

## Article

# The Effects of Student-Engaged Video Lectures on Motivation for Sustainable Flipped Learning

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**Abstract:** Flipped learning has a metacognitive effect on learning and knowledge and cultivates students' active and subjective attitudes toward participatory lessons. This pedagogical model is a specific type of blended learning that frees up classroom time for interaction and higher-order activities. Recent research on flipped learning tends to focus on its educational effects and operational methods. However, no studies have considered the types of video lectures that should be developed or how to encourage students' engagement in pre-class activities. If students do not watch the video lecture beforehand, the effects of the flipped learning class may be restricted. Therefore, for flipped learning to be sustainable, instructors should encourage students to watch the video lecture before class. In this study, we aimed to determine whether videos that engage students affect students' motivation more than videos produced by instructors alone. Fifty-two students studying "Basic Hindi I" provided their consent to participate in the study. Questionnaire surveys were conducted before and after midterm exams, using video lecture type and students' grades as parameters. We examined the contributions and educational effects of flipped learning and sustainable language education on motivation. Our study's methodology combines qualitative and quantitative approaches based on a mixed methods sequential explanatory design. We used the Instructional Materials Motivation Survey (IMMS) designed by Keller to investigate how students' motivation is affected by different types of video lecture. Two focus group interviews were conducted to interpret the results of quantitative studies. The results show that a significant difference could not be obtained between the traditional video lecture (TVL) and student-engaged video lecture (SEVL). However, the SEVL made a slight difference in the attention variable regardless of students' grades.

**Keywords:** sustainable flipped learning; student-engaged video lecture (SEVL); traditional video lecture (TVL); motivation; Hindi education



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## 1. Introduction

Academic circles have been using video content on different subjects to induce interest and active participation in the classroom [1]. Among them, flipped learning, which uses video lectures, teaches students the content of the instructor's lecture online in advance. This method reinforces metacognition and knowledge recognition during offline class time [2,3]. It is also known as a self-directed learning method [4,5]. Flipped learning has attracted attention despite not being a systematic teaching method and having a short history with few existing studies. Nevertheless, flipped learning is known as a teaching-learning method that fosters students' active attitudes and has metacognitive effects on learning and knowledge [5,6], encouraging growth and change in both students and instructors.

In accordance with overseas research related to flipped learning, the Education 3.0 Program introduced by KAIST in 2012 changed the classroom environment by implementing flipped learning in Korean universities. However, flipped learning in higher education

is still in its infancy. Although this pedagogical method has been applied in the field of social sciences where presentations, discussions, and collaboration are frequent, it has not been adopted yet by language education. In recent years, however, multimedia has been widely used in language education to strengthen student motivation and improve memory retention. Therefore, flipped learning-based language education is certainly beneficial [5,7].

Despite its advantages, flipped learning classrooms face many restrictions if students do not watch the video lectures in advance. Videos are arguably one of the most popular resources for pre-class learning because students can pause and rewatch them to review their content [8–11]. Therefore, some of the main components of flipped learning are video lectures together with text materials, presentations, digital textbooks, etc., used pre-class. Until now, many researchers have only focused on instructional methods and the role of the instructors. They have not considered video lectures because video production in flipped learning is a heavy burden on instructors, who generally prefer to combine available materials. In this study, we aimed to implement a sustainable and successful flipped learning operation based on students' interest in the video lecture. Therefore, we examined how student-engaged video lectures affect students' motivation to learn. Students' engagement has become a leading factor in teaching and learning [5].

We conducted an empirical study with 52 students who participated in the course "Basic Hindi I". The course length was eight weeks. Instructors solely produced video lectures before the midterm exam, and videos that engaged students were produced after the midterm exam, respectively. In other words, two video lecture types were produced for flipped learning: video lectures produced by the instructor alone (TVL) and those collaboratively produced by the instructor and students (SEVL). In this study, we aimed to determine the contributions and educational effects of flipped learning and language education on motivation. We used the Instructional Materials Motivation Survey (IMMS) designed by Keller [12] to investigate how students' motivation varies according to the video lecture type.

### *1.1. Previous Studies on Flipped Learning and the Uniqueness of this Study*

The most important inventions in the history of modern education include the blackboard (followed by the Microsoft PowerPoint), projector, classroom setting, and standardization. Combined, they deliver substantial content to countless students. However, such teacher- and content-centered pedagogical models have turned teachers into "town criers" and failed to recognize individuals' complexities and varied learning styles [13]. They have also distorted our educational landscape by sacrificing other crucial components of education, namely curiosity and interaction [14]. This introspection has led education researchers to stress the value of student-centered learning environments that allow students to actively engage in self-directed, interactive, and higher-order activities [15,16].

In higher education, blended learning has received much attention because students can obtain knowledge and information outside the classroom through various technological resources and receive traditional face-to-face instruction in the classroom [17,18]. Student engagement is one of the primary components of effective teaching methods [19,20].

One of the approaches to creating such environments is flipped learning, which uses blended learning to combine onsite (i.e., face-to-face) and online experiences to produce effective, efficient, and flexible learning [21]. Flipped learning turns conventional teaching and learning activities on their heads: It uses technology to deliver direct instruction (as well as other asynchronous activities) outside of the classroom, reserving onsite time for interaction and activities.

Although studies on flipped learning classrooms are scarce, valuable research has been conducted in relevant areas over the years. These studies attest to the effectiveness of flipped learning in educational outcomes such as student engagement, collaboration, peer interaction, self-paced learning, independent learning, individualized attention, motivation, etc. [22–26]. However, none has focused on the kinds of video lectures that should

be developed or how to encourage student engagement in pre-class activities. It is the instructor's role to create an engaging learning environment grounded in their interests [6].

O'Flaherty and Phillips note that students are less likely to engage in pre-class activities that lack interactivity [17]. Students should pay attention to the pre-class because on-site classes are based on what they learned pre-class. It is important that students understand the learning materials before class to increase the productivity and effectiveness of on-site flipped learning classes. In other words, a successful flipped learning class depends on how eagerly the students watch and understand video lectures in pre-class. Students may not be motivated to review the content or understand it if the learning materials, such as video lectures, are not engaging enough. A lack of engagement with pre-class activities creates variability in the students' preparedness [17]. Garcia-Allen explored how student engagement is determined by the amount of homework they complete and the number of videos they watch prior to class [6].

In this study, we present the relationship between SEVLs and TLVs in the flipped class. The development of SEVLs may impact pre-class student engagement. No educational effectiveness can be expected from flipped learning without watching video lectures or completing pre-class assignments. Therefore, the purpose of this pilot project was to examine the contributions to and the educational effects of different video types on motivation in flipped learning and language education.

### 1.2. Hypothesis and Research Questions

To motivate students and create a student-centered learning environment, we designed this pilot project to determine students' pre-class activities online and apply flipped learning to the on-site Hindi language classroom. We also compared how students perceive TVLs and SEVLs. In addition, we hypothesized that pre-class SEVLs are the most appropriate means for strengthening learners' motivation and sustaining flipped learning. We conducted an empirical case study by asking the following questions:

- (i) What video lectures are being used to engage students in flipped learning?
- (ii) How do students perceive the TVL produced by the instructor alone?
- (iii) Will students' motivation be stronger if the instructor and the student collaborate on video lectures?
- (iv) If student-engaged videos do not affect motivation, then why?

## 2. Methods

### 2.1. Research Context: Student-Engaged Video Lecture Project

Several flipped projects were piloted at Hankuk University of Foreign Studies in 2018. In a workshop organized by the university's Centre for Teaching and Learning, instructors were trained on the theoretical concept and general design of flipped classrooms to stimulate student-centered teaching, especially in different language classrooms such as Hindi, Thai, Polish, Indonesian, etc. Nevertheless, no specific designs for individual modules were presented, as flipped classrooms have not yet been fully implemented in Hindi. Hence, flipped learning was new to both instructors and students. In the spring semester of 2018, a full-time flipped learning-based course called "Basic Hindi I" was developed for a small project at Hankuk University of Foreign Studies.

The two main pillars of the flipped classroom model were designed and implemented for the course: (i) student-centered interactive learning and (ii) IT-enabled active learning.

In addition, video production, a prerequisite for flipped learning, was essential. However, students gradually began to neglect watching video lectures and learning Hindi before class despite having an initial interest in flipped learning. Therefore, after the midterm exam, we attempted to attract students' interest in the pre-class by having them participate in the video lecture. Unlike previous video lectures (TLVs) produced by the instructor before the midterm exam, new video lecture types that engaged students (SLVs) were produced after the midterm exam (Table 1).

**Table 1.** Description of TLVs and SEVLs.

	Traditional Video	Student-Engaged Video
Participation	Lecturer alone	Lecturer + two students for each video
Role	Teaching	Question and Answer Feedback
Playing time	15 min each	20 min each
Video shoot	PPT recording mode with camera	PPT + video recording app (explain everything—iPad)
Lecture method	Explanatory Lecture	Explanatory Lecture + Interaction
Application time	Before midterm exam	After midterm exam

We conducted a survey to determine how effective the SVL design was at running sustainable flipped learning for learning motivation. Two types of focus group interviews (FGI) were also conducted to interpret survey results from the perspective of learners.

### 2.2. Analytic Framework: Instructional Materials Motivation Survey (IMMS)

In this study, we used both quantitative and qualitative methodologies to seek statistical generalizations and explore perceptions. The analytical framework for this study was the IMMS, which was first introduced by Keller [1,27] to apply motivational strategies to instructional materials by testing their effects [28].

The IMMS framework outlines the key components and processes contributing to the ideal motivational learning experience. It posits that four characteristics—Attention (A), Relevance (R), Confidence (C), and Satisfaction (S)—are the main pillars of measuring students' reactions to motivational instructions. According to Keller [1], people's curiosities and interests should be stimulated and sustained (A) before they can be motivated to learn. They must believe that the instruction relates to their personal goals or motives. Furthermore, they must feel connected to the setting (R). Even if the content is relevant and people are curious to learn it, they may not feel motivated due to low confidence, overconfidence, or unrealistic expectations of success (C). To have a continuing desire to learn, people must be satisfied with the process or results of the learning experience (S).

### 2.3. Focus Group Interviews

Based on a mixed-methods sequential explanatory design [29], two FGIs were conducted. Each group consisted of two graduate school students majoring in Hindi Linguistics and Korean as a Foreign Language (KFL), respectively. One group assessed the Hindi learning level and content shown in the video lectures, and the other discussed the lecture from the perspective of language learning and teaching. Each interview lasted 40–50 min and was recorded and transcribed with the interviewees' consent.

### 2.4. Classroom Description

Basic Hindi I is a 16-week-long module with a weekly two-hour session. Fifty-two students participated in this course, designed to teach basic Hindi grammar and sentence structure for communication and translation at the beginner level. Nineteen students re-enrolled in the course because they failed to receive credits in the previous semester. This study consisted of two settings, namely, before and after midterm exams. Until the midterm exam, flipped learning was conducted using TVLs produced by an instructor alone. After the midterm exam, flipped learning was performed using SEVLs. The following sections describe and compare the design and implementation of TVLs and SEVLs (Table 2). In this study, we analyzed data assuming that motivation may vary according to grades. Students were classified into five groups according to their grades: A+/A, B+/B, C+/C, D+/D, and F (Table 3). Their grades were based on evaluations made after the semester ended.

**Table 2.** TVL and SEVL.

	TVL Based Flipped Classroom	SEVL Based Flipped Classroom
Approach	Experimental Hindi learning	Experimental Hindi learning
Goal Setting	By instructor	By instructor and students
Video Production	By instructor	By instructor and students
Learning Activities	Individual, reflective journal, team	Individual, reflective journal, team
Learning Feedback	team discussion	team discussion
Assessment	Instructor-led formative assessment Team feedback and assessment	Instructor-led formative assessment Team feedback and assessment

**Table 3.** Participant demographics.

		Grade					Total
		Excellent	Very Good	Good	Not Bad	Bad	
gender	male	2	7	10	6	1	26
	female	6	8	15	2	5	26
total		8	15	25	8	6	52

### 3. Results

This section is divided into subheadings. Our results, interpretations, and conclusions are presented concisely and precisely.

#### 3.1. Research Instrument and Procedure

In this study, we used the M-IMMS questionnaire (see Appendix A), a modified version of the IMMS instrument developed by Keller [1]. The original IMMS consists of four sections: (i) attention (twelve items); (ii) relevance (nine items); (iii) confidence (nine items); and satisfaction (six items). The M-IMMS maintains the structure and essentials of the IMMS while omitting writing-related items and adding material components to produce A 11 and A 12. Ordinal responses are provided on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

The surveys were administered through the university's LMS. We used these data in SPSS 21 to compare two different video lecture types based on flipped classrooms, followed by an examination of individual items.

#### 3.2. Reliability of Survey and Result

The M-IMMS questionnaire had high reliability, Cronbach's  $\alpha = 0.947$  (Table 4).

**Table 4.** Reliability of survey.

Cronbach's Alpha	N of Items
0.947	36

The means and standard deviations of TVL are presented in Table 5.

A one-way ANOVA was performed to compare the effect of five different grades on motivation (ARCS) in a Traditional Video Lecture (TVL) (Table 6).

**Table 5.** Analysis: overall results of TVL.

		Group	M	SD
TVL	Attention	A (Excellent)	4.39	0.59
		B (Very Good)	4.02	0.50
		C (Good)	4.05	0.73
		D (Not Bad)	3.13	0.43
		E (Bad)	3.56	0.70
	Relevance	A	4.46	0.51
		B	4.12	0.46
		C	3.89	0.62
		D	3.28	0.48
		E	3.54	0.26
	Confidence	A	4.28	0.66
		B	3.74	0.48
		C	3.64	0.57
		D	2.82	0.32
		E	3.48	0.41
	Satisfaction	A	4.27	0.60
		B	3.99	0.62
		C	3.79	0.89
		D	2.75	0.40
		E	3.44	0.48

**Table 6.** ANOVA Results in TVL.

		Sum of Squares	df	Mean Square	F	Sig.	Post hoc	
TVL	Attention	Between	7.962	4	1.990	5.468	0.001	a,b,c > d
		Within	17.109	47	0.364			
	Relevance	Between	7.096	4	1.774	6.887	0.000	a > d,e b > d
		Within	12.107	47	0.258			
	Confidence	Between	8.926	4	2.232	8.500	0.000	a,b,c > d
		Within	12.339	47	0.263			
	Satisfaction	Between	11.566	4	2.891	6.411	0.000	a,b,c > d
		Within	21.197	47	0.451			

The one-way ANOVA results revealed statistically significant differences between at least two groups in Attention ( $F(4, 47) = [5.468]$ ,  $p = 0.01$ ), Relevance ( $F(4, 47) = [6.887]$ ,  $p = 0.00$ ), Confidence ( $F(4, 47) = [8.500]$ ,  $p = 0.00$ ), and Satisfaction ( $F(4, 47) = [6.411]$ ,  $p = 0.00$ ).

Scheffé's test for multiple comparisons found that the mean value of motivation scores for Groups A, B and C were significantly higher than Group D in Attention, Confidence, and Satisfaction. The Attention score was significantly different between Groups A and D ( $p = 0.04$ , 95% C.I. = [0.29, 2.23]), Groups B and D ( $p = 0.032$ , 95% C.I. = [0.05, 1.74]), and Groups C and D ( $p = 0.025$ , 95% C.I. = [0.08, 1.77]). For Relevance scores, Group A was significantly higher than Groups D ( $p = 0.001$ , 95% C.I. = [0.37, 2.00]) and E ( $p = 0.035$ ,

95% C.I. = [0.43, 1.80]). Group B was significantly higher than Group D ( $p = 0.013$ , 95% C.I. = [0.13, 1.55]). The Confidence score of Group D was significantly lower than Groups A ( $p = 0.00$ , 95% C.I. = [−2.28, −0.64]), B ( $p = 0.005$ , 95% C.I. = [−1.64, −0.20]), and C ( $p = 0.018$ , 95% C.I. = [−1.54, −0.98]). For Satisfaction, Group D was significantly lower than Groups A ( $p = 0.002$ , 95% C.I. = [−2.60, −0.44]), B ( $p = 0.004$ , 95% C.I. = [−2.18, −0.30]), and C ( $p = 0.023$ , 95% C.I. = [−1.98, −0.10]).

The means and standard deviations of SEVLs are presented in Table 7.

**Table 7.** Analysis: overall results of SEVL.

		Group	M	SD
Student-engaged Lecture (SEVL)	Attention	A	4.29	0.60
		B	4.06	0.66
		C	4.05	0.82
		D	3.17	0.45
		E	3.79	0.90
	Relevance	A	4.32	0.52
		B	4.15	0.51
		C	3.96	0.56
		D	3.25	0.55
		E	3.52	0.36
	Confidence	A	4.32	0.55
		B	3.83	0.56
		C	3.64	0.65
		D	2.81	0.32
		E	3.56	0.59
	Satisfaction	A	4.21	0.65
		B	4.12	0.57
		C	3.83	0.91
		D	2.75	0.41
		E	3.42	0.60

One-way ANOVA was used to compare the effects of five different grades on motivation (ARCS) in SEVLs (Table 8).

**Table 8.** ANOVA Results in SEVL.

		Sum of Squares	df	Mean Square	F	Sig.	Post-hoc	
SEVL	Attention	Between	6.295	4	1.574	3.135	0.023	-
		Within	23.597	47	0.502			
	Relevance	Between	6.627	4	1.657	6.168	0.000	a,b > d,e
		Within	12.625	47	0.269			
	Confidence	Between	9.880	4	2.470	7.806	0.000	a,b,c > d
		Within	14.870	47	0.316			
	Satisfaction	Between	12.525	4	3.131	6.673	0.000	a,b,c > d
		Within	22.054	47	0.469			

The one-way ANOVA results revealed statistically significant differences between Attention ( $F(4, 47) = [3.135]$ ,  $p = 0.023$ ), Relevance ( $F(4, 47) = [6.168]$ ,  $p = 0.00$ ), Confidence ( $F(4, 47) = [7.806]$ ,  $p = 0.00$ ), and Satisfaction ( $F(4, 47) = [6.673]$ ,  $p = 0.00$ ).

We used Scheffé's test and the Games–Howell test for multiple comparisons and found that the mean value of the motivation scores was significantly different between several groups. The Attention score was significant in ANOVA, but there was no significant group in the post hoc test. For Relevance scores, group A was significantly higher than group D ( $p = 0.010$ , 95% C.I. = [0.24, 1.90]) and E ( $p = 0.035$ , 95% C.I. = [0.05, 1.55]). Group B was significantly higher than group D ( $p = 0.014$ , 95% C.I. = [0.17, 1.63]) and E ( $p = 0.044$ , 95% C.I. = [0.15, 1.24]). The Confidence score of Group D was significantly lower than Groups A ( $p = 0.00$ , 95% C.I. = [−2.42, −0.62]), B ( $p = 0.005$ , 95% C.I. = [−1.81, −0.23]), and C ( $p = 0.034$ , 95% C.I. = [−1.62, −0.42]). For Satisfaction, Group D was significantly lower than Groups A ( $p = 0.004$ , 95% C.I. = [−2.56, −0.36]), B ( $p = 0.001$ , 95% C.I. = [−2.33, −0.41]), and C ( $p = 0.019$ , 95% C.I. = [−2.04, −0.12]).

#### 4. Discussion

##### 4.1. No Significant Results except for Attention and Relevance among the Groups

To determine whether video lecture types affect learners' motivation, a paired-sample t-test was conducted according to video lecture types. However, no significant difference was found between TVLs and SEVLs.

Therefore, we examined whether there were differences in motivation levels according to grades in the TVL and SEVL classes. Using one-way ANOVA in ARCS (Attention, Relevance, Confidence, Satisfaction), we did not find any significant differences between the two teaching methods in the Confidence and Satisfaction areas.

However, for the Attention variable, students with Excellent (Group A), Very Good (Group B), and Good grades (Group C) in the TVL class had significantly higher attention scores than those with Not Good grades (Group D). No difference was found, however, by grade level in the SEVL class. Therefore, SEVL shows significant changes in Attention regardless of students' grades, whereas TVL shows differences based on grades.

Relevance in the SEVL class also changed. Students with bad grades (Group E) did not differ significantly from other grade students. Middle-class students, however, felt less relevant than upper-class students, which is somewhat controversial and indicates issues that must be discussed in the future.

This study was supposed to explore the possibilities of piquing students' interest by watching video lectures before class. Therefore, we attempted to induce their interest through SEVLs rather than TVLs produced by an instructor alone. SEVL inspires students' motivation to learn and enables sustainable flipped learning. We also proved that the number of videos students watch and the amount of homework they complete before class is key to successful flipped learning classrooms [6]. Unfortunately, our hypothesis for this study—that SEVLs strengthen learners' motivation—could not be proven. Unlike our initial expectation that SEVLs would strengthen students' learning motivation, this pilot project did not improve engagement significantly. We can conclude that learners are influenced by other classroom conditions than the video type provided pre-class. Certainly, this result derives from the fact that a SEVL has never been exposed to flipped learning classrooms before. We also conducted interviews with two focus groups to interpret these results.

##### 4.2. Why Student-Engaged Video Lecture Did Not Affect Motivation

Flipped learning classes cannot operate unless learners watch the video lecture beforehand. Therefore, as a last resort, we designed a video lecture where students participate to arouse learners' motivation. However, we confirmed no significant educational effects on the student-engaged video lectures planned for sustainable flipped learning classes. These findings were completely unexpected. Therefore, a qualitative survey was also conducted in focus groups to determine whether it was a design problem or if learners were less motivated by student-engaged video lectures.

We classified the responses of four graduate students who participated in the interview into similar themes to analyze three characteristics of the Community of Inquiry (CoI)-teaching, social, and cognitive-concreted frameworks by Garrison, Anderson, and Archer [30] (Table 9). The CoI framework may outline the key components contributing to learning and teaching experiences.

**Table 9.** Summary of the interview.

Presence	Main Common Responses
Teaching	No difference in friendliness Not a class, but tutoring only for participating students
Social	More interest but less concentration Negative effects of comparing students to others
Cognitive	Not specialized video editing and shooting Flipped learning may not be suitable for critical foreign language learning

Although SEVLs were more effective in arousing students' interest than TVLs, it remains uncertain whether the current level of video lectures will inspire sustainable motivation among students. For learners accustomed to high-quality multimedia lectures, the low-quality video lectures produced by the instructor were neither more nor less engaging. There may be the possibility that the appearance of peers' video lectures reflects the learner's own abilities. The video lecture may have felt more like a private tutoring class than a traditional class.

## 5. Conclusions and Current Research Limitations

We explored effective strategies for designing and implementing sustainable flipped classrooms by comparing traditional video lectures produced by instructors and SEVLs created by instructors and students using the IMMS instrument. Key findings, limitations, and recommendations for future research are summarized below.

This study is unique in terms of (i) modifying flipped learning for sustainable education and motivation; (ii) streamlining flipped learning activities in a semester-long module in a formal educational setting; (iii) comparing traditional and student-engaged video lectures using a quasi-experimental design; (iv) examining how student-engaged video lectures motivate student activities in a classroom or pose challenges to students; and (v) conducting focus group interviews to analyze survey results and identify probable causes.

However, several limitations must also be acknowledged for future research. Firstly, we analyzed a relatively small sample of students. More classrooms and a larger sample would have produced more reliable results. Secondly, we did not assess students' language and communicative skills or performance in this study. A more comprehensive and long-term comparison between the experimental and control groups would have revealed the Hindi classroom's effect on student performance. Thirdly, qualitative research should have been systematically conducted to further investigate the interaction between the instructional method and language group. Therefore, this study's findings are tentative and open to revision. More research is needed to share the best practices of flipped learning classrooms and implement a sustainable system of flipped learning.

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## Appendix A

### The Instructional Materials Motivation Survey (IMMS) by Keller [1].

Items of the Instructional Materials Motivation Survey		5	4	3	2	1
C1	When I first saw this lesson, I had the impression that it would be easy.					
A1	Something interesting at the beginning of this lesson caught my attention.					
C2	This material was more difficult to understand than I wanted it to be.					
C3	After reading the introductory information, I felt confident in what I was supposed to learn from this lesson.					
S1	Completing the exercises in this lesson gave me a satisfying feeling of accomplishment.					
R1	It is clear to me how this content relates to things I already know.					
C4	This material had so much information that it was hard to identify and remember important points.					
A2	These materials were eye-catching.					
R2	Stories, pictures, or examples showed me how this material could be important to some people.					
R3	Completing this lesson successfully was important to me.					
A3	The quality of the material held my attention.					
A4	This lesson was so abstract that it could not hold my attention.					
C5	As I worked on this lesson, I felt confident about learning the content.					
S2	I enjoyed this lesson so much that I would like to know more about the topic.					
A5	The pages of this lesson looked dry and unappealing.					
R4	The content of the learning material is relevant to my interests.					
A6	The way the information was arranged in the material held my attention.					
R5	There were explanations or examples of how people have used the knowledge in this lesson.					
C6	The exercises in this lesson were too difficult.					
A7	This lesson stimulated my curiosity.					
S3	I enjoyed studying this lesson.					
A8	The amount of repetition in this lesson caused boredom at times.					
R6	The content and style of writing in this lesson convey the impression that its content is worth knowing.					
A9	I learned things that were surprising or unexpected.					
C7	After working on this lesson for a while, I was confident in my ability to pass a test on it.					
R7	This lesson was irrelevant to my needs because I already knew most of the material.					
S4	The wording of the feedback after the exercises, or other comments in this lesson, made me feel rewarded for my effort.					
A10	The variety of reading passages, exercises, illustrations, etc., kept my attention on the lesson.					
A11	The style of the material is boring.					
R8	I can relate the content of this lesson to things I have seen, done, or thought about in my own life.					
A12	There is an excessive number of words in this material.					
S5	It felt good to successfully complete this lesson.					
R9	The content of this lesson will be useful to me.					
C8	I did not understand much of the material in this lesson.					
C9	The organization of the content helped my confidence in learning this material.					
S6	It was a pleasure to work on such a well-designed lesson.					

5 = very true; 4 = mostly true; 3 = moderately true; 2 = slightly true; 1 = not true.

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