# Systematic teaching of English affixes through the online material Affix Master 10

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**Abstract**. This study examines whether ten weeks of direct instruction of affixes with online systems can improve learners' knowledge of affixes by using Affix Master 10 (AM10), a collection of online self-study materials developed by the current researchers. The aim of AM10 is to let students comprehensively learn 30 prefixes and 31 suffixes. The two research questions are (1) whether systematic instruction of affixes using the online program improves learners' knowledge of affixes (prefixes and suffixes), and (2) whether systematic instruction of affixes using the online program improves learners' knowledge of affixes without direct instruction as well as those with direct instruction. The results found that after learning with AM10, the affix knowledge statistically significantly increased. Furthermore, it seemed to contribute to the learning of the affix system itself, which was evidenced by the gain in knowledge of untaught affixes.

**Keywords**: affix, direct instruction, online program.

## 1. Introduction

Expanding word knowledge through affixation is a familiar L2 learning strategy. Nagy and Anderson (1984) stated that "if the frequent words in a word family are already known, this procedure provides a bridge from familiar words to new

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words" (p. 326). The concept of word families (i.e. a word stem and its collection of affixes) allows learners to infer the meaning of other members of the same word family if they know the affixed word (Bauer & Nation, 1993).

However, there has been insufficient research on the knowledge of affixes among Japanese learners of English. Most studies on this topic have focused on the relationships between lexical knowledge and affixes, and between productive and receptive knowledge of affixes (Aizawa, Iso, & Nadasdy, 2019; Mochizuki & Aizawa, 2000; Schmitt & Meara, 1997). These studies show that the relationship between lexical knowledge and affix knowledge as well as between productive and receptive affixation knowledge is highly correlated. However, it has not been tested whether increase in affixation knowledge is caused by increased lexical knowledge or by increased knowledge of affixation itself.

Schmitt and Meara (1997) found that without educational intervention, the learning of English affixes is limited, but there has been little systematic teaching of affixes in Japan. This is partly because the type and number of affixes presented to learners vary in different textbooks (Morita, Uchida, & Takahashi, 2019). Therefore, the aim of this study is to investigate the effect of systematic teaching of affixes using a collection of original materials, AM10, as well as its extended effect, if any, on untaught affixes.

Our research questions are as follows.

- Does systematic instruction of affixes using AM10 improve learners' knowledge of affixes between pre- and post-test?
- Does AM10 improve learners' knowledge of affixes without direct instruction as well as those with direct instruction?

## 2. Method

The affixes targeted for study were selected according to two criteria: (1) The stem of the word must be within the 4,000-frequency band in the *JACET8000* vocabulary list, and (2) affixes must have three or more different stems to be added to form new words. Finally, 30 prefixes and 31 suffixes were selected as in Table 1. The procedure of the on-demand self-study program was made up of four steps as shown in Table 2 and Figure 1.

Table 1. Target affixes introduced in AM10

| | | | |
|---|---|---|---|
| **Week 1** | Prefix | un-, in-, dis-, non- | Negative |
| **Week 2** | | anti-, contra-, counter-, with- | Against |
| **Week 3** | | inter-, pre-, post-, re- | Before, forward, in, after, backward |
| **Week 4** | | super-, sur-, extra-, ultra-, sub-, in-, en-, em- | Over, beyond, down, under, in, within |
| **Week 5** | | com-, co-, cor-, syn-, sym-, semi-, uni-, mono-, homo-, bi- | With, number |
| **Week 7** | Suffix | -an, -eer, -ee, -er, -ist | Person |
| **Week 8** | | -al, -ance, -ency, -ion, -ment, -ism, -dom, -ness, -ship, -th | Abstract noun |
| **Week 9** | | -ful, -ous, -y, -ish, -ern, -able, -ible, -less, -ate, -al, -ive | Adjective |
| **Week 10** | | -ize, -ify, -ate, -ly, -wards | Verb, adverb |
| **Week 11** | Wrap-up | Review | |

Figure 1. Components of AM10

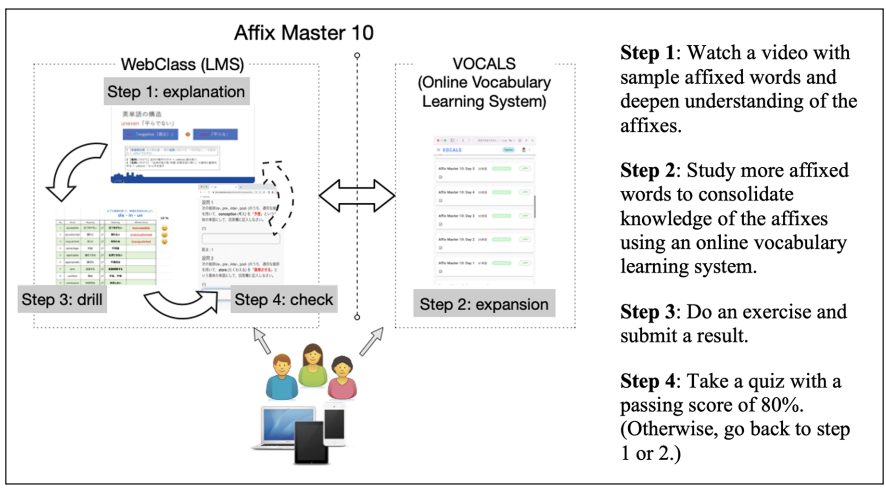



Table 2. Four stages of weekly sessions

| | **Activities** | **Interface** | **Devices** | **Duration** |
|---|---|---|---|---|
| Step 1 | Watching video | WebClass | PC, Tablet, or Smartphone | 7-12 mins |
| Step 2 | Additional examples | VOCALS | Smartphone | 10-30 mins |
| Step 3 | Exercises | WebClass | PC | 15-30 mins |
| Step 4 | Taking a quiz | WebClass | PC, Tablet, or Smartphone | 15-30 mins |

To measure the learning outcome, an online affix test (based on Aizawa et al., 2019) was used. The task was to choose one out of eight affixes commonly attachable to the three stems. For example, when 'clear', 'complete', and 'quiet' are given as a cue, participants were to choose '-ly' among '-al', '-ment', '-ist', '-ous', '-ful', '-ize', '-ly', and '-ation'. The total number of questions was 60 (15 prefixes and 15 suffixes, two different sets of stems for each).

Participants in this study were 512 Japanese university students majoring in engineering. Their proficiency levels are estimated as CEFR A2 to B1 level. They had at least six years of formal English education.

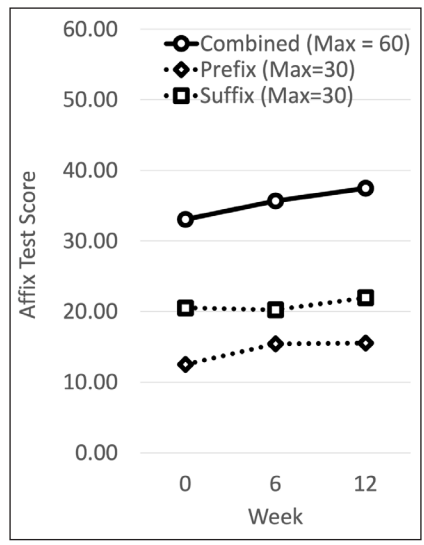
## 3. Results and discussion

Table 3 and Figure 2 show the results of the affix test at the pre- and post-tests.

Table 3. Mean raw scores with standard deviations across time

| | N | Week 0 | Week 6 | Week 12 |
|---|---|---|---|---|
| | | Mean (S.D.) | Mean (S.D.) | Mean (S.D.) |
| Combined | 512 | 33.05 (10.72) | 35.67 (12.09) | 37.48 (12.28) |
| Prefix | | 12.52 (5.49) | 15.42 (6.22) | 15.54 (6.43) |
| Suffix | | 20.53 (6.12) | 20.25 (6.72) | 21.95 (6.62) |

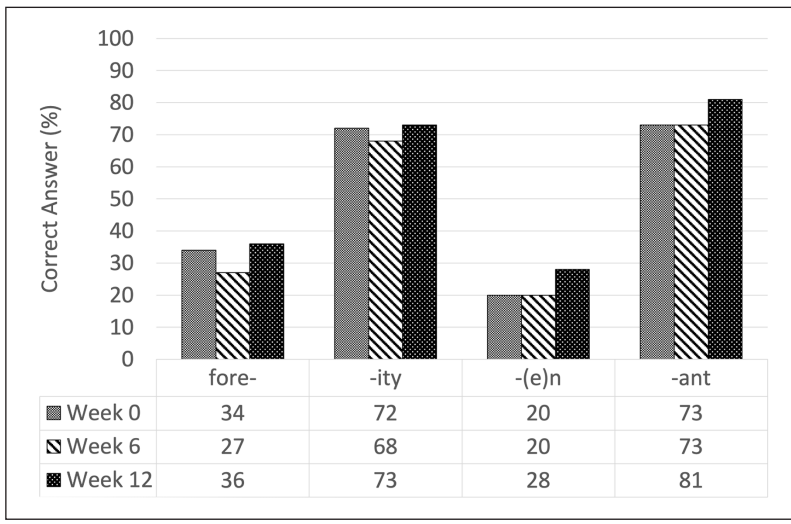
Figure 2. Mean scores across time



The scores of the prefixes increased at Week 6, as did the scores of the suffixes at Week 12, which corresponds to the period when the respective types of affixes were learned. These gains were revealed as significant with ANOVA and a post-hoc comparison ($F(2,1022)=77.55$, $p<.001$, *partial* $\eta^2=0.132$; $t=-11.45$, $p<.001$, $d=-0.506$ for prefix, and $F(2,1022)=33.95$, $p<.001$, *partial* $\eta^2=0.62$; $t=-6.41$, $p<.001$, $d=-0.283$ for suffix). Further, there was no significant difference in the mean scores during Weeks 6 to 12 in prefix. This indicates that the affix knowledge gained through AM10 was retained after six weeks. Taken together, these results demonstrate the effectiveness of AM10. The results extend the findings of Schmitt and Meara (1997).

Concerning the effects on affixes that were not taught in AM10, Figure 3 shows the changes in the amount of knowledge over time for the four affixes: 'fore-', '-ity', '-(e)n', and '-ant'. Here, the perfect score for each affix indicates that all the participants' answers were correct on two occasions.

Figure 3. Changes in the amount of knowledge of the untaught affixes




| | fore- | -ity | -(e)n | -ant |
|---|---|---|---|---|
| Week 0 | 34 | 72 | 20 | 73 |
| Week 6 | 27 | 68 | 20 | 73 |
| Week 12 | 36 | 73 | 28 | 81 |

When comparing Weeks 0 and 12, the amount of affix knowledge increased over time for '-(e)n' and '-ant'. The results suggest that AM10 invoked system learning of affixes as opposed to item learning. That is, AM10 contributed to learning of the affix system itself, not only the individual affix taught. However, these results should be interpreted cautiously, as the participants could have chosen the untaught affixes simply because they could tell that the other choices, all of which were the learned affixes, were not good matches.

Regarding 'fore-' and '-ity', the overall increase was limited. Interestingly, there was a decrease in knowledge of these affixes at Week 6, which suggests negative interference caused by AM10. The current study lacks evidence regarding the cause due to the limited number of untaught affixes. At this point, the effect of AM10 on untaught affixes remains mixed. Future studies should include other prefixes and suffixes that AM10 does not include.

## 4. Conclusions

This study investigated the effectiveness of AM10, a collection of materials which teach English affixes systematically. After ten weeks of self-study, the learners showed an increase in their affix knowledge. Further, the use of AM10 possibly contributed to the system learning of affixes. More studies are needed to generalize the findings of this study. However, AM10 showed potential as a teaching/learning system of affixes.

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