AWSuM User's Manual

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About AWSuM

What is AWSuM?

AWSuM (Academic Word Suggestion Machine) is an online tool that provides support for English academic research writers through an approach that integrates move analysis, particularly prominent in ESP (English for Specific Purposes), with the lexical bundles used in corpus research. AWSuM suggests high frequency lexical bundles for each move within a section of a paper in a specific discipline. AWSuM (http://langtest.jp/awsum/) has been available free of charge since February 2016.

Why AWSuM is awesome:

- It can display frequent lexical bundles within a section of a paper in a specific discipline according to rhetorical structures (i.e., moves).

- It can suggest the most frequent lexical bundles through an auto-complete user interface.

- Checking for collocations and formulaic sequences in a specific discipline is much easier with AWSuM, because it displays the words before and after the search terms.

- With its concordance feature, AWSuM can display how words are actually used in the context of discipline-specific research articles.

- Due to these features, AWSuM is significantly more useful than conventional reference tools such as dictionaries.

Target Disciplines and Journals

As of December 2016, users can only select two academic fields: (1) Applied Linguistics and (2) Computer Science. In 2017, we will add Materials Science, and plan to support more fields in the future.

(1) Articles from the following journals in the Applied Linguistics field are included in AWSuM (Approximately 1,400 papers):
1. *Applied Linguistics*
2. *ELT Journal*
3. *English for Specific Purposes*
4. *Journal of Second Language Writing*
5. *Language Learning*
6. *Language Teaching Research*
7. *Modern Language Journal*
8. *Studies in Second Language Acquisition*
9. *System*
10. *TESOL Quarterly*

(2) Articles from the following journals in the Computer Science field are included in AWSuM (Approximately 300 papers):
1. *Applied Ergonomics*
2. *Behaviour & Information Technology*
3. *Communications of the ACM*
4. *Ergonomics*
5. *Human Factors*
6. *IEEE Transactions on Computers*
7. *IEEE Transactions on Knowledge and Data Engineering*
8. *IEEE Transactions on Parallel and Distributed Systems*
9. *IEEE Transactions on Pattern and Machine Analysis*
10. *IEEE Transactions on Software Engineering*
11. *International Journal of Human-Computer Interaction*
12. *International Journal of Industrial Ergonomics*

The preliminary steps for developing AWSuM included: (1) downloading the target papers in pdf or html format, and (2) attaching a mark (tag) for rhetorical structures (moves) within each section of the papers. We tagged all sections in the papers.

We shall explain how to use AWSuM below.

1. Selection of Disciplines, Sections, and Moves

1.1 Selection of Disciplines, Sections, and Moves

When you first access AWSuM (http://langtest.jp/awsum/), you begin by using the **"Discipline"** menu to choose a target field, the **"Section"** menu for choosing a section of research articles, and the **"Move"** menu to choose communicative functions within specific sections of their respective pull-down menus.


For the Discipline, Section, and Move menus, it is possible to select all disciplines, all sections, and all moves by choosing "ALL." In the following example, we select "Applied Linguistics" for Discipline, "abstract" for Section, and "02 presenting research" for Move.

The most frequently selected lexical bundles are displayed in frequency order along the right edge of the screen, according to the selected Section and Move. This lets you see which lexical bundles are most frequently used in a specific Section and Move.

For a list of move categories used in AWSuM, refer to the next page.

1.2 List of 25 Move Categories Used in AWSuM

Sections	Moves	Steps
Abstract	[01] Introduction (Establishes context of the paper)	・Arguing for topic prominence (Claiming centrality) ・Making topic generalizations ・Defining terms, objects, or processes ・Identifying a gap in current knowledge ・Justifying the research study
	[02] Presenting the research	・Stating the purpose directly
	[03] Describing the methodology	・Describing the participants ・Describing the instruments or equipment ・Describing the procedure and conditions
	[04] Summarizing the findings	・Describing the main features or properties of the solution or product
	[05] Discussing the research (Interprets or extends results beyond the scope of the paper, draws inferences, points to applications, or wider applications.)	・Deducing conclusions from results ・Evaluating value of the research ・Presenting recommendations
Introduction	[06] Establishing a territory (Announcing the importance of the field)	・Claiming the centrality of the topic ・Making topic generalizations ・Summarizing existing studies (Reviewing items of previous research) ・Drawing inferences from previous studies ・Reference to main research problems
	[07] Establishing a niche (Preparing for the present study)	・Indicating a gap ・Adding to what is known ・Presenting positive justification ・Raising a question
	[08] Presenting the present work (Introducing the present study)	・Announcing present research descriptively and/or purposively ・Stating purpose(s) ・Presenting research questions or hypotheses ・Definitional clarifications ・Reference to main research procedure (Summarizing methods) ・Predicting results (Announcing principal outcomes) ・Stating the value of the present research ・Indicating RA (Research Article) structure
Method	[09] Describing the sample [10] Describing research instruments [11] Describing the procedures [12] Describing data analysis procedure	
Results (or Results & Discussion)	[13] Preparing for the presentation of results	・(Re)stating data collection and analysis procedure ・Restating research questions or hypotheses
	[14] Reporting specific / individual results	・Location of results ・Reporting most important findings ・Substantiating (or invalidating) results ・Indicating non-consistent observations
	[15] Commenting on results	・Interpreting results
	[16] Summarizing results	・Presenting integrated results on the basis of a number of specific results
Discussion (or Conclusions)	[17] Preparing for the presentation of the discussion section	・Giving background information (Restate the aims, objectives, procedural information, theories, and research questions)
	[18] Highlighting overall research outcome	・Reporting results (Expected or unexpected outcome)
	[19] Discussing the findings of the study	・Interpreting / discussing results ・Indicating significance of the outcome ・Comparing results with a hypothesis ・Comparing results with literature ・Exemplifying
	[20] Drawing conclusions of the study Stating research conclusions	
	[21] Evaluating the study	・Indicating significance / advantage ・Indicating limitations ・Evaluating methodology
	[22] Deductions from the research	・Recommending further research ・Making suggestions / drawing (pedagogic) implications
Conclusions (or Pedagogic implications)	[23] Summarizing the study	・Providing summary
	[24] Evaluating the study	・Indicating significance / advantage ・Indicating limitations ・Evaluating methodology
	[25] Deductions from the research	・Recommending further research ・Making suggestions / drawing (pedagogic) implications

http://langtest.jp/awsum/

2. Presentation of lexical bundles (suggestion function)

2.1 Word Input

After selecting a discipline, section, and move, users input a character string. For a pre-determined number of words (Keyword), you will be presented with the lexical bundles from that section/move in frequency order in the form of an incremental search.

The following example demonstrates the process of finding which words typically follow "the" for the abstract presentation of research. If you enter a space after inputting "the," you will see that common following words are presented.

If you do not wish to use the suggestion function, simply remove the check mark from "☑ Auto-suggest" on the right side of the screen.

※ If no suggestions are displayed, try re-entering the space or the immediately preceding character.

> We have confirmed that AWSuM runs on all browsers including iOS browsers. Please contact us if you discover any browser compatibility issues.

2.2 Designating Reference Words (Keyword) and Presented Words (R)

With AWSuM, it is possible to designate reference keywords on the left (Keyword) and presented words (R) on the right. This allows you to display words in a more restricted linguistic context.

Below, we provide a detailed example of how to specify reference words on the left and presented words on the right. (Note that the string of reference words counts as only a single word when choosing the number of display words.)

If you wish to write something like "The purpose of this study is..." in your abstract, you can do this by setting Keyword to 1 + 4R (reference 1 word on the left, present 4 words on the right), and inputting "the." The following suggestions will appear:

Next, we enter "the purpose" and set Keyword to 2 + 4R (reference 2 words on left, present 4 words on the right), the left side becomes "the purpose" and you can check the most frequent words summing to 4 on the right.

Next, we enter "the purpose of," and set Keyword to 3 + 4R (reference 3 words on the left, present 4 words on the right), suggestions for the words to follow will be displayed.

Finally, with an input of "the purpose of this," and Keyword set to 4 + 4R (reference 4 words on the left, and present 4 words on the right), suggestions for the words to follow are displayed.

As you increase the number of reference words for the phrase you wish to find suggestions for, the context will be increasingly limited. This allows you to see what kind of words should follow in more detail. This is an extremely useful reference when writing a research article.

Up until the previous example, we have always used 4R (four words on right) suggestions, but if we set this to 3R, it will suggest three words on the right, and with 5R, it will suggest five words.

3R

5R

The purpose of AWSuM is to suggest "lexical bundles common to moves for academic research papers in a particular field." There may be times when word sequences with low frequency are presented for reference (this is intentional), or special examples are displayed. You will need to take special care to avoid plagiarism when using such examples in your own paper. It is necessary for teachers to be aware of this when utilizing AWSuM in teaching L2 research writing.

2.3 Choosing Words (1L–3L) to Display on the Left

With AWSuM, it is possible to display 1 to 3 high frequency words (1L-3L) that appear to the left of the searched Keyword. This option is set to "off" by default.
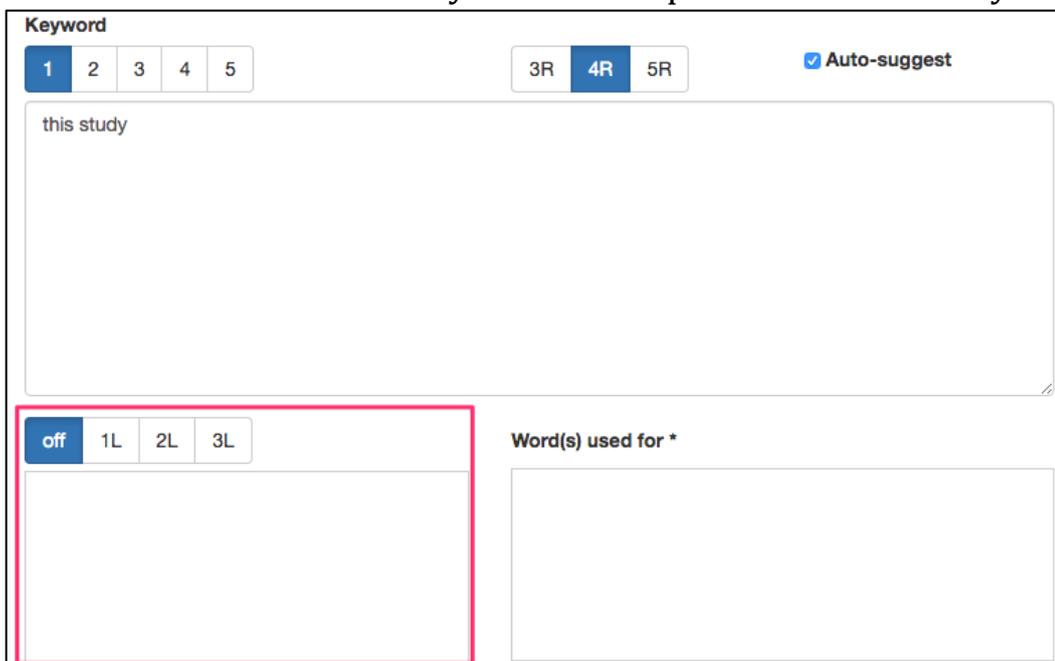
As an example, we find the two words used before (to the left of) "this study," by selecting 2L, and we can still display words that appear to the right (in this example 4R).
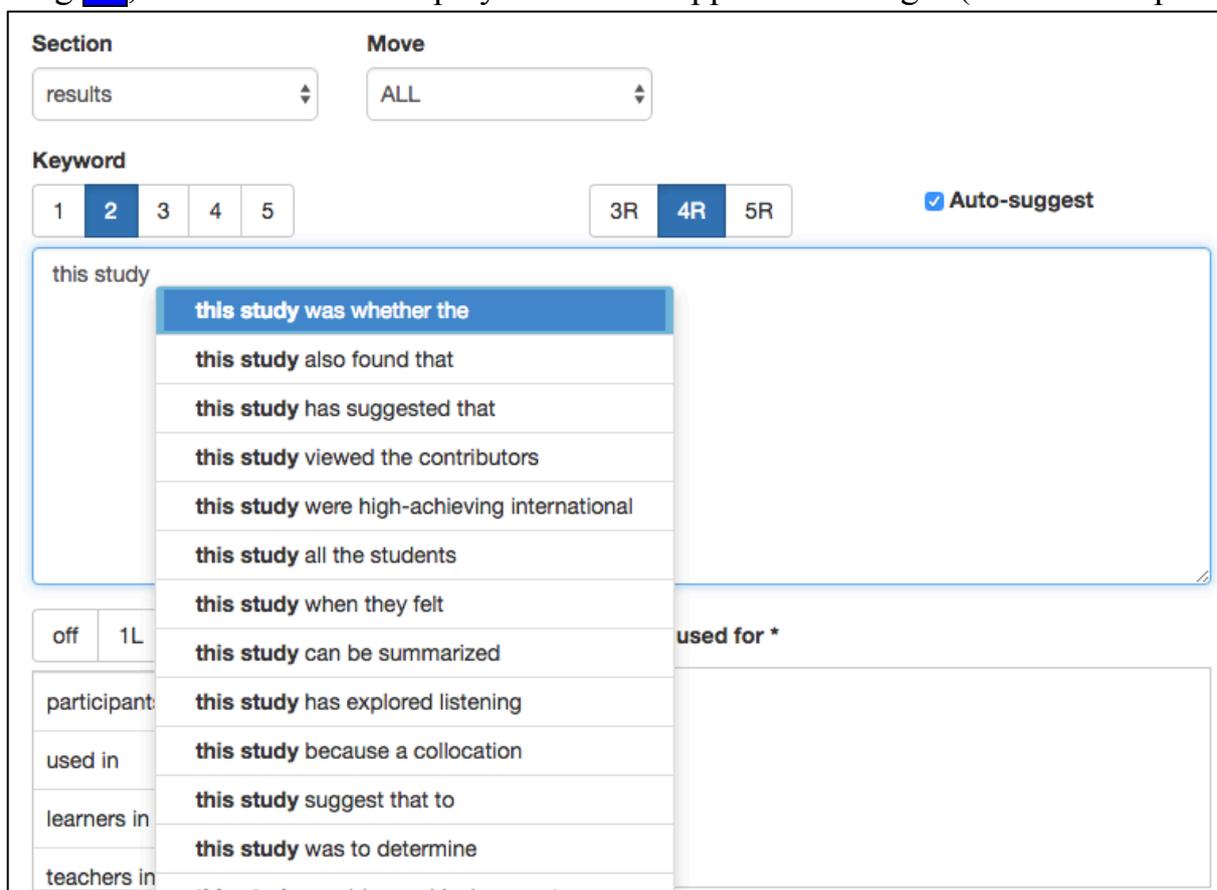
By using this setting as shown in the left figure below, the two words used to the left of "this study" are displayed. If we set it to 3L, and use the suggestion function in the same way, the three words (3L) used to the left of "this study" will be displayed in frequency order, as shown in the right figure below.

off	1L	**2L**	3L

participants in
used in
learners in
teachers in

off	1L	2L	**3L**

the participants in
the teachers in
the purposes of
the scope of

> The words displayed the left (1L–3L) correspond to the suggestion function for the right side (3R–5R), and will not be displayed simply by selecting the off, 1L, 2L, or 3L buttons without entering search terms.

2.4 Wildcard Searches Using Asterisks

When you are performing an AWSuM search and do not know what word to use, you can use a wildcard search to search for strings containing any word in a specific place. When using the suggestion function, it is possible to use an asterisk (*) in place of one word. For example, if you enter "the * of this," it is possible to perform a search regardless of what word is found in place of the asterisk.
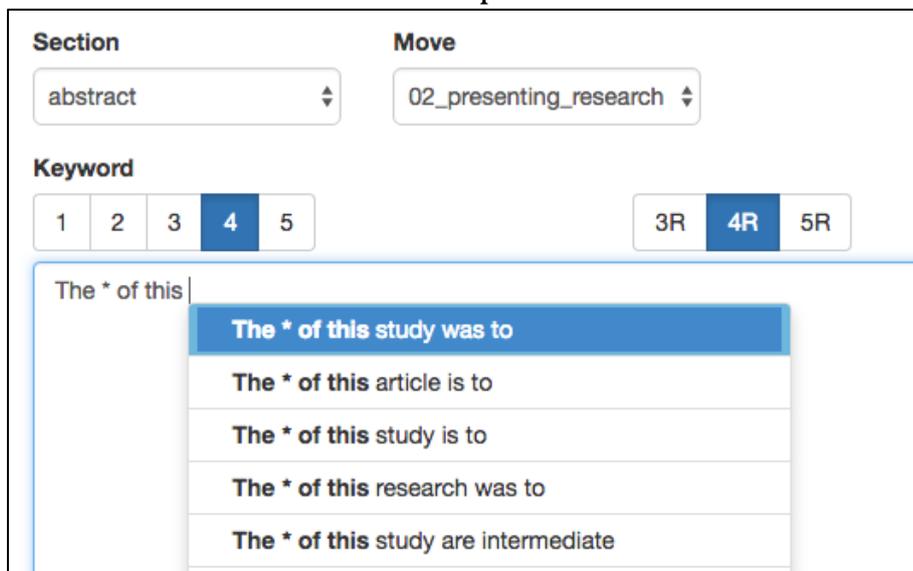
It is also possible to search using two wildcards, by inserting two asterisks, such as in "the * of *".

2.5 Displaying Words Corresponding to Asterisks

With AWSuM, when performing wildcard searches, it is possible to display high frequency words that correspond to the asterisks.
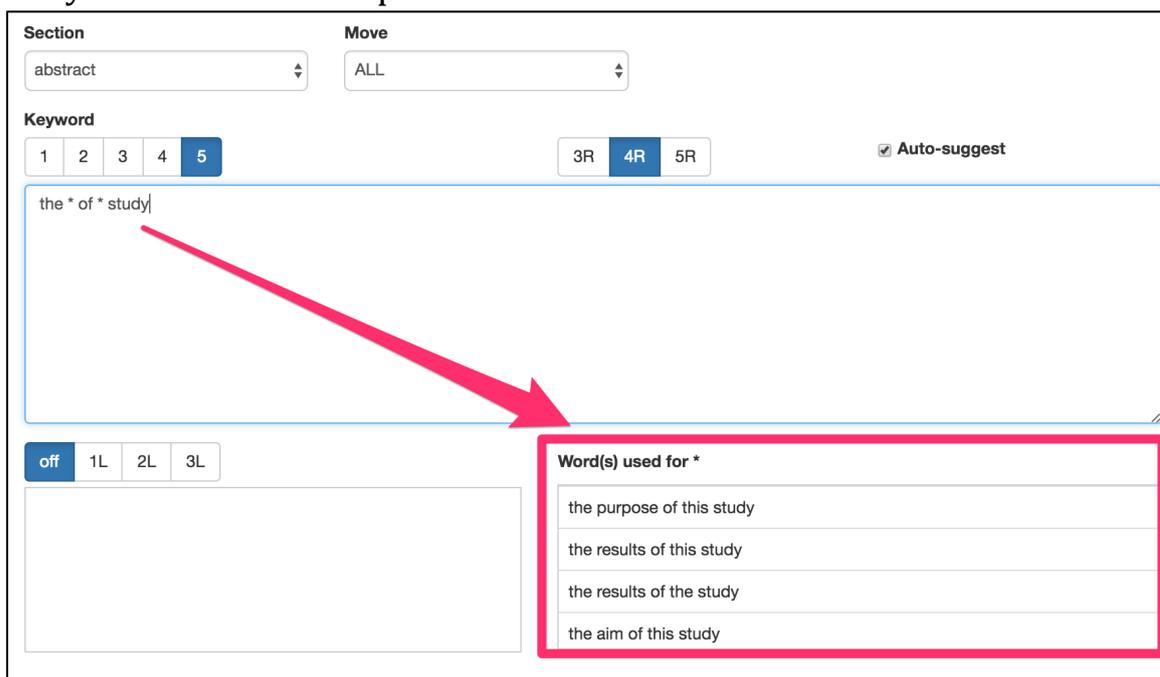
3. Concordance Line Functions

There will likely be times when you need to see examples in context to see how words and phrases are actually used in papers. There are free programs, such as AntConc (http://www.laurenceanthony.net/software.html) and CasualConc (https://sites.google.com/site/casualconc/), that contain such concordance functions, which make it possible to view examples in context. AWSuM also enables you to see the usage of words in their original context. Furthermore, with Google's custom searches, you can see how words and phrases are used in academic texts even if they are not covered by the corpus of AWSuM.

3.1 Displaying AWSuM Concordance Lines

You can search by selecting the words or phrases you wish to find in the upper text area, or inputting them directly into the Concordance text area and clicking the Search button.

The content displayed in Concordance area corresponds to the selected section and move.

3.2 Google Custom Search

The Google search area in AWSuM makes it possible to use the Google custom search function. The domain of this search is higher educational institutions in countries where English is the primary language, meaning it can be used to find words and phrases from academic texts outside of those covered by the AWSuM corpus.

The method of searching, similar to Concordance, is to select the words or phrases you want to find in the upper right area. Those terms will then be automatically entered into the Google custom search box below. Of course, you can also type the terms manually as with normal searches.

If you perform a search using double quotations, strings such as "the * of this" will be searched for complete matches. If double quotations are not included, any search result that contains "the," or "of," or "this" will be displayed. (Additionally, when using * as a wildcard in Google, it will return cases when * covers a single or multiple words.)

4. Links

At the bottom of the AWSuM screen, there are links to free sites that are useful for English research writing and instruction. The currently registered links are as shown below. We are interested in registering potentially useful links, so please contact us if you find something that you think may be useful.

＜Wording/thesaurus/collocation＞

1. Sketch Engine (https://the.sketchengine.co.uk/open/)
    Search the British Academic Written English Corpus (BAWE). With Word sketch, it is possible to use collocation, and with Thesaurus you can search for replacement expressions.

2. StringNet Navigator 4.0 (http://nav4.stringnet.org/)
    Enter a word, wording, or collocation, and examples are displayed.

3. WriteAway (http://writeaway.nlpweb.org/)
    Enter a word, and patterns such as wording or grammar and examples are displayed.

4. Just The Word (http://www.just-the-word.com/)
    Enter a word, and patterns such as wording or grammar and examples are displayed. Uses BNC.

5. FLAX [Resource Collections] (http://flax.nzdl.org/)
    Enter a word or phrase, high frequency collocations and wording are displayed in a list.

6. ozdic.com (http://ozdic.com/)
    Enter a word or phrase, high frequency collocations and examples are displayed.

＜Collections of Phrases for Research Articles＞

7. Academic Phrasebank (http://www.phrasebank.manchester.ac.uk/)
    The University of Manchester Academic Phrasebank is a collection of phrases, summarized according to function or section, containing phrases you may wish to use in a research paper.

8. Online PhraseBook (http://englishforresearch.com/phrasebook/)
    Collection of phrases you may wish to use in research articles according to rhetorical functions.

＜Corpus Search＞

9. Words and phrases (http://www.wordandphrase.info/academic/analyzeText.asp)
    Enables searching of the COCA (Corpus of Contemporary American English).
    When searching for single terms, it displays similar terms. It is also very useful for searching phrases.

10. Springer Exemplar (http://www.springerexemplar.com/)
    Corpus of journals and books published by Springer.

11. Corpus of Research Articles (http://rcpce.engl.polyu.edu.hk/RACorpus/)
    Corpus of research articles covering 39 fields (more than 5.5 million words).

12. COCA (http://corpus.byu.edu/coca/)
    Enables searching of the Corpus of Contemporary American English.

13. BNC (http://corpus.byu.edu/bnc/)
    Enables searching of the British National Corpus.

5. Miscellaneous Info

5.1 Publications

As of April 2017, our research results have been reported in two papers (one published, the other in press):

Mizumoto, A., Hamatani, S., & Imao, Y. (2016). Analysis of research articles in applied linguistics using an approach combining moves and lexical bundles: Toward developing a support tool for writing research articles in English. *English Corpus Studies, 23*, 21–32. [Written in Japanese]

Mizumoto, A., Hamatani, S., & Imao, Y. (in press). Bundle-move connection approach: Applying its concept to the development of an online writing support tool for research articles. *Language Learning*.

In March 2017, we have published a book in Japanese, entitled "English Academic Writing Instruction Using ICT: Development of a Support Tool and its Applications."

5.2 Future Research and Development Plan

Moving forward, we plan to promote the following R&D, while applying for external grants such as Grants-in-aid for Scientific Research in Japan:

- Instruction for writing articles using AWSuM.
- Covering many fields from both the sciences and humanities.
- Automation of move tagging.
- Investigating a method for presentation of lexical bundles that is not based solely on frequency.
- Presentation of synonyms and antonyms.
- Presentation of collections of expressions.

We are constantly searching for research collaborators, so please contact us if you are interested. We would also like to hear the opinions and impressions of those who have used AWSuM for research writing.

5.3 Credits

AWSuM is powered by VERSION2 Inc. (http://ver2.jp/), an innovative Japanese company specializing in web technology for education.