

Developing English Course Book to Enhance Students' Pronunciation Proficiency

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Abstract: - Many lecturers use teacher-centered methods to teach pronunciation. This research aims to change the teacher-centred class domain and prove the importance of pronunciation as a course that can stand alone without being merged into other classes. This research method uses quantitative methods to collect the data from the questionnaire. Before this book was implemented, this book was designed based on need analysis. This need analysis shows that students need pronunciation when learning books and vocabulary that often appear in real life. After that, through the development stage, this learning book goes through the validation process stage by expert validators of pronunciation learning materials. This research produced a book specifically designed based on new learning syntax: Identification, Notification, Decision, application, and Harmonization (INDAH). After going through two prototypes, this learning book was declared valid at 82.3%. Thus, this learning book is suitable for use in pronunciation courses.

Keywords: English, pronunciation, course book.

1. Introduction

Pronunciation is crucial for pupils to communicate effectively and obviously. Studies have demonstrated that statement capability in an FL directly connects to the speaker's equal articulation. [1]. Pronunciation is a critical component in evaluating oral communication and spoken competency. Pronunciation accuracy impacts language instructors' and learners' self-esteem and job prospects [2]. Furthermore, pronunciation is not just a captivating thing of review but one that encompasses all sectors of human activity, lying at the heart of oral language expression and embodying how the speaker and hearer work together to produce and comprehend one another [3]

Mispronunciation can cause misunderstandings. Thus, it's a vital aspect of learning a new language. Pronunciation is speaking certain sounds, stress, and intonation patterns in the target language. Studying foreign language pronunciation fosters authentic communication and Intelligibility among speakers [4]. The speaker's pronunciation level considerably influences both communicative competency in a foreign language and the capability to comprehend it in its ordinary environment [3]. Verbal pronunciation testing aims to deliver a system for learning foreign languages, such as English, that automatically corrects national pronunciation [5]. Approachable knowledge is the capacity to comprehend spoken and written words, whereas productive information is the capacity to employ words correctly in written and spoken form [1].

Language teachers who use communicative techniques in their lessons encourage appropriate pronunciation in the target language since the level of in/correct pronunciation of the words directly impacts mutual Intelligibility in spoken speech [6]. Use the mistake instructions in the learner's pronunciation and apply them to voice recognition to notice and diagnose the probable mistake types in their phoneme pronunciation [5]. Most language teachers were unwilling to teach pronunciation systematically (Ercan & Demirezen, 2023). Explicit pronunciation teaching may elicit objections because it may involve using metalanguage and language jargon that may turn off non-native language learners; thus, some ELT practitioners may argue that teaching

pronunciation is an optimal practice with advanced/proficient EFL/ESL learners [7]. Several aspects influence pronunciation learning. These contain accent, motivation, exposure to the target language, attitude, mode of education, age, personality, and the impact of the mother tongue [4]

Despite its rarity, this line of study has demonstrated the need to investigate language instructors' cognitions concerning pronunciation, however, with the rising realization of beliefs as a complex system comprised of "substructures of beliefs, practices, and settings" [8]. The primary compelling reason for teaching pronunciation is to promote communicative competence among target language learners and avoid communication breakdowns caused by mispronunciations. Inaccuracies in pronunciation might be induced by the adverse transfer impact of the mother tongue [7].

The current problem in the field is that some universities have merged Pronunciation courses into listening and speaking courses. Since pronunciation learning has been integrated into the entire language learning process, it has been observed that pronunciation learning from a curriculum point of view has been neglected by language teachers [6]. Teachers do not have particular training to teach pronunciation. Thus, they lack preparation and pronunciation abilities to increase their ability to teach pronunciation in class [9]. Even though pronunciation is recognized as an essential component of second language learning, classroom learning shows that most pronunciation is underestimated as a language skill that can be integrated into other courses in the curriculum throughout the Language program [10]. They are adding to the long list of factors that influence students' lack of studying pronunciation in detail.

From the point of view of pronunciation learning materials, the learning materials presented are sourced from foreign learning books. This creates a new problem: the incompatibility of the material with the student's background, where the available vocabulary is not familiar to students' daily lives. The linguistic background of teachers and students is essential in teaching and learning pronunciation [11]. On the other hand, there is still a lack of proper practice in *pronunciation learning textbooks* [10]. Learning *pronunciation* can be difficult because it requires *metalinguage* and *linguistic jargon* that can complicate students' understanding [7]. This is the background for researchers to create learning materials that suit the needs of students equipped with images that interpret the word's meaning.

Moreover, the conventional learning system still dominates in the pronunciation center learning class. This can be shown from the Lecturer's learning method of being a role model when students imitate pronunciation. So, the lack of activity of students who only wait for the Lecturer to ask to repeat the pronunciation exemplified. Pronunciation learning methods in traditional classrooms are reading aloud, using dictionaries, and conversing [9]. Traditional English teachers emphasize writing and grammatical instruction, whereas vocal training has long been overlooked. In conventional classrooms, one of the issues oral teaching faces is the mismatch of the teacher-student ratio: a teacher must deal with dozens of pupils, one-on-one oral teaching and pronunciation assistance is impossible, and the instructors and the environment constraints also impact it [12]. This book is a book specifically designed in conjunction with the design of automatic speech recognition-assisted pronunciation learning media. So, this book is inseparable from the media based on the ASR website. Today technology has become part of learning in the last decades, numerous universities transitioned to online SET procedures because of the widely accepted need for resource-saving [13].

This study aims to design a pronunciation learning book based on student needs. The words presented in the book are equipped with pictures, so even though students do not know the meaning, being equipped with pictures can help students interpret the meaning of the words spoken.

The formulation of the problem in this study is:

1. What kind of learning material do students need?
2. What is the course book INDAH's validity according to the expert judgment?

2. Method

This article is part of development research using the ADDIE Model. This research was using questionnaire as instruments that are assessed by two learning material experts as validators. This book was applied to 29

students of the teaching faculty of the English Language Education study program at Universitas Pahlawan. The validation process by the expert judgment involved came from two pronunciation learning expert lecturers from two different universities, they are: Dr. Syofianis Ismail, M. Ed, Dr. Eliwarti, M. App.Ling.

3. Results

Need Analysis of Learning Material

The first finding in this study is to answer the research formulation "What type of learning media are needed by students?" Data collection was carried out in the form of questionnaires distributed through online questionnaires.

Table 1. Need Analysis Course Book

Indicator	Need			Lack			Want		
	Total Score	Mean Score (%)	Result	Total Score	Mean Score (%)	Result	Total Score	Mean Score (%)	Result
<i>Consonant /k/</i>	148	88,1	Desperately need	128	76,2	Lack	133	79,2	Eager to
<i>Consonant /g/</i>	147	87,5	Desperately need	123	73,2	Lack	132	78,6	Eager to
<i>Consonant /dʒ/</i>	143	85,1	Desperately need	126	75	Lack	136	81	Very Eager to
<i>Consonant /tʃ/</i>	144	85,7	Desperately need	120	71,4	Lack	136	81	Very Eager to
<i>Consonant /θ/</i>	146	86,9	Desperately need	119	70,8	Lack	124	73,8	Eager to
<i>Consonant /ð/</i>	145	86,3	Desperately need	124	73,8	Lack	124	73,8	Eager to
<i>Vowel /u/</i>	149	88,7	Desperately need	127	75,6	Lack	137	81,5	Very Eager to
<i>Vowel /ʊ/</i>	150	89,3	Desperately need	125	74,4	Lack	138	82,1	Very Eager to
<i>Vowel /æ/</i>	149	88,7	Desperately need	124	73,8	Lack	138	82,1	Very Eager to
<i>Vowel /ə/</i>	148	88,1	Desperately need	123	73,2	Lack	138	82,1	Very Eager to
<i>Vowel /ʌ/</i>	146	86,9	Desperately need	125	74,4	Lack	139	82,7	Very Eager to
<i>Diphthong /ɪ/</i>	147	87,5	Desperately need	126	75	Lack	137	81,5	Very Eager to
<i>Diphthong /ɪə/</i>	146	86,9	Desperately need	124	73,8	Lack	138	82,1	Very Eager to
<i>Diphthong /aɪ/</i>	146	86,9	Desperately need	124	73,8	Lack	137	81,5	Very Eager to
<i>Diphthong /aʊ/</i>	144	85,7	Desperately need	125	74,4	Lack	138	82,1	Very Eager to
<i>Diphthong /əʊ/</i>	146	86,9	Desperately need	121	72	Lack	135	80,4	Very Eager to
<i>Stress word</i>	149	88,7	Desperately need	118	70,2	Lack	135	80,4	Very Eager to
<i>Stress word</i>	146	86,9	Desperately need	122	72,6	Lack	137	81,5	Very Eager to
<i>Intonation</i>	148	88,1	Desperately need	126	75	Lack	136	81	Very Eager to

Based on the table, it can be concluded that the types of pronunciation learning materials in terms of needs, deficiencies, and desires are *consonant /k/*, *consonant /g/*, *consonant /dʒ/*, *consonant /tʃ/*, *consonant /θ/*, *consonant /ð/*, *vowel /u/*, *vowel /ʊ/*, *vowel /æ/*, *vowel /ə/*, *vowel /ʌ/*, *diphthong /eɪ/*, *diphthong /ɪə/*, *diphthong /aɪ/*, *diphthong /aʊ/*, *diphthong /əʊ/*, *stress word*, *stress on first syllable* dan *stress on second syllable*; *rising intonation* dan *falling intonation*.

Designing of Syntax INDAH

The stages or syntax of INDAH in pronunciation learning materials are the basis for designing pronunciation learning. (1) Taxonomy Affective objective A3 **Identification**; (2) Taxonomy of cognitive goals C1 **Notification**; (3) Taxonomy of cognitive goals C2 **Decision**; (4) Taxonomy of cognitive objectives C3 **Application**; (5) Taxonomy of psychomotor objectives P3 **Harmonization**. Therefore, it is necessary to explain the basis for selecting activities in advance. The syntax in learning pronunciation consists of five steps: I – N – D – A – H: **Identification**; **Notification**; **Decision**; **Application**; **Harmonization**.

- Identification:** Students are asked to observe and identify segmental and suprasegmental learning materials. Lecturers ask students to keep and identify segmental and suprasegmental learning.
- Notification:** Students are asked to recognize segmental pronunciation (consonant, vowel, diphthong, and suprasegmental (stress, intonation). Lecturers prepare segmental learning materials (consonant, vowel, diphthong, and suprasegmental (stress, intonation)
- Decision:** Students are asked to specify phonetic symbols, such as consonants, vowels, and diphthongs. Lecturers guide students in observing the sounds produced by a word consisting of consonants, vowels, and diphthongs.
- Application:** Students in pairs take turns practicing the observed word (one student pronounces the other follows). The Lecturer supervises students who practice the observed word.
- Harmonization:** Students are given assignments of several words to one sentence to pronounce according to the pronunciation of the word practiced. Lecturers provide assignments on several words to one sentence to pronounce according to the pronunciation of the word practiced.

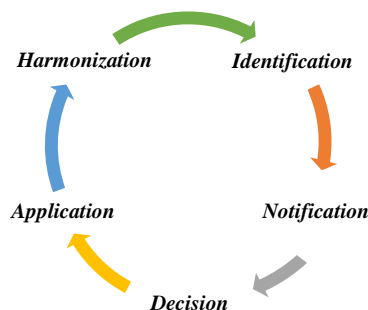


figure 1. ASRI Media Learning Syntax

Based on the explanation of the syntax in the table, the following is the flow of syntax I – N – D – A – H learning pronunciation in the form of pictures. The figure shows the flow of syntax I – N – D – A – H, which starts with **Identification**, which identifies each learning material of segmental (consonant, vowel, and diphthong) and suprasegmental (stress and intonation) pronunciation. The second syntax is **Notification**, which provides notifications for the pronunciation of segmental (consonant, vowel, and diphthong) and suprasegmental (stress and intonation) pronunciation learning materials. The third syntax, **Decision**, is a learning activity that asks students to determine each phoneme, learning material, segmental pronunciation (consonant, vowel, and diphthong), and suprasegmental (stress and intonation). The fourth syntax is **Application**, where students can optimize ASRI applications to practice segmental (consonant, vowel, and diphthong) and suprasegmental (stress and intonation) pronunciation. The last syntax is **Harmonization**; student activities are tested for their ability to pronounce segmental (consonant, vowel, and diphthong) and suprasegmental (stress and intonation) in this section.

Development Course Book INDAH

The product developed in this study is a pronunciation learning book. The following is an explanation of the development of pronunciation-learning product books.

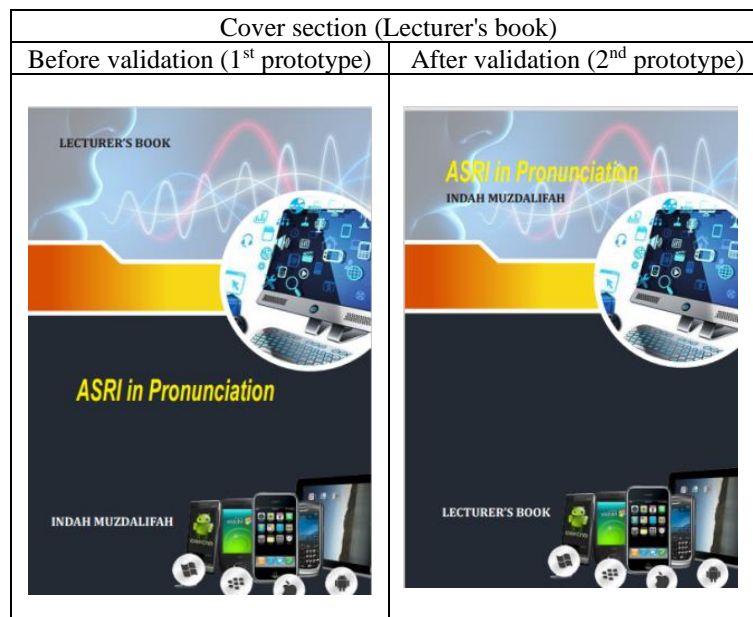


Figure 2. Prototype Lecturer Book Cover

There is no significant change between the Lecturer's book cover on prototype one and the second prototype. It's just that one of the material validators suggested that the position of the title on the cover be placed at the top, followed by the author's name, and then the writing Lecturer's book was placed at the bottom. The color and design of the book follow the standards of learning books in general.

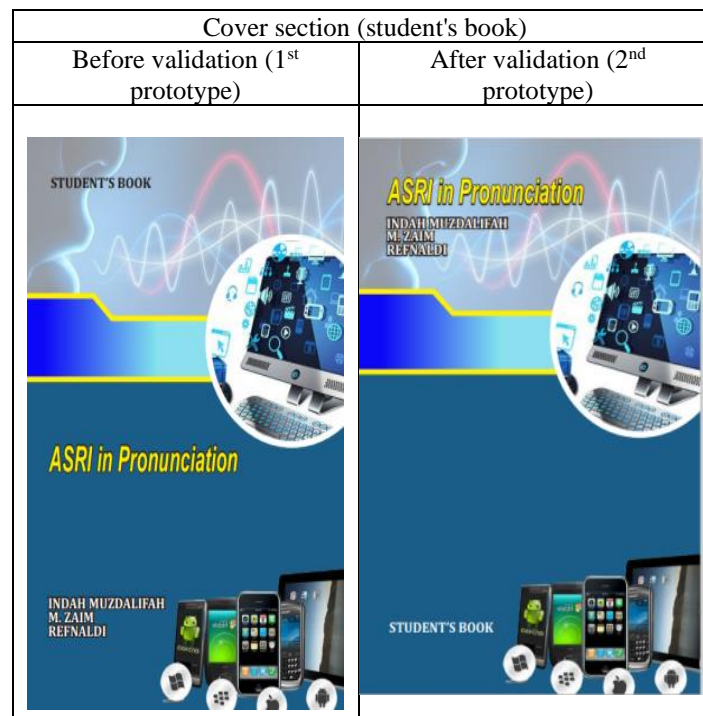


Figure 3. Student Book Cover Prototype

Similarly, for student books with the same comments by material validators, the title position on the cover is placed at the top, followed by the author's name, then the words "students' book." Likewise, the color selection and design of student books follow the standards of learning books

Preface section (Lecturer's book and student book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p style="text-align: center;">PREFACE</p> <p>Alhamdulillahirobbilalamin, praise and gratitude the author wishes to say the presence of Allah SWT for all His blessings and gifts who have given His Grace <i>Taufik and Hidayat</i> that the writer can finish this book <i>ASRI in Pronunciation</i>.</p> <p>The purpose of writing this textbook was the outcome of her doctoral dissertation research entitled <i>Development of Pronunciation Learning Materials and Media based on Automatic Speech Recognition Indah</i>. The second goal is to develop the author's knowledge in the field of Teacher Training and Languages. The third objective is to contribute to the Pronunciation course as a textbook at the University.</p> <p>One of outcome doctoral dissertation research presented in textbook form. The writing of this book is part of the assistance of several parties. Acknowledgments to the Ministry of Research and Technology of Higher Education (Kemendikristek Dikti) who has provided the opportunity to research funding for a doctoral dissertation entitled <i>Development of Pronunciation Learning Materials and Media based on Automatic Speech Recognition Indah</i>. Acknowledgments to Rector of Padang State University, Chair of the Padang State University Research and Community Service Institute (LPPM) who have facilitated Doctoral Dissertation Research funding. Acknowledgments to Dean of the Faculty of Languages and Arts, Padang State University, Head of the Language Teaching Doctoral Study Program;</p>	<p style="text-align: center;">PREFACE</p> <p>Alhamdulillahirobbilalamin, praise and gratitude the author wishes to say the presence of Allah SWT for all His blessings and gifts who have given His Grace <i>Taufik and Hidayat</i> that the writer can finish this book <i>Automatic Speech Recognition Indah</i>. The aim of the doctoral dissertation study, 'Development of Pronunciation Learning Materials and Media based on Automatic Speech Recognition Indah', was the inspiration for this textbook. The author's expertise of teacher training and languages is to be expanded as the second goal. The creation of a textbook for the university's Pronunciation course is the third goal.</p> <p>One of the results of a doctoral dissertation is provided in a textbook. This book was written with the help of a number of people. It is acknowledged that the Development of Pronunciation Learning Materials and Media based on Automatic Speech Recognition Indah PhD dissertation was made possible by research funding from the Ministry of Research and Technology of Higher Education (Kemendikristek Dikti). The Padang State University Rector and the Chair of the Padang State University Research and Community Service Institute (LPPM) are to be thanked for their assistance in securing funds for doctoral dissertation research. Thanks go to the Padang State University Dean of the Faculty of Languages and Arts, the Director of the Doctoral Program in Language Teaching, and the promoter and co-promoter who helped the writing this book by directing it and offering critique, advice, and assistance.</p> <p>ASRI in Pronunciation textbook is a handbook intended for lecturers and students in learning pronunciation at the university level. This textbook contains pronunciation learning material which consists of two basic components, they are segmental and suprasegmental assisted by a media website called ASRI. ASRI stands for Automatic Speech Recognition Indah. There are many studies pronunciations learning based on Automatic Speech Recognition. However, this ASRI has its own characteristic; it is <i>Interactive, Notification, Design, Accurate, and Handy</i> or INDAH. Besides that, the use of syntax adapted in this pronunciation learning book consists of five learning stages they are <i>Identification, Notification, Decision, Application, and Harmonization</i> or INDAH.</p> <p>The foundation of speaking ability is the capacity to pronounce words correctly. Computer-based learning resources and media that can support students' needs in acquiring proper pronunciation are required in order to help them with pronunciation. This is required because pronunciation mistakes of English words frequently lead to a change in meaning. Pupils wish to declare, for instance, that "want" is the word. They pronounce it incorrectly, saying "go" in the past tense ("went"). Consequently, the student's desire to say "I want" (I want) becomes "I went" (I go). Another instance of a mispronunciation is the word "many", which, based on students' writing, most mispronounce <i>Mans</i>.</p> <p>This book is part of development research dissertation aimed at developing materials and learning media for pronunciation based on Automatic Speech Recognition Indah (ASRI) in university. In addition, it is also to test the feasibility (valid, practical, and effective) of the materials and learning media developed. With this learning material and media, researchers pay attention to elements of pedagogy and technology in</p>

Figure 4. Prototype Introduction

The first prototype is on the left, while the second is on the right. In the *preface* section, there are many revisions or changes from the prototype 1 to the second prototype. The first in terms of the typeface was originally "Arial" to "Times New Roman." Secondly, there are many revisions *in the form of content*, the sequence structure of writing prefaces, and grammar that do not follow the correct English standards. So, after revision, the foreword to prototype two was compiled.

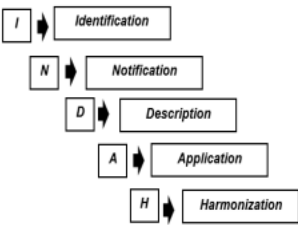

Introduction section (Lecturer's book and student book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>2. About This Book</p> <p>This book consists of five steps, INDAH (Identification, Notification, Description, Application, harmonization) in each of these five steps, containing 5 main materials: consonant, vowel, diphthong, stress, and intonation</p>  <p>The chart above explains that the main core of this learning book there are five stages, they are INDAH. Each of these stages includes five materials, consonants, vowels, diphthongs, stress, and intonation. The following is an explanation of each stage of learning.</p>	<p>The chart above explains that the main core of this learning book there are five stages, they are INDAH. Each of these stages includes five materials, consonants, vowels, diphthongs, stress, and intonation. The following is an explanation of each stage of learning.</p> <p>Identification</p> <p>Identification is the first step carried out in each lesson. The meaning of identification is that students identify the sounds they listen to via ASRI website as below:</p> <ol style="list-style-type: none"> 1. Identification is limited to listening to the sounds presented so that students can repeat the sounds without limits and without any assessment. The following are the activities carried out in the identification learning step: <ol style="list-style-type: none"> a. The lecturer asks the students to listen to the consonant sounds <i>ic</i> provided at the ASRI website b. The lecturer asks the students to pronounce the words as they listen to the consonant sounds <i>ic</i> provided at the ASRI website c. The lecturer asks the students to repeat the activity <p>Example of appearance on the website</p>  <p>Picture 1. Lesson 1 Identification</p> <p>The picture above shows the first section that appears on the identification screen. There are several features in this identification section that provide an illustration of the word.</p>

Figure 5. Prototype Introduction

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Part Lesson 1 (Lecturer's book)																																					
Before validation (1 st prototype)	After validation (2 nd prototype)																																				
<p>LESSON 1 CONSONANT</p> <p>A. Competency Standard The students are able to master English pronunciation in production of human speech organs of segmental and suprasegmental. Segmental contains consonants, vowels, and diphthongs, while suprasegmental contains stress words and intonation patterns in English words and sentences.</p> <p>B. Learning Outcome of Consonant The following are learning outcome of teaching material lesson 1.</p> <ol style="list-style-type: none"> Students are able to identify the phonemic symbol of word consonant /k/, /g/; /dʒ/; /ŋ/; /B/;/O/ Students are able to notify phonemic symbol of word consonant /k/, /g/; /dʒ/; /ŋ/; /B/;/O/ Students are able to describe the phonemic symbol of word consonant /k/, /g/; /dʒ/; /ŋ/; /B/;/O/ Students are able to apply the phonemic symbol of word consonant /k/, /g/; /dʒ/; /ŋ/; /B/;/O/ Students are able to harmonize the phonemic symbol of word consonant /k/, /g/; /dʒ/; /ŋ/; /B/;/O/ 	<p>LESSON 1. CONSONANT</p> <p>A. Standard Competence The students are able to master English pronunciation in production of human speech organs of segmental and suprasegmental. Segmental contains consonants, vowels, and diphthongs, while suprasegmental contains stress words and intonation patterns in English words and sentences.</p> <p>B. Learning Outcome of Consonant The following are learning outcome of teaching material lesson 1.</p> <ol style="list-style-type: none"> Students are able to identify the phonemic symbol of word consonant /k/; /g/; /ŋ/; /B/;/O/ Students are able to notify phonemic symbol of word consonant /k/; /g/; /ŋ/; /B/;/O/ Students are able to describe the phonemic symbol of word consonant /k/; /g/; /ŋ/; /B/;/O/ Students are able to apply the phonemic symbol of word consonant /k/; /g/; /ŋ/; /B/;/O/ Students are able to harmonize the phonemic symbol of word consonant /k/; /g/; /ŋ/; /B/;/O/ <p>C. Learning Material Consonant There are six types of content learning material for lesson 1. Every content in this lesson 1 is included in five steps. They are the identification step, notification step, description step, application step, and harmonization step. These steps are summarized in INDIAH. The following list indicates the learning material of consonants.</p> <table border="1"> <tr> <td>1. The Consonant /k/</td><td>4. The Consonant /ŋ/</td></tr> <tr> <td>a. Identification of consonant /k/</td><td>a. Identification of consonant /ŋ/</td></tr> <tr> <td>b. Notification of consonant /k/</td><td>b. Notification of consonant /ŋ/</td></tr> <tr> <td>c. Decision of consonant /k/</td><td>c. Decision of consonant /ŋ/</td></tr> <tr> <td>d. Application of consonant /k/</td><td>d. Application of consonant /ŋ/</td></tr> <tr> <td>e. Harmonization of consonant /k/</td><td>e. Harmonization of consonant /ŋ/</td></tr> </table> <table border="1"> <tr> <td>2. The Consonant /g/</td><td>5. The Consonant /B/</td></tr> <tr> <td>a. Identification of consonant /g/</td><td>a. Identification of consonant /B/</td></tr> <tr> <td>b. Notification of consonant /g/</td><td>b. Notification of consonant /B/</td></tr> <tr> <td>c. Decision of consonant /g/</td><td>c. Decision of consonant /B/</td></tr> <tr> <td>d. Application of consonant /g/</td><td>d. Application of consonant /B/</td></tr> <tr> <td>e. Harmonization of consonant /g/</td><td>e. Harmonization of consonant /B/</td></tr> </table> <table border="1"> <tr> <td>3. The Consonant /dʒ/</td><td>6. The Consonant /O/</td></tr> <tr> <td>a. Identification of consonant /dʒ/</td><td>a. Identification of consonant /O/</td></tr> <tr> <td>b. Notification of consonant /dʒ/</td><td>b. Notification of consonant /O/</td></tr> <tr> <td>c. Decision of consonant /dʒ/</td><td>c. Decision of consonant /O/</td></tr> <tr> <td>d. Application of consonant /dʒ/</td><td>d. Application of consonant /O/</td></tr> <tr> <td>e. Harmonization of consonant /dʒ/</td><td>e. Harmonization of consonant /O/</td></tr> </table>	1. The Consonant /k/	4. The Consonant /ŋ/	a. Identification of consonant /k/	a. Identification of consonant /ŋ/	b. Notification of consonant /k/	b. Notification of consonant /ŋ/	c. Decision of consonant /k/	c. Decision of consonant /ŋ/	d. Application of consonant /k/	d. Application of consonant /ŋ/	e. Harmonization of consonant /k/	e. Harmonization of consonant /ŋ/	2. The Consonant /g/	5. The Consonant /B/	a. Identification of consonant /g/	a. Identification of consonant /B/	b. Notification of consonant /g/	b. Notification of consonant /B/	c. Decision of consonant /g/	c. Decision of consonant /B/	d. Application of consonant /g/	d. Application of consonant /B/	e. Harmonization of consonant /g/	e. Harmonization of consonant /B/	3. The Consonant /dʒ/	6. The Consonant /O/	a. Identification of consonant /dʒ/	a. Identification of consonant /O/	b. Notification of consonant /dʒ/	b. Notification of consonant /O/	c. Decision of consonant /dʒ/	c. Decision of consonant /O/	d. Application of consonant /dʒ/	d. Application of consonant /O/	e. Harmonization of consonant /dʒ/	e. Harmonization of consonant /O/
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e. Harmonization of consonant /dʒ/	e. Harmonization of consonant /O/																																				

Figure 6. Prototype Lesson 1 Lecturer Book

There are many revisions in the introduction section for lecturer books and student books. In the prototype, the book only mentions the steps of learning INDIAH without explaining in detail the stages. So, after being revised in the second prototype section in the introduction section in the lecturer book and student book, the acronym INDIAH is explained individually, they are *Identification*, *Notification*, *Decision*, *Application*, and *Harmonization*. In addition, this section is equipped with instructions for lecturers in each section of INDIAH and added pieces of images contained in the ASRI website media.

The lesson 1 section in the Lecturer's book shows a difference between prototypes 1 and 2. The first in terms of writing type is from "Arial" to "Times New Roman." The second is the structure of the section arrangement or the location of the components in the lesson 1 section


Identification Section (lecturer book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>Identification of Consonant /k/</p> <p>Consonant /k/ is Voiceless Velar stop. Listen the correct sound in ASRI. Then practice it by repeating it several</p> <ol style="list-style-type: none"> The lecturer asks the students to listen the initial sound Consonant /k/ from website ASRI The lecturer asks the students to pronounce the initial sound Consonant /k/ from website ASRI The lecturer asks the students to repeat the initial sound Consonant /k/ from website ASRI <p>Lecturers' guide</p>	<p>LESSON 1. CONSONANT /k/</p> <p>1. Identification Identification is the first step carried out in each lesson. The meaning of identification is that students identify the sounds they listen to via ASRI website in lesson 1. Identification is limited to listening to the sounds presented so that students can repeat the sounds without limits and without any assessment. The following are the activities carried out in the identification learning step.</p> <ol style="list-style-type: none"> The lecturer asks the students to listen to the consonant sounds /k/ provided at the ASRI website The lecturer asks the students to pronounce the words as they listen to the consonant sounds /k/ provided at the ASRI website The lecturer asks the students to repeat the activity <p>Example of appearance on the website</p>  <p>Picture 1. Lesson 1 Identification</p> <p>The picture above shows the first section that appears on the identification screen. There are several features in this identification section that provide an illustration of the word.</p>

Figure 7. Prototype Identification Lecturer's book

The identification section in the Lecturer's book shows a difference between prototypes one and 2. The first in terms of writing type is from "Arial" to "Times New Roman." The second in prototype 2 of the Lecturer's book is equipped with the understanding of "identification" and what activities lecturers carry out at this stage. In addition, prototype two has a website section displayed at the identification stage, *as* shown in the picture on the right

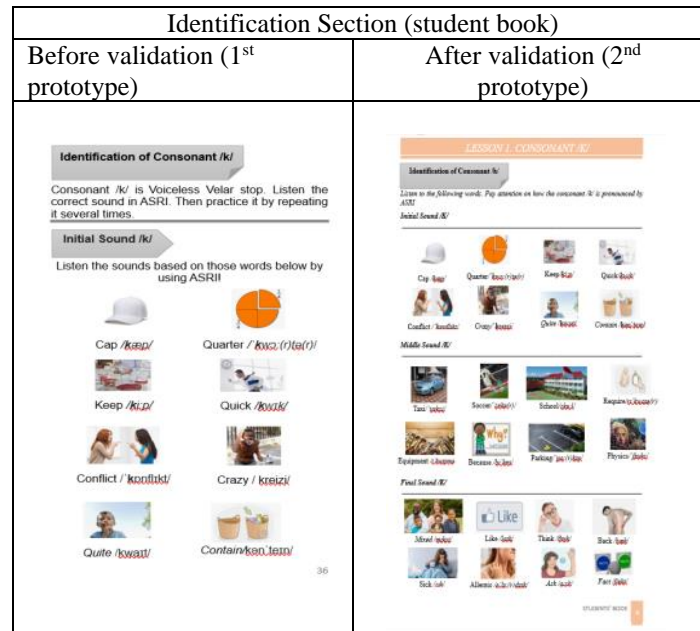


Figure 8. Student Book Identification Prototype

The identification section in the student book shows a difference between prototype one and prototype 2. The first in terms of writing type is from "Arial" to "Times New Roman." The second section of the Prototype 2 section of the student book looks more exciting and neatly arranged than Prototype 1

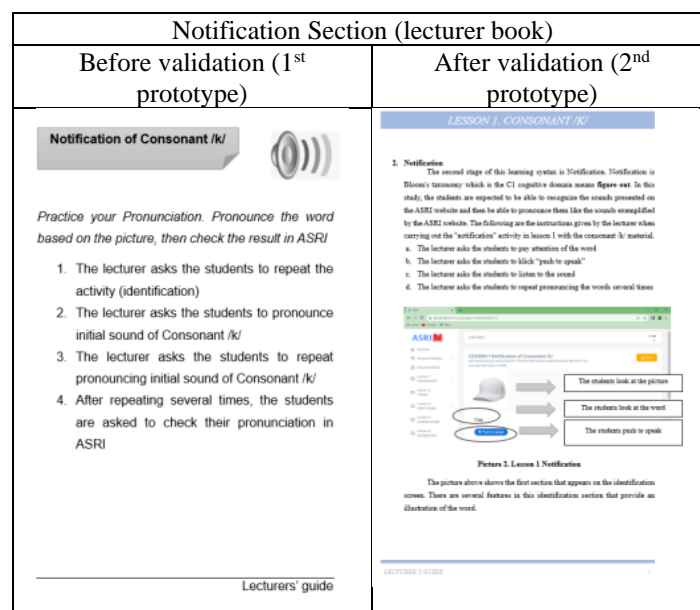


Figure 9. Prototype Notification Lecturer's book

In the *notification* section in the Lecturer's book, prototype one only presents learning steps at each stage. In prototype two, understanding Notification is explained first, and then it is more straightforward in the learning steps. Furthermore, the prototype has a cut image of the ASRI





Notification Section (student book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>Notification of Consonant /k/</p> <p>Practice your Pronunciation. Click the picture and pronounce the sounds, then check the result in ASRI!</p> <p>Initial Sound /k/</p> 	<p>LESSON 1. CONSONANT /k/</p> <p>Notification of Consonant /k/</p> <p>Learn and practice Initial Sound /k/</p>  <p>Middle Sound /k/</p>  <p>Final Sound /k/</p> 

Figure 10. Student Book Notification Prototype.

In the *notification* section in the student book, it can be seen that prototype 1 is more straightforward and looks less attractive. In addition, in prototype 1, the initial, middle, and final sounds are separated by page so that they take up a lot of space in the book. As for prototype 2 in 1 page, it can summarize the three materials of the initial sound, middle sound, and final sound. Thus, it looks more attractive


Decision Section (Lecturer's book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>Description of Consonant /k/</p> <p>Describe the phoneme based on the picture, then check the result in ASRI. Number one has been done for you</p> <ol style="list-style-type: none"> The lecturer asks the students to review material in introduction section about consonant The lecturer guides the students to recognize each phoneme of the sound based on the picture (example number 1) The lecturer asks the students to write down each phoneme of the sound on their book The lecturer asks the students to check and match their working by using ASRI Lecturer and students can discuss it together <p>The answer</p> <ol style="list-style-type: none"> Voiceless velar plosive /k/ Low front unrounded vowel /æ/ Voiceless bilabial plosive /p/ Voiceless Velar stop /k/ high front upsound vowel /i/ Voiceless Bilabial stop /p/ <p>Lecturers' guide</p>	<p>LESSON 1. CONSONANT /k/</p> <p>3. Decision</p> <p>The final stage of the learning system is 'decision'. Decision is Bloom's taxonomy in the C1 cognitive domain which means explaining/determining (Decision). Decision here aims to give students the opportunity to determine the correct phoneme according to the words presented. The decision referred to in this learning stage is that students are given the opportunity to decide on which phoneme corresponds to the word presented on the ASRI website. The following are the instructions that are followed in the decision activity:</p> <ol style="list-style-type: none"> The lecturer asks the students to study the introduction section about sound /k/ The lecturer helps the students to recognize each phoneme. The lecturer asks the students to decide which phoneme suits the words The lecturer discusses the answers with the students  <p>Picture 3. Lesson 1 Decision</p> <p>On the screen above, several phoneme answer choices are presented for each image. Students are asked to make the correct phoneme decision according to the words presented. When students decide, the ASRI website will respond to the student's answer as shown on the screen. There at the bottom there are 24 dots which indicate there are 24 questions that students must go through. These 24 questions are divided into 3 parts, they are initial sound, middle sound, and final sound. There on the right there are 'next' and 'previous' buttons which means students can repeat each image they want to know the phoneme composition of each word.</p>

Figure 11. Prototype Decision Lecturer Book

The decision section in the Lecturer's book shows that prototype 1 is more straightforward and looks less attractive. In addition, prototype one was initially answered in the Lecturer's book. However, after revision in prototype 2, the answer should be eliminated because the answer has been provided on the website. Then, prototype 2 in the decision section is equipped with an understanding of decisions and steps passed in learning. In addition, prototype two has a snippet of the ASRI website containing a decision section.

Decision Section (student book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>Description of Consonant /k/</p> <p>Describe the phoneme based on the picture, then check the result in ASRI Number 1 has been answered for you.</p> <p>Initial Sound /k/</p> <p>Voicless velar plosive /k/ Low front unrounded vowel /æ/ Voicless bilabial plosive /p/</p> <p>Cap /kæp/</p> <p>Keep /ki:p/</p> <p>Conflict /kɒnflɪkt/</p> <p>Quarter /kwɔ:(r)ta(r)/</p>	<p>LESSON 1. CONSONANT /k/</p> <p>Decision of Consonant /k/</p> <p>Decide the correct phoneme of each word</p> <p>Initial Sound /k/</p> <p>Cap /kæp/ Quarter /kwɔ:(r)ta(r)/ Keep /ki:p/ Quick /kwɪk/</p> <p>Conflict /kɒnflɪkt/ Crisp /krɪsp/ Quiet /kwaɪət/ Conson /kɒnsən/</p> <p>Middle Sound /k/</p> <p>Taxi /tæksi/ Soccer /sɒkə(r)/ School /sku:l/ Require /rɪ'kwaɪə(r)/</p> <p>Equipment /i'kwɪpmənt/ Because /bi'kɔ:z/ Parking /pɑ:kɪŋ/ Physics /fɪzɪks/</p> <p>Final Sound /k/</p> <p>Admire /əd'maɪə/ Like /laɪk/ Thank /θæŋk/ Back /bæk/</p> <p>Sick /sɪk/ Allergic /ə'lɜ:dʒɪk/ Ask /ɑ:sk/ Fan /fæn/</p>

Figure 12. Student Book Decision Prototype

In the *decision* section in the student book, it can be seen that prototype 1 is more straightforward and looks less attractive. In addition, in prototype 1, the initial, middle, and final sounds are separated by page so that they take up a lot of space in the book. As for prototype 2 in 1 page, it can summarize the three materials of the initial sound, middle sound, and final sound.

Application Section (lecturer book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>Application of Consonant /k/</p> <p>Pronounce the word based on the picture, apply ASRI to measure your score. The score will be shown at the end of the section</p> <ol style="list-style-type: none"> In this section, the students begin to conduct their task. The students are not able to repeat their pronunciation as the previous section. Thus, this section will show their score as the reflection of their ability in pronunciation. The material application is different from identification, notification, and description. The lecture asks the students to do exercise by pronouncing initial sound, middle sound, and final sound /k/ by using ASRI. The lecture guides the students in conducting this exercise. The lecture asks the students to focus on their pronunciation because this part cannot be repeated. <p>Lecturers' Guide</p>	<p>LESSON 1. CONSONANT /k/</p> <p>4. Application</p> <p>The fourth step of this learning system is Application. Application is part of Bloom's taxonomy in the C3 cognitive domain, it is Application. In learning pronunciation, this is an important part because learning pronunciation will be easy to master if practiced and repeated. This fourth section is the stage of practicing the material that has been studied previously in the three previous stages. However, please note that the material contained in this application section is different from the material contained in the three previous stages (identification, notification, and decision). Even though they are different, they have the same concepts and patterns, but they are differentiated in the choice of material in order the students can explore other words that have the same pattern. Therefore, the following are instructions for lecturers who teach in class to guide students in carrying out activities in the Application section.</p> <ol style="list-style-type: none"> The lecture explains that in this section, the students cannot repeat pronouncing the words as in the previous section. The lecture explains that the application step is different from identification, notification and description. The students are asked to focus on pronouncing words presented in the section. The lecture informs that the students' answers are calculated by the website. The results are given at the end of the section. The lecture asks the students to pronounce the words. The lecture informs that website ASRI will provide the answer <p>ASRI</p> <p>LESSON 1 Application of Consonant /k/</p> <p>The students look at the picture</p> <p>The students look at the word</p> <p>The students push to speak</p> <p>Picture 4. Lesson 1 Application</p> <p>From the screen above, it is explained in the Application section that students are presented with an image, then below the image, words are given as a description of the image. Under the words, the button "push to speak" is presented, meaning students are asked to press the button to apply the words given. Students are asked to wait a moment for a response from the ASRI website.</p>

Figure 13. Prototype Application for Lecturer Books

The application section in the Lecturer's book shows that prototype 1 is more straightforward and looks less attractive. After being revised in prototype two, this decision section is equipped with an understanding of the application and the steps passed in learning. In addition, prototype two has a snippet of the ASRI website containing the application section.

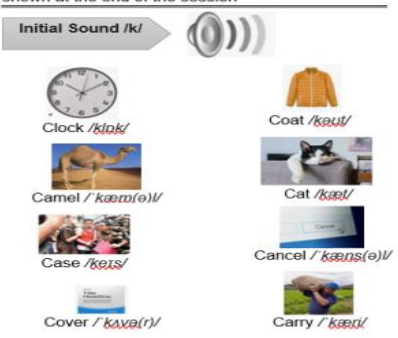



Application Section (student book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>Application of Consonant /k/</p> <p>Click the picture and pronounce the sounds, apply ASRI to measure your score. The score will be shown at the end of the session</p> <p>Initial Sound /k/</p>  <p>How many pictures you can answer the correct sounds?</p>	<p>LESSON 1. CONSONANT /k/</p> <p>Application of Consonant /k/</p> <p>Click on the button and say the word. Use ASRI to check your pronunciation. Get the result at the end of the session.</p> <p>Initial Sound /k/</p>  <p>Middle Sound /k/</p>  <p>Final Sound /k/</p>  <p>STUDENT'S BOOK</p>

Figure 14. Student Book Application Prototype

In the *application* section in the student book, it can be seen that prototype 1 is more straightforward and looks less attractive. In addition, in prototype 1, the initial, middle, and final sounds are separated by page so that they take up a lot of space in the book. As for prototype 2 in 1 page, it can summarize the three materials of the initial sound, middle sound, and final sound. Thus, it looks more attractive



Harmonization Section (Lecturer's book)	
Before validation (1 st prototype)	After validation (2 nd prototype)
<p>Harmonization of Consonant /k/</p>  <p>Now, test your Pronunciation! The score at the end of the session will indicate your ability in your pronunciation</p> <ol style="list-style-type: none"> In this section, the students will pass the last section. The lecturer asks the students to pass the examination Basically, this section is almost similar with application section. The difference is the application section is the task while harmonization section is test. The material between application is different from harmonization. The lecturer asks the students to prepare themselves to repeat the previous material before they take the harmonization section. The test in harmonization section cannot be repeated. The lecturer asks the students to harmonize their pronunciation by using ASRI The lecturer informs the students to check the answer after they finish all the questions <p>Lecturers' Guide</p>	<p>LESSON 1. CONSONANT /k/</p> <p>5. Harmonization</p> <p>The final step in this learning system is Harmonization. Harmonization is part of Bloom's taxonomy in the PS psychomotor domain, it is Practicing. In learning pronunciation, the correct equivalent word is harmonizing. Basically, the Application learning stage are the same as Harmonization. The difference lies in the Application section which can still be repeated at the end after students leave their grades, whereas in the Harmonization section students cannot repeat it once the grades have appeared on the screen. This means that the aim of the Harmonization learning stage is to really test students' ability in pronunciation because students cannot repeat (like the stages in Application). Therefore, this Harmonization learning stage will be a benchmark in evaluating this learning in each lesson or in each learning topic in this book. The material in the Harmonization section can also be used by lecturers as material for mid-semester or final semester exams. The following are instructions that can be used by lecturers to guide students in carrying out learning activities in the Harmonization section.</p> <ol style="list-style-type: none"> The lecturer informs that in this section, the students are given a test. The lecturer informs that the test is provided by ASRI. The lecturer informs the students to review the previous materials The lecturer informs the students to focus on how the words are pronounced The lecturer informs that the results are provided at the end of the session  <p>Picture 5. Lesson 1. Harmonization</p> <p>On the screen, an image is presented for students to analyze. The picture also has a word below it so that students are ready to say the word on the button presented below it.</p> <p>LECTURER'S GUIDE</p>

Figure 15. Prototype Harmonization of Lecturer's Book

The harmonization section in the Lecturer's book shows that prototype 1 is more straightforward and looks less attractive. After being revised in prototype two, this decision section is equipped with an understanding of the application and the steps passed in learning. In addition, prototype two has a snippet of the ASRI website containing the application section.

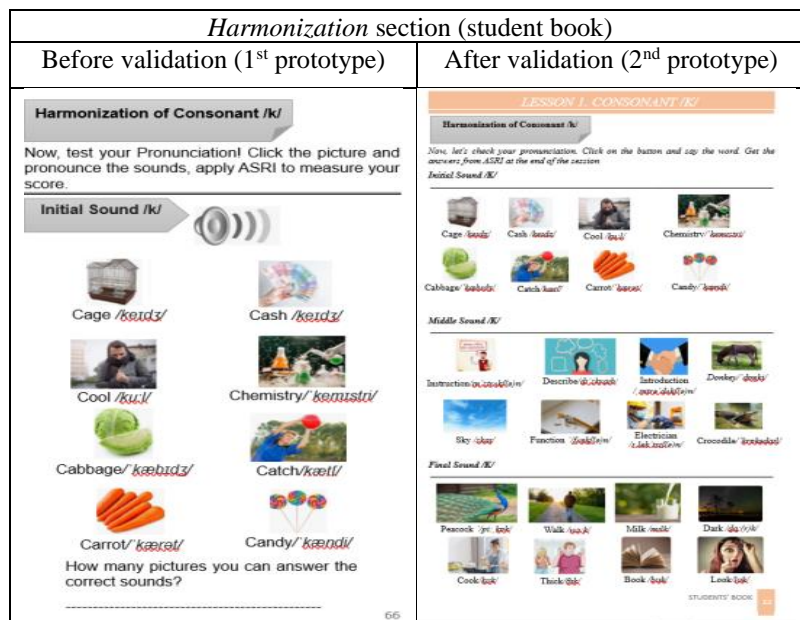


Figure 16. Prototype Harmonization of Student Books

In the *harmonization* section in the student book, it can be seen that prototype 1 is more straightforward and looks less attractive. In addition, in prototype 1, the initial, middle, and final sounds are separated by page so that they take up a lot of space in the book. As for prototype 2 in 1 page, it can summarize the three materials of the initial sound, middle sound, and final sound. Thus, it looks more attractive.

Validation of course book by Expert Judgment

The following are the findings from the product development results in the form of assessments by material experts through instrument questionnaire.

Table 2. Compatibility of the product with the syllabus

Indicator	No	Sub - Indicator / Description	1 st validator				2 nd validator			
			4	3	2	1	4	3	2	1
Compatibility of the product with the syllabus	1	The material presented in the book is following competency standards		√			√			
	2	The material presented in the book contains affective, cognitive, and psychomotor elements.		√				√		
	3	The material presented in the book is based on learning theory.		√				√		
	4	The material presented in the book can achieve learning objectives.		√				√		
	5	The material presented in the book is involved in website-based media.	√					√		

From the table, the overall analysis of product conformity indicators with the syllabus can be seen. The second validator stated that the validator agreed with the material presented following competency standards, fulfilled the affective, cognitive, and psychomotor elements based on learning theory, could achieve learning objectives, and could be poured into website-based media

Table 3. Student characteristics

Indicator	No	Sub - Indicator / Description	1 st validator				2 nd validator			
			4	3	2	1	4	3	2	1
Student characteristics	6	The material presented in the book contains clear instructions	√					√		
	7	The material presented in the book is according to the student's age.		√				√		
	8	The material presented in the book fulfils the elements of a sequential presentation.	√				√			
	9	The material presented in the book fulfils the precise instructions for use.	√					√		
	10	The material presented in the book fulfils the elements of interest to students.		√			√			
	11	The material presented in the book meets the elements of ease of use.		√				√		
	12	The material presented in the book can be used independently.	√				√			
	13	The material presented in the book supports student knowledge.	√					√		
	14	The material presented in the book provides material answers.		√				√		

From the data above, it can be concluded that the student characteristic indicators consisting of material statements presented in the book contain clear instructions according to the age of the student, meet the elements of a coherent presentation, comply with clear instructions for use, meet the elements of interest to students; fulfil the element of ease of use; can be used independently; support student knowledge; and provide material answers that overall the two validators agreed.

Table 4. Graphical Eligibility

Indicator	No	Sub - Indicator / Description	1 st validator				2 nd validator			
			4	3	2	1	4	3	2	1
Graphical eligibility	15	The size of the book is suitable for ISO standards (A4)		√			√			
	16	The book cover design follows the research title.			√			√		
	17	The book cover illustration corresponds to the research title.			√		√			
	18	The book cover's shape, color, and font size are standard.		√			√			
	19	The shape, color, and size of the cover letter are attractive.		√			√			
	20	The layout of the book elements (Titles, subtitles, text, tables, graphics, page numbers) according to the standard			√			√		
	21	The size of the letters in the book is standard.		√				√		
	22	The overall design of the book is attractive.		√			√			
	Total		24	39	6		40	36		

The data above shows that the book size graphic feasibility indicator meets ISO standards (A4) for the first validator to agree by giving a value of 3. The book cover illustration corresponds to the research title, and the

first validator states that he disagrees by providing a value of 2; the shape, colour, and size of the book cover letters are according to the standard; the first validator contradicts by giving a value of 2; while for the suitability of the font size and the attractiveness of the book design, the first validator gives a value of 3 which means agree. These statements are summed up by entering the acquisition of the numbers obtained into the following formula.

From the results of the material expert validator, the first validator was 78.4, and the second validator was 86.3; therefore, to get the results in the middle, it averaged 82.35. It converted into the feasibility percentage conclusion, and 82.35 falls into the range (76% – 100%), meaning that ASRI products are categorized as very feasible or not revised from a material perspective.

4. Discussion

Based on the findings above, it can be concluded that the product designed as a pronunciation learning book has been produced through a series of validation processes assessed by validators from pronunciation material experts. The results of the validation assessment are declared valid. The current issue in the sector is that several colleges have integrated Pronunciation classes into listening and speaking courses. Despite its importance, pronunciation does not appear to receive appropriate attention in second-language lessons. One of the reasons for these challenges might be the methods utilized to teach pronunciation. Many teachers and students struggle with pronunciation instruction and learning [14].

On the contrary, understandable pronunciation is critical for cooperating and being understood because "without satisfactory pronunciation skills, an individual's communicative skills may be strictly disadvantaged, and this, in turn, may stretch increase to speech that lacks unambiguousness, leading to malfunctions in discussion and stress on the share of the listener" [15]. It is a big thing that most universities are reluctant to include pronunciation courses in the curriculum for several reasons that have been discussed in the background. Full of hard effort and cooperation so that the pronunciation course can be presented again in every English learning curriculum at the university. One of these efforts is to design and develop pronunciation learning books based on the needs and suitability of student backgrounds. Moreover, this learning book is a pronunciation learning assistance book that uses Automatic Speech Recognition Indah (ASRI) assisted learning media to make pronunciation learning more fun than traditional learning.

The learning materials presented are sourced from foreign learning books, and the material is incompatible with the student's background, where the available vocabulary is not familiar to students' daily lives. The synergistic impact of boldness allows students to learn the features of English pronunciation from hearing, vision, and touch and enhance their English pronunciation [12]. Speech categories include phonemes, syllables, stress, and intonation [16]. Thus, focusing strongly on understanding phonology and phonetics is necessary to improve pronunciation [17]. Phonological categories are conceptually more challenging, and gaining an adequate comprehension of those notions necessitates many exposures in various circumstances.

Furthermore, learners frequently require more than exposure to comprehend sounds in the same manner as target language (TL) speakers do [16]. Because students cannot always find the opportunity to ask their language for help in real-life circumstances, they should be encouraged to reach a point where they can make their own decisions regarding their pronunciation acquisition [14]. Listener-friendly and intelligible pronunciation is crucial to clarity, fluency, and better communication. ELT professionals need to realize the importance of explicitly or implicitly teaching pronunciation [7]. Furthermore, some elements influence pronunciation learning. Accent, motivation, exposure to the target language, attitude, teaching method, age, personality, and mother tongue impact are all elements to consider. Several ways can help learners improve their pronunciation [4]

Furthermore, the conventional learning system still dominates in the pronunciation learning class. On the contrary, Effective communication necessitates the skilled use of the phonological features of the target language [17]. Demonstrates the previous tendency in language instruction, where pronunciation is rarely discussed in textbooks and classroom approaches, persists [18]. As a result, pronunciation is more straightforward and vital in approaches and activities for learning foreign languages [18]. One of the reasons for

such issues might be the methods used to teach pronunciation. Pronunciation teaching and learning appear to be a significant difficulty for many instructors and learners [14].

Similarly, there are two types of pronunciation objectives that the instructor or student sets in terms of the degree of pronunciation skill that the learner must obtain to communicate successfully in English, and they are the nativeness principle and the intelligibility principle [19]. On the other hand, Intelligibility is defined as the listener's capacity to recognize specific phrases or utterances, which means that learners produce speech that can be comprehended by a variety of diverse listeners" [19]. Learners of a foreign language confront the arduous challenge of acquiring the sound system, which is typically noticeably different from the one they received for their language [20].

5. Conclusion

This study seeks to show the actual situation in the field that many universities still look down on pronunciation courses. This case is evident in some universities integrating pronunciation courses into other classes. This research is one of the efforts to prove the importance of learning pronunciation independently so that it can provide valuable English quality for EFL students. This study aims to design learning materials outlined in a book equipped with relevant images and following the needs and backgrounds of students. The five stages of new learning activities are expected to change the conventional learning paradigm that relies on teacher dominance in the classroom, where students only wait for the teacher to pronounce and imitate words. The learning step was adapted from Bloom's Taxonomy learning theory, giving birth to a new learning syntax: *Identification, Notification, Decision, Application, and Harmonization* (INDAH). The results of applying products in the form of books are expected to contribute to students' proficiency in pronunciation.

Conflict of interest

The authors declare no competing interests.

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