing and producing online ETBs as well as investigate a usability evaluation of the proposed platform with instructional technology experts. This study focused on two research questions. RQ1: What is the pattern of a platform for designing and producing online ETBs for both instructors and students of instructional and information technology? RQ2: What are the perceptions of instructional technology experts about the proposed platform?

2. Development of the ETBP

2.1. The ETBP Overview

This project, ETBP, was implemented for faculty in the Departments of Instructional and Information Technology who wanted to enable their students to design and produce online ETBs. To answer RQ1, the ETBP was designed based on the following five educational theories/principles and three technical requirements.

- (a) Microlearning: the principle that content learning time should not exceed 10 min [18].

- (b) E-learning theory: consideration of multimedia, segmentation, consistency, and learner control [19].
- (c) Cognitive apprenticeship: applying main methods such as modeling, coaching, and scaffolding [20].
- (d) Self-regulated learning: self-paced learning approach, time management, and self-evaluation [21].
- (e) Dual coding theory: user interface design using multiple channels [22].
- (f) Functional requirements: ETBP should be based on instructor/student authentication and consist of a set of learning tools required for online ETB learning.
- (g) Software requirement: ETBP should be able to support daily used applications and store learning log data and extend its functionality easily.
- (h) Performance requirements: ETBP should have a stress-free response for instructors/students.

2.2. ETBP Functions

Based on the requirements described in the previous section, we developed a new ETBP with the following seven functions as a web application running on IIS, employing CakePHP. As shown in Figure 1, a dual-coding design combining icons and text was adopted throughout the user interface.

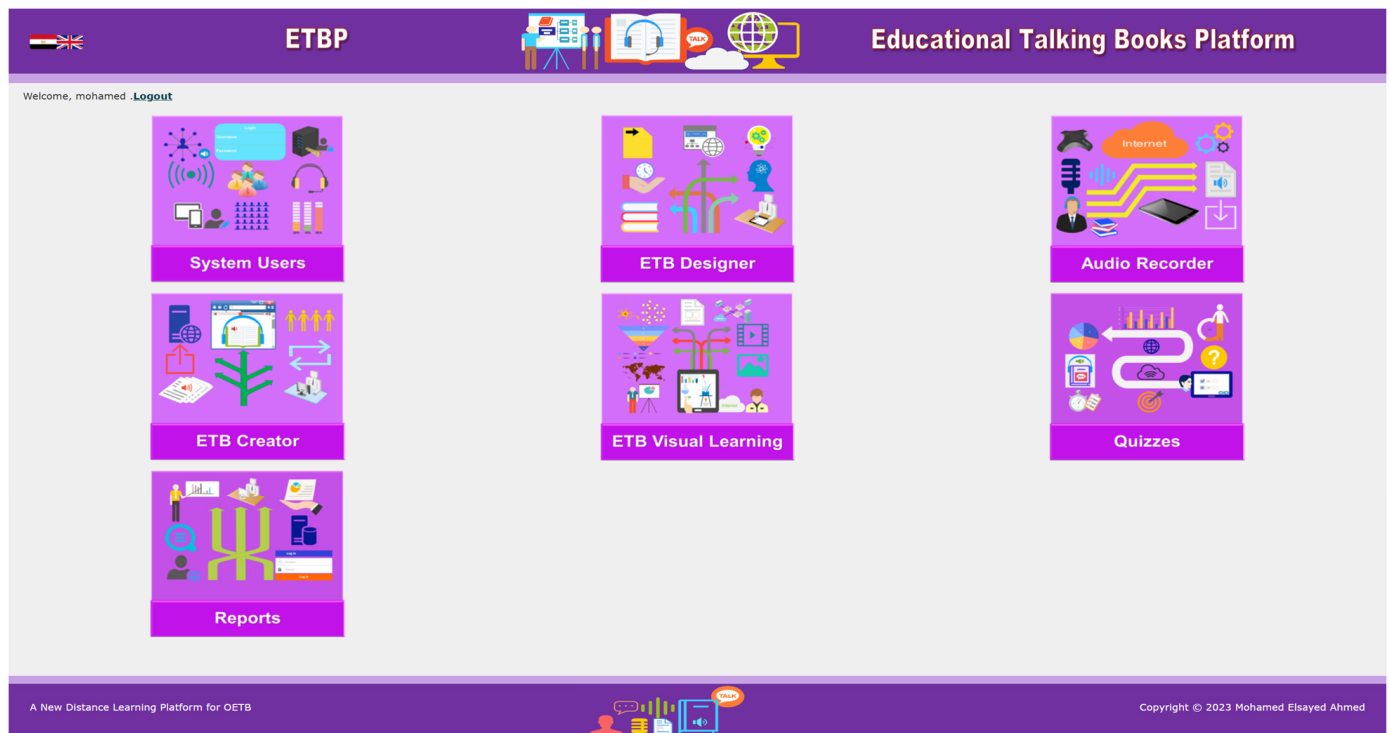


Figure 1. The user interface for the instructor mode of the ETBP.

1. Platform Users function provides password-based login/logout and role-based authentication for instructors and students. It also provides user account management (create, edit, delete, display, and search) for instructors.
2. ETB Designer function allows for students to design, edit, manage, and search online ETB scenarios, providing no-code templates based on the microlearning principle of 5 min or less of content and the segmentation principle of structuring scenarios with overviews, chapters, and pages.
3. Audio Recorder function records audio materials based on the online ETB scenarios in conjunction with the h5p Audio Recorder website.
4. ETB Creator function enables students to publish, edit, manage, and search for online ETBs. Based on multimedia principles, it provides no-code templates that combine

- images, graphics, and videos with text scenarios and audio materials. Based on the learner control principles, it can add video/audio controls, such as “play”, “stop”, and “repeat”, and navigation options, such as “next” and “back”.
5. ETB Visual Learning function manages and delivers content for E-learning of online ETB development methods. It teaches students a model case of content creation based on the principles of cognitive apprenticeship. It comprises three pieces of content that reflect the principles of E-learning theory, textual and visual explanation, coherence, and learner control, as well as the principles described in the functions above.
 6. Quizzes function is a no-code template tool for creating, editing, and managing quizzes (true or false/choice) for student formative assessment. Based on the principle of self-regulated learning, students can check their understanding at any time.
 7. Reports function generates student performance reports, such as student activity logs and quiz scores from the ETBP database.

The developed ETBP realizes the above requirements as follows. (a) Microlearning principles are implemented in the no-code templates of ETB Designer to help students design online ETB segments for effective learning without learners’ overload. These principles are also reflected in the content provided by ETB Visual Learning. (b) E-learning theory is implemented in the templates in ETB Designer (Segmentation) and ETB Creator (Multimedia, Learner Control), allowing for students to develop content that facilitates learner comprehension quickly, as shown in Figure 2. ETB Visual Learning is also based on the same concept. (c) The principle of cognitive apprenticeship is realized in ETB Visual Learning function by providing not only the initial material to teach online ETB development methods but also practical learning using ETB Designer, Audio Recorder, and ETB Creator. In addition, instructors could provide feedback to students based on reports generated by Reports, leading to more effective ETB development. (d) The principle of self-regulated learning is mainly realized by Quizzes that are available at any time so that students can confirm their understanding and select the necessary functions to proceed with their learning. (e) The dual-coding principle is fully incorporated into the user interface design to reduce the learning cost for usability and achieve an environment where it is easy to concentrate on learning.

Add Content Page to Electronic Courses

Page Content title*

please enter the title of content page here

Page Text*

Rich text editor toolbar: Source, Undo, Redo, Bold, Italic, Underline, Strikethrough, Text Color, Background Color, Bulleted List, Numbered List, Indent, Outdent, Link, Unlink, Image, Table, Horizontal Line, Full Screen, Help.

please enter the content text of Lecture here

Page graphic(Max Size 500MB)

No file chosen

Page Video

No file chosen

Audio File of the Page*

No file chosen

Figure 2. No-code template for creating online ETB content page with audio narration.

2.3. Importance of the ETBP for Instructors and Students in Higher Education

For RQ1, the proposed ETBP is developed based on five principles and three requirements and offers several benefits to instructors and students in education and information technology. For instructors in instructional and information technology departments, the ETBP provides an adopted professional web-based platform for designing and producing online EBPs as digital teaching materials. It enables creating and presenting multimedia-rich professional learning content and teaches eligible students how to design and produce online ETBs. Instructors can view and evaluate the students' online ETB designs and products. The ETBP offers a practical, no-code template platform for instructional and information technology students to overcome web programming obstacles in developing online ETBs. It also ensures that learning materials are remotely available to students, even in emergency situations. In addition, it provides several training opportunities to support students' self-learning strategies, making it a valuable tool for their academic journey.

3. Methodology

Our study employed a mixed-methods approach, a research strategy that involves using both qualitative and quantitative methods, to investigate the opinions of instructional technology experts on the developed platform and identify any usability issues. Fourteen instructional technology experts participated in the evaluation designed to address the RQ2. The prototype ETBP was made accessible for operational use as a web application on the local IIS server. The Arabic version of the proposed platform was used in the experiment. A post-test questionnaire, including open- and closed-ended questions, was used for data collection.

3.1. Participants

Fourteen instructional technology specialists from South Valley University in Egypt, aged 27 to 51 years (mean = 32.93 years, SD = 6.18), were the participants in this experiment. Six have less than five years of experience in instructional technology, two have between five and ten years of experience, and six have more than ten years. Thirteen of them were faculty in the instructional and information technology department at the same university as follows: a professor (1), an associate professor (2), an assistant professor (3), an assistant lecturer (3), and a demonstrator (4). The remaining is a Master researcher in the instructional technology domain. On December 6, 2023, seven were given a training session with the proposed ETBP, and seven received that training on December 12. The number of participants in this experiment is enough for the qualitative study of usability evaluation [23,24]. Ethics consent was obtained from the scientific research ethics committee in the specific education college, South Valley University, to conduct the research experiment with participants. Additionally, all volunteers who participated in this study as instructional technology experts provided written approval.

3.2. Procedure

They conducted the experiment training with the indicated platform version in a university computer lab. Before the training, we sent out the electronic ETBP guide and user accounts for the ETBP. They initially accessed the platform via a web browser, and one researcher trained them on how to utilize the tools that had been developed. Following their training session, they responded to an online post-test questionnaire designed for experts in instructional technology.

3.3. Instrument

An online questionnaire for educational technology experts was explicitly created for this experiment to assess the proposed platform's importance in teaching the skills necessary to design and produce online ETBs, its tools' usefulness for creating online ETBs, and the quality of its design. The instrument used to gather quantitative and qualitative data for this study was specifically designed and guided by previous studies on software

development and web-based platform design [25–29]. It was divided into five sections: In addition to demographic questions, there were a set of 24 positive design closed-ended questions with a five-point Likert scale and one open-ended question to obtain feedback on the suggested ETBP from instructional technology experts. All quantitative data were analyzed using the mean and standard deviation as a descriptive analysis technique for the closed-ended questions. For the open-ended questions and comments, an inductive thematic analysis approach was used as the qualitative method. See Tables 1–3 in the next section for the question items.

Table 1. Instructional technology experts’ perceptions of the importance of the proposed ETBP (N = 14).

Questions Items	SA	A	N	D	SD	Mean	Standard Deviation
1. The ETBP is considered a new digital teaching tool that supports learning to design and produce online educational talking books.	12	2	0	0	0	4.86	0.36
2. Using such a platform would assist in designing and creating online ETBs in multi-educational domains.	13	1	0	0	0	4.93	0.27
3. The proposed platform (ETBP) would help the instructors teach the design and production of online educational talking books more effectively.	10	4	0	0	0	4.71	0.47
4. Using such a platform would assist “instructional and information technology students” in the digital instructional design of online ETB more efficiently through the ready-made templates for design.	9	4	1	0	0	4.57	0.65
5. Using such a platform would assist “instructional and information technology students” in developing online ETB without the difficulties of web programming.	12	2	0	0	0	4.86	0.36
6. Using such a platform would facilitate designing and producing online ETBs for both regular and blind students.	7	6	0	0	1	4.29	1.07
7. Using such a platform would support developing online ETBs with some microlearning rules, especially the audio duration.	11	3	0	0	0	4.79	0.43
Overall Mean						4.71	

Table 2. Instructional technology experts’ perceptions of the usefulness of the proposed platform tools (N = 14).

Questions Items	SA	A	N	D	SD	Mean	Standard Deviation
1. The tool “ETB Designer” is useful in creating a digital design for an online ETB (book overview—chapter/unit—content pages) with a text scenario for recording.	10	4	0	0	0	4.71	0.47
2. The tool “Audio Recorder” is useful in recording and downloading audio files of text scenario design for educational talking books.	11	3	0	0	0	4.79	0.43
3. The tool “ETB Creator” is useful in creating online ETBs in various domains	13	1	0	0	0	4.93	0.27
4. The tool “ETB Visual Learning” is useful in creating and publishing visual lecture content about how to design and produce online ETBs for students.	10	4	0	0	0	4.71	0.47
5. The tool “Quizzes” is useful in creating and publishing quizzes besides receiving students’ responses.	12	2	0	0	0	4.86	0.36
6. The tool “Reports” is useful in generating reports for students’ activity logs and quiz results.	12	2	0	0	0	4.86	0.36
Overall Mean						4.81	

Table 3. Instructional technology experts' perceptions of the quality of the platform design (N = 14).

Questions Items	SA	A	N	D	SD	Mean	Standard Deviation
1. The interface design of the platform is satisfactory and artistic.	6	3	5	0	0	4.07	0.92
2. The navigation in the platform is clear and easily understood.	6	6	2	0	0	4.29	0.73
3. The platform functions work without technical problems.	13	1	0	0	0	4.93	0.27
4. The platform provides appropriate performance relative to response time from one page to another, page generation speed, and download time.	14	0	0	0	0	5.00	0.00
5. The teaching material quantity regarding designing and developing online ETB is appropriate and meets learners' needs.	10	4	0	0	0	4.71	0.47
6. The platform provides messages for appropriate help and guidance.	9	5	0	0	0	4.64	0.50
7. The platform design prevents user errors.	9	4	1	0	0	4.57	0.65
8. It is easy to design and create the online ETB using the platform.	10	4	0	0	0	4.71	0.47
9. The platform is available in the user's same language.	14	0	0	0	0	5.00	0.00
10. Overall, the platform is easy to use.	10	3	1	0	0	4.64	0.63
11. Overall, the quality of the platform design is acceptable.	7	5	2	0	0	4.36	0.74
Overall Mean						4.63	

Note: SA (5) = Strongly Agree, A (4) = Agree, N (3) = Neutral, D (2) = Disagree, SD (1) = Strongly Disagree.

4. Results and Discussion

4.1. Instructional Technology Experts' Perceptions of the Proposed Platform

The following are the descriptive statistics obtained from the questionnaire on the perspectives of instructional technology experts regarding the suggested ETBP.

Section 2: Table 1 presents the viewpoints of the instructional technology experts on the importance of the suggested ETBP for instructing the skills of designing and producing online ETBs. The mean score for questions Q1 and Q5 was 4.86, indicating that the instructional technology experts regard the proposed ETBP as a new digital teaching aid for designing and producing online ETBs. It would also help students studying instructional and information technology to create online ETBs without dealing with web programming challenges, which makes the process simple. With this proposed platform (ETBP), they believed it would assist target students in designing and creating online ETBs for multiple domains. This is evident from the mean value for Q2 of 4.93. The participants concurred that the suggested ETBP is a beneficial tool for assisting the instructors in teaching the design and production of online ETBs more effectively, as shown by the mean of Q3 of 4.71. The mean score for Q4 was 4.57, illustrating that students would more efficiently prepare a digital instructional design of online ETBs in the proposed platform. The suggested ETBP is suitable for designing and producing online ETBs for both regular and blind learners, as demonstrated by the average score of 4.29 for Q6. The participants confirmed that the ETBP would support developing online ETBs with audio duration according to microlearning principles. This is evident from the mean for Q7 of 4.79. Furthermore, 100% of the participants had an entirely positive attitude (strongly agree and agree) regarding Q1, Q2, Q3, Q5, and Q7. Approximately 93% of the participants had a positive attitude regarding Q4 and Q6. However, one participant in Q6 strongly disagrees with using the proposed ETBP in designing and producing online ETBs for both regular and blind students. The reason for this was not stated. According to the questionnaire results for this section, approximately 98% of all participants had favorable opinions regarding the importance of implementing the proposed ETBP in teaching skills for designing and producing online ETBs in higher education. The total mean, which is 4.71, shows that the participants generally approved.

Section 3: Table 2 illustrates the participants' perceptions regarding the usefulness of the proposed platform tools. The mean score for question items Q1 and Q4 was 4.71, indicating that the experts agreed that the proposed ETB designer tool and ETB

Visual Learning tool would be useful for creating a digital design for all online ETB parts with text scenarios and lecture content regarding developing online ETBs. The participants confirmed the audio recorder tool would help record text scenarios for online ETB parts. This is evident from the mean for Q2 of 4.79. They confirmed that the ETB creator tool would be useful for creating online ETBs with audio narrations in numerous domains. This is evident from the mean value for Q3 of 4.93. The participants confirmed that the quizzes and reports tools would be useful for creating quizzes and generating reports for ETBP students. This is evident from the mean for Q5 and Q6 of 4.86. Moreover, 100% of the participants had a totally positive attitude (strongly agree and agree) regarding the proposed tools of ETBP. Thus, they confirmed the proposed platform tools are very beneficial for developing target online ETBs, with an overall mean of 4.81.

Section 4: Table 3 illustrates the participants' perceptions regarding the quality of the platform design and ease of use. The mean score for question items Q4 and Q9 was 5, indicating that 100% of the participants strongly agreed that the proposed platform has appropriate performance related to response time, page generation speed, and download time besides using the same language for target users. For Q2, approximately 86% (strongly agree and agree) of the participants believed that the proposed ETBP navigation was clear and easily understood, with the overall mean = 4.29. For Q7, approximately 93% (strongly agree and agree) of the participants believed that the proposed ETBP platform design prevents user errors, with the overall mean = 4.57. Furthermore, 100% of the participants had a completely positive attitude (strongly agree and agree) regarding Q3, Q4, Q5, Q6, Q8, and Q9. For Q1, approximately 64% of the participants had a less positive attitude towards the interface design, and 36% had a neutral attitude. According to the questionnaire results for this section, approximately 93% of all participants had favorable opinions regarding the quality of the design of the proposed ETBP. The total mean, which is 4.63, shows that the participants generally approved.

In Section 5, an open-ended question on the opinions of instructional technology experts regarding the proposed platform ETBP was answered by 8 out of 14 respondents (57.1%). The open-ended question was analyzed using the qualitative data coding (inductive coding) approach. This analysis aims to identify the instructional technology experts' favorable and unfavorable opinions of the ETBP. They additionally suggested features for its improvement. The analysis experts' responses coding included three categories (entirely positive comments towards the ETBP, positive comments with suggestions for improving the ETBP, and negative comments towards the ETBP).

The analysis shows that three experts (21.4%) from the total sample commented positively on the proposed ETBP, including "great and successful effort". In addition, three experts (21.4%) gave both positive comments and suggestions for improving the proposed ETBP: One of the experts said "The platform is easy to use" and suggested that "a hyperlink must be made to the title Educational Talking Books Platform so that when clicking on it, it is transferred to the main interface", another expert stated "The platform supports a category for which there are not many assistive technologies" and suggested to "add an Excel file insert for student data and names, the expected time to record the definition for the chapter or introduction, Linking the design data for the scenario and design to add data and not repeat the entry, in the report, add a performance analysis. The chapter or page has been completed to follow up on performance. The chapter or page has been completed to monitor performance, the visual book lacks interaction with the content and its parts, and the control panel is called "return to the main menu", and another expert stated "The user interface is easy and familiar, an innovative design for designing talking books, this platform is concerned with an important group, namely the visually impaired" and suggested that it "needs a voice speaker, in addition to adding sub-chapters to the main chapter".

Lastly, two experts (14.3%) negatively commented on some of the tools of the proposed ETBP, especially the quizzes and users' tools. One of the experts said "Questions must be diverse, and choices need more clarity, instructions need more clarity—To some extent,

the platform does not prevent design errors due to ambiguity”, and another expert stated “Modifying instructors’ accounts so that each instructor can control the talking books created by him only and not all books”.

4.2. Summary of the Evaluation Experiment’s Result

Descriptive statistics from the questionnaire analyzing the opinions of the instructional technology experts revealed, in summary, that approximately 96% of participants (strongly agree and agree) thought the current proposed ETBP was a suitable specialized web-based platform for teaching design and production of the online ETB to students studying instructional and information technology, with an overall mean of 4.70. Nevertheless, a few minor enhancements to the suggested function were recommended by the assessment process. These included the user interface design, tools for users, quizzes, reports, ETB designer, and ETB creator.

Some recent research concentrated on creating customized learning platforms for teaching particular subjects and student groups, such as [30] who presented a specialized learning platform for teaching biology to secondary school students. Moreover, [31] offered a specialized web-learning platform in the medical domain for undergraduate medical students. Additionally, [32] introduced a specialized web-learning platform for supporting gifted children’s education. Also, [33] presented a new distance-learning platform for creating and delivering learning content for deaf students with sign language translation videos. A web-based platform was also provided by [34] to support the learning process of visually impaired children. Other recent studies [9–13,15–17] focused on positive learning aspects with audiobooks or digital talking books for learners and did not focus on developing a specialized learning platform for designing and creating online ETBs. Compared with this literature, the primary distinction of our proposed platform is the presence of a web-based platform that supports instructors’ teaching skills in designing and producing online ETBs for instructional and information technology students. The proposed platform considers an ICT teaching aid that consists of several tools developed specifically for educating students in instructional and information technology departments and can be used by any instructor. Since the suggested platform design was general, the tool’s development was concentrated on supporting all educational book domains. For target students, these tools, which include ETB designer, ETB creator, ETB visual learning, and quizzes, help students boost their skills. For the coming improvement, the user interface of the current version of ETBP will be redesigned to become more satisfying and artistic in the future. The redesigned version will include an attractive user interface, a hyperlink for the ETBP title to move to the main interface easily from any page, a text hint for each tool, and a rename of the dashboard to the main page. The quiz tool will be redesigned in the future to be more satisfactory for users. The redesigned version will include instructions for creating quizzes and questions and new question types, like fill-in-the-blank and write-an-essay.

This paper presents a new specialized learning platform for designing and producing online ETBs as a contribution and encourages audio-based digital learning in schools and universities. Previous studies have focused on confirming the positive impact of educational talking books or audiobooks on supporting the learning process. Our study focused on constructing a new specialized learning platform that enables instructors and students to develop online ETBs quickly. The proposed platform adopted several education theories and principles, such as microlearning [18], E-learning theory [19], cognitive apprenticeship [20], self-paced learning approach [21], and dual coding theory [22]. Thus, its instructional design’s quality and worth have been validated. In addition to offering distinction for creating online ETBs, the suggested platform can increase awareness. The research paper’s findings on expert usability evaluation are valuable. However, the need to address the design of some function tools, such as tools for platform users, user interface, quizzes, ETB designer, and ETB creator tools, limits its quality design. There may be some limitations to this study. The current study was limited to 14 instructional technology experts, but increasing the number of participants may lead to more findings. Increasing

the number of training sessions for participants will lead to better findings, but there are time constraints for participants. This is an evaluation by experts, and it is necessary to investigate separately the target user's evaluation and performance improvement. This survey was conducted by experts in the field in Egypt and may require appropriate localization when applied to other cultures.

4.3. Pedagogical Implications for ETBP Development

This study has demonstrated that the proposed platform can be relied upon as a new digital educational tool in teaching how to design and create online ETBs. Thus, our findings may be helpful when considering the development and use of online ETBs in schools and university education. The insights gained from our findings may utilize the proposed platform as a digital learning tool by educational and information technology department instructors to develop students' skills in designing and producing online ETBs without programming difficulties. The proposed platform can also be used to train teachers of visually impaired students to design and produce online ETBs in any field, especially in educational institutions that teach visually impaired students. It can guide researchers, instructional designers, and developers as they create new specialized educational platforms using the same approach. These findings also have significant implications for instructors, instructional designers, and institutions looking to optimize the integration and use of audio-based digital learning in supporting visually impaired and auditory learners' learning processes. The results of this study suggest that future research should investigate the impact of using the proposed platform on fostering specialized undergraduates' designing and creating online ETB skills.

5. Conclusions

In this study, we developed a new specialized, web-based platform for designing and producing online ETBs. The ETBP was evaluated through usability evaluation and the instructional technology expert review. The participants in this study were fourteen experts in instructional technology. The participants were trained with the same version of the proposed platform that we developed. This study collected data using an online questionnaire for the instructional technology experts. The results confirmed that the instructional technology experts agreed to the ETBP created as a smart teaching aid for teaching designing and producing online ETB skills for target students. However, the results demonstrated some practical issues regarding the user interface design, tools for platform users, quizzes, reports, ETB designer, and ETB creator. These practical issues will be considered in the next version of the ETBP. The research outcome presents a new digital educational platform for educators and practitioners. This proposed platform can be utilized as a teaching tool in the educational and information technology departments to enhance students' abilities in designing and producing online ETBs without coding difficulties. It can also be utilized as a new training tool for teachers to develop online ETBs in educational institutions that teach visually impaired students. It can support and optimize the use of audio-based digital learning in future learning processes in schools and universities, especially for visually impaired and auditory learners. In the future, the current version of the proposed platform will be tested in teaching skills of designing and producing online ETBs for instructional and information technology students.

Author Contributions: Conceptualization, M.E.A. and S.H.; methodology, M.E.A. and S.H.; software, M.E.A. and S.H.; validation, M.E.A. and S.H.; formal analysis, M.E.A. and S.H.; investigation, M.E.A. and S.H.; resources, M.E.A. and S.H.; data curation, M.E.A. and S.H.; writing—original draft preparation, M.E.A.; writing—review and editing, M.E.A. and S.H.; visualization, M.E.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: Data are available upon request from the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Technology in Education—2023 GEM Report. 2023 GEM Report. 8 November 2023. Available online: <https://gem-report-2023.unesco.org/technology-in-education/> (accessed on 22 May 2024).
2. Ice, P.; Curtis, R.; Phillips, P.; Wells, J. Using asynchronous audio feedback to enhance teaching presence and students' sense of community. *J. Asynchronous Learn. Netw.* **2007**, *11*, 3–25. [CrossRef]
3. Saputra, D.B.; Arianto, M.A.; Saputra, E. "Will they listen to me?" Investigating the utilization of audio feedback in higher education. *Stud. Engl. Lang. Educ.* **2023**, *10*, 741–755. [CrossRef]
4. Mudawi, G.H.H.; Mohamed, G.R. The Effectiveness of Course—Book Audio Files as Strategy to Improve Listening Skills of 'EFL' Learners. *Int. J. ELT Linguist. Comp. Lit.* **2016**, *4*, 7–27.
5. Saka, Z. The Effectiveness of Audiobooks on Pronunciation Skills of EFL Learners at Different Proficiency Levels. 2015. Available online: <https://repository.bilkent.edu.tr/items/42db8d47-2c44-449c-93bf-c96d4d890358> (accessed on 9 August 2024).
6. Muzata, K.K. Distance Education Students' Experiences of Learning from Audio Recorded Lectures, a Case of Mufulira and Nkrumah Colleges of Education. *Int. J. Educ. Chron.* **2013**, *4*, 97–109.
7. Shahriza, A.Z.; Rahmatullah, B.; Majid, M.H.A.; Samuri, S.M.; Hidayanto, A.N.; Yas, Q.M.; Purnama, S. A systematic literature review on the use of podcasts in education among university students. *ASEAN J. Teach. Learn. High. Educ.* **2022**, *14*, 222–236. [CrossRef]
8. García-Bullé, S. Five Educational Benefits of Audiobooks. Observatory—Institute for the Future of Education. 16 June 2022. Available online: <https://observatory.tec.mx/edu-news/five-educational-benefits-of-audiobooks/> (accessed on 11 August 2024).
9. Amirah, B.; Saidalvi, A. Talking story: eBooks to improve reading comprehension skills. In *Embracing Change: Emancipating the Landscape of Research in Linguistics, Language and Literature, Proceedings of the International Conference of Research on Languages Education 2023, Melaka, Malaysia, 13–14 March 2023*; Academy of Language Studies: Melaka, Malaysia, 2023; pp. 259–271. Available online: <https://ir.uitm.edu.my/id/eprint/82077/> (accessed on 6 February 2024).
10. Alsamadani, H.A. The Effect of Talking Story Books on Saudi Young EFL Learners' Reading Comprehension. *Engl. Lang. Teach.* **2017**, *10*, 204. [CrossRef]
11. Fansury, A.H.; Lutfin, N.; Arsyad, S.N. Audio Books as Teaching Media to Blind Students in Learning EFL. *Klasikal J. Educ. Lang. Teach. Sci.* **2019**, *1*, 1–9. [CrossRef]
12. Rahman, A.; Hajar, I. The effect of audiobook on reading comprehension of the eleventh grade students of SMA Negeri 2 Buru. *ELT Worldw. J. Engl. Lang. Teach.* **2020**, *7*, 104. [CrossRef]
13. Çarkıt, C. Evaluation of audiobook listening experiences of 8th grade students. *Educ. Policy Anal. Strateg. Res.* **2020**, *15*, 146–163. [CrossRef]
14. Singh, A.; Alexander, P.A. Audiobooks, Print, and Comprehension: What We Know and What We Need to Know. *Educ. Psychol. Rev.* **2022**, *34*, 677–715. [CrossRef]
15. Hufon, A.; Trisanti, N. English digital talking books as media to teach narrative writing. *ELT Forum J. Engl. Lang. Teach.* **2016**, *5*, 1–8.
16. Rusdianti, M. The Influence of Using Audiobooks on Student's Listening Skill. Ph.D. Thesis, State Islamic University, South Tangerang, Indonesia, 2024. Available online: <https://repository.uinjkt.ac.id/dspace/handle/123456789/76977> (accessed on 11 August 2024).
17. Rahmat, M.S.; Fikri, I.F.; Habibi, A. Using Talking Books to Improve The Seventh Grade Students' speaking Achievement of Smp Muhammadiyah 11 Rogojampi. *Taklimuna J. Educ. Teach.* **2023**, *2*, 13–22.
18. Nikkhoo, I.; Ahmadi, Z.; Akbari, M.; Imannezhad Sh Anvari Ardekani, S.; Lashgari, H. Microlearning for Today's Students: A Rapid Review of Essentials and Considerations. *Med. Educ. Bull.* **2023**, *4*, 673–685. [CrossRef]
19. E-Learning Theory (Mayer, Sweller, Moreno)—Learning Theories. 15 December 2015. Available online: <https://learning-theories.com/e-learning-theory-mayer-sweller-moreno.html> (accessed on 18 February 2024).
20. Collins, A. Cognitive Apprenticeship. In *The Cambridge Handbook of the Learning Sciences*; Sawyer, R.K., Ed.; Cambridge University Press: Cambridge, UK, 2006; pp. 47–60.
21. Zimmerman, B.J. Becoming a Self-Regulated Learner: An Overview. *Theory Pract.* **2002**, *41*, 64–70. [CrossRef]
22. Loveless, B. Dual Coding Theory: The Complete Guide for Teachers. Education Corner. 14 April 2023. Available online: <https://www.educationcorner.com/dual-coding-theory/> (accessed on 2 June 2024).
23. Nielsen, J. How Many Test Users in A Usability Study? Nielsen Norman Group. 3 June 2012. Available online: <https://www.nngroup.com/articles/how-many-test-users/> (accessed on 31 March 2024).
24. Faulkner, L. Beyond the five-user assumption: Benefits of increased sample sizes in usability testing. *Behav. Res. Methods Instrum. Comput.* **2003**, *35*, 379–383. [CrossRef]
25. Nielsen, J. 10 Usability Heuristics for User Interface Design. Nielsen Norman Group. 30 January 2024. Available online: <https://www.nngroup.com/articles/ten-usability-heuristics/> (accessed on 30 November 2023).
26. Laubheimer, P. Preventing User Errors: Avoiding Unconscious Slips. Nielsen Norman Group. 1 July 2023. Available online: <https://www.nngroup.com/articles/slips/> (accessed on 30 November 2023).

27. Kaley, A. Match between the System and the Real World (Usability Heuristic #2). Nielsen Norman Group. 30 January 2024. Available online: <https://www.nngroup.com/articles/match-system-real-world/> (accessed on 30 November 2023).
28. Hsu, C.; Yeh, Y.; Yen, J. Development of design criteria and evaluation scale for web-based learning platforms. *Int. J. Ind. Ergon.* **2009**, *39*, 90–95. [[CrossRef](#)]
29. Shollar, D.Z.; Hana, M.; Elgaber, S. 10-Criteria for E-Learning Interface Design: Theoretical study. *Int. Conf. Electr. Eng.* **2010**, *7*, 1–16. [[CrossRef](#)]
30. Rao, D.; Saha, S.K. An immersive learning platform for efficient biology learning of secondary School-Level students. *J. Educ. Comput. Res.* **2019**, *57*, 1671–1694. [[CrossRef](#)]
31. Taveira-Gomes, T.; Saffarzadeh, A.; Severo, M.; Guimarães, M.J.; Ferreira, M.A. A novel collaborative e-learning platform for medical students—ALERT STUDENT. *BMC Med. Educ.* **2014**, *14*, 143. [[CrossRef](#)] [[PubMed](#)]
32. Kim, S.-W.; Seo, B.-H. The Development of e-Learning Platform for Gifted Children Education. *Int. J. Educ. Media Technol.* **2009**, *3*. Available online: <https://ijemt.org/index.php/journal/article/view/156> (accessed on 8 February 2024).
33. Ahmed, M.E.; Hasegawa, S. Development of New Distance Learning Platform to Create and Deliver Learning Content for Deaf Students. *Educ. Sci.* **2022**, *12*, 826. [[CrossRef](#)]
34. Kavčič, A.; Pesek, M.; Marolt, M. A platform for supporting learning process of visually impaired children. In Proceedings of the 2017 40th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO), Opatija, Croatia, 22–26 May 2017; pp. 848–852. [[CrossRef](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.