



## Availability and Use of Digital Textbooks for English in Japan

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### Abstract

*The Japanese Ministry of Education, Culture, Sports, Science, and Technology is discussing the official introduction of digital textbooks. All the eighteen textbooks for junior high school already have their digital version and sixty-six percent of one hundred six textbooks for senior high school have their digital version. Digital textbooks contain unique features which traditional textbooks do not have. They can enlarge text and focus students' attention; display which part of text is being read in a karaoke style; and adjust the speed of the audio. For the benefits of teachers, digital textbooks liberate them from carrying a heavy CD player; relieve them of writing long text on the blackboard; and enable them to select the part of the audio to play with ease and exactness. Digital textbooks differ from one to another in terms of the variety of functions, settings, and options. Generally, more functions are available in junior high school textbooks than in senior high school textbooks. As tablet computers become more popular and cheaper, digital textbooks optimised for tablets may become more popular in the future. When it comes to the actual prevalence of digital textbooks, only thirty-nine percent of schools have one. There are several factors that prevent their use in the classroom. First, necessary hardware and system is not readily available. Fifty-five percent of classrooms are without a digital display or an interactive whiteboard. Second, teachers may not know how to use them. Only one third of teachers receive training to use ICT in the classroom per year. Third, digital textbooks are not necessarily a preferred choice of parents. More than thirty percent of parents are against the use of digital textbooks at school and at home. Fourth, digital textbooks are expensive. A digital textbook for teachers would cost 80,000 yen (640 euros) and that for students would cost 2,000 yen (16 euros). This paper presents the data on the current availability and use of digital textbooks in Japan, describes their strengths and benefits, and discusses the factors that prevent their use in the classroom.*

### 1. Introduction

The Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT) has set up a council to discuss the status of digital textbooks [1]. Textbooks must be authorised by MEXT, used in class, and paid for by taxpayers' money. In this sense, digital textbooks currently available and used are not textbooks, but just one of teaching materials. In view of the informatisation in education, the roles and forms of textbooks are being reviewed and the benefits and costs of digital textbooks are being discussed.

This paper presents the data on the current availability and use of digital textbooks in Japan, describes their strengths and benefits, and discusses the factors that prevent their use in the classroom.

### 2. Functions and Strengths of Digital Textbooks

Digital textbooks contain unique features which paper textbooks do not have. Teachers can:

- enlarge the text and focus students' attention
- display which part of the text is being read in a karaoke style
- adjust the speed of the audio
- set the length of pauses between the audios
- show the intonation, rhythm, and liaison visually
- show and hide the text at a click
- explain grammar in animation
- use flashcards smartly
- select and play the audio for a word, sentence, turn, or passage with ease and exactness

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Teachers do not have to:

- carry a heavy CD player
- write long text on the blackboard
- look for the point to play the audio from

Digital textbooks differ from one to another in terms of the variety of functions, settings, and options [2] [3]. Displaying the text in a karaoke style is available in four textbooks for junior high school (Table 1). In three of them, teachers have the option not to use the function (Karaoke reading may discourage students to read a few words ahead before vocalising the text). Displaying intonation visually is available in one textbook while displaying rhythm is available in another. Three options of audio speed (fast/normal/slow) are available in three textbooks and two options are available in one textbook while no other option is available in two textbooks.

Generally, more functions are available in junior high school textbooks than in senior high school textbooks. As tablet computers become more popular and affordable, digital textbooks optimised for tablets may become more common in the future.

Textbook	A	B	C	D	E	F
Karaoke Display	on/off	on/off	on/off	on	N/A	N/A
Displaying Intonation	Available	N/A	N/A	N/A	N/A	N/A
Displaying Rhythm	N/A	Available	N/A	N/A	N/A	N/A
Audio Speed Options	3	3	3	2	1	1

Table 1: Comparison of Functions in Digital Textbooks for Junior High School

### 3. Availability and Use of Digital Textbooks

English is taught at junior high school and senior high school in Japan. All the eighteen textbooks for junior high school have their digital version (Table 2). Sixty-six percent of textbooks for senior high school have their digital version.

		Paper	Digital	Rate
Junior High School	Publisher	6	6	100%
	Textbook	18	18	100%
Senior High School [4]	Publisher	15	9	60%
	Textbook	106	70	66%

Table 2: Availability of Digital Textbooks

Digital textbooks are not readily available in reality. Forty-six percent of junior high schools and eight percent of senior high schools have one (Table 3) [5]. The actual use of digital textbooks can be presumed to be even lower since teachers are not obliged to use any teaching material.

School	Number of Schools	Schools where Digital Textbooks are Available	Rate
Elementary School	20,184	8,788	44%
Junior High School	9,586	4,411	46%
Senior High School	3,628	275	8%
Others	1,060	106	10%
Total	34,458	13,580	39%

Table 3: Prevalence of Digital Textbooks

### 4. Obstacles to Digital Textbooks

There are several factors that prevent the use of digital textbooks in the classroom. First, necessary hardware and system is not available everywhere. Sixty percent of classrooms at junior high schools and eighty-two percent at senior high schools are without an interactive whiteboard or any other device of display to use digital textbooks (Table 4) [6].



School	Classroom	IWB (A)	TV/Monitor (B)	Display (A+B)	Rate
Elementary School	619,534	55,599	308,080	363,679	59%
Junior High School	347,829	24,706	115,037	139,743	40%
Senior High School	233,867	8,330	33,083	41,413	18%
Others	55,043	1,868	15,653	17,521	32%
Total	1,256,273	90,503	471,853	562,356	45%

Table 4: Digital Display in Classroom

Second, teachers may not know how to use them. Only thirty-two percent of teachers at junior high schools and twenty-one percent at senior high schools receive training to use ICT in the classroom per year (Table 5) [7]. Sixty-five percent of the training is held locally at the school where teachers work. Twenty-four percent of the training is held outside the school, organised by the central and local governments.

School	Teachers	Trained	Rate
Elementary School	392,830	167,314	43%
Junior High School	229,921	72,653	32%
Senior High School	175,222	37,553	21%
Other	75,022	25,125	33%
Total	872,995	302,645	35%

Table 5: Teacher Training per Year

Third, digital textbooks are not necessarily a preferred choice of parents. According to a survey of nearly four thousand parents, more than thirty percent are against the use of digital textbooks at school and at home (Table 6) [8] [9]. Some parents do not believe that digital textbooks help consolidate knowledge or develop writing or thinking abilities. Others think that digital textbooks lack the characteristics which paper textbooks inherently possess (e.g. readability). Concerns about health and exposure to harmful information were also expressed.

School	Agree	Somewhat Agree	Somewhat Disagree	Disagree
Elementary & Junior High School	19%	46%	28%	7%
Senior High School	21%	48%	24%	7%

Table 6: Parents' Opinion to Using Digital Textbook at School and Home

Fourth, digital textbooks are expensive. There are various forms of contracts: one-time payment or annual subscription, and per PC, tablet, student or school. On average, a digital textbook for teachers would cost 84,200 yen (674 euros) for junior high school and 22,600 yen (181 euros) for senior high school. A digital textbook for students would cost 2,300 yen (18 euros) for junior high school and 2,200 yen (18 euros) for senior high school when a paper textbook costs 317 yen (3 euros) for junior high school and 595 yen (5 euros) for senior high school.

## 5. Concluding Remarks

Digital textbooks are not readily available or popularly used in Japan now. The financial burden is huge to buy them and prepare the necessary system and environment. Teachers may not be ready yet. It is also important to note that a large proportion of parents cast doubts on digital textbooks. And their voice is endorsed by educationalists and researchers [10]. However, there are obvious strengths of digital textbooks. When we see young students and adults spending hours reading and exchanging information (or playing games) on smartphones and tablets, we cannot help but think that we should catch up with the times and make use of the media that the learners are most familiar with.

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