



# Improving temporal prepositions in Korean students and exploring gender differences in studying space and time\*

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**Jeffery, Thomas. 2023. Improving temporal prepositions in Korean students and exploring gender differences in studying space and time.** *Linguistic Research* 40(Special Edition): 207-228. English prepositions of time, (*in*, *on* and *at*) are generally accepted to be challenging for Korean students as shown by studies by Seong and Lee (2008). This study examines those difficulties and suggests effective learning strategies which can be implemented to help lessen these problems. The study took place in a Korean Elementary school involving more than 100 students of various ages and levels. Initially the nature of the problems surrounding preposition comprehension was identified. Then an analysis based on cognitive linguistics was applied to seek to improve teaching strategies. The study was extended to include foreign born English Teachers' and Korean Teachers' views on the problem. The results show improvement in temporal understanding and a particularly marked improvement in males when temporal prepositions were also linked to spatial concepts. This could be because with males, spatial prepositions may be acting as supportive scaffolding linking the abstract temporal prepositions to the more concrete spatial concepts, which appeared to have a more significant impact on males than females. (Kyungpook National University)

**Keywords** prepositions, temporal, spatial, linguistics, Korean, English

## 1. Introduction

Temporal prepositions, (*in*, *on* and *at*) pose a complicated problem for Korean English learners. This study was undertaken in a Korean Elementary school in a large

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city in South Korea where subjects aged between 10 and 12 years old are required to write 10 English journal diary entries per semester across all proficiency levels. These journals account for 10% of their overall grade. Here it was revealed multiple subjects across various grades and levels had difficulties understanding prepositions of time (“in”, “on” and “at”). The errors found in the subjects’ journal diaries were almost exclusively errors of misuse, (the incorrect preposition being selected within a sentence) examples of which can be seen in the appendix. The uniform difficulty of this learning point for Korean English language learners justified the first study, during which implemented teaching strategies found an improvement from 20.5% to as high as 42.7% per class in accuracy between pre and post tests specifically aimed at prepositions of time (see sections 3.1-3.3).

Consequently, in light of other cognitive linguistic research, there was evidence for the role spatial, (space) prepositions may have in the processing and mapping of temporal, (time) based prepositions. (Gentner, Imai, and Boroditsky 2002; Kemmerer 2004; Matlock, Ramsar, and Boroditsky 2004; Chatterjee 2009; Kranjec, Cardillo, Schmidt, and Boquist 2009). Thus, creating the need for a second study to observe if such differences could be found and methodologies applied to use this research to aid temporal prepositional uptake. Further, there appear to be gender differences in this study that were then also explored. To place an understanding of such problems in a wider context, Korean and Foreign English Teachers were interviewed to further understand the nature of the difficulty when teaching temporal prepositions and the different teaching strategies these separate teacher groups adopted.

This study will assess the literature regarding the differences in temporal prepositions between the two languages and general difficulties when teaching temporal prepositions in English followed by an assessment of the role that spatial prepositions have in our understanding of time. This will be followed by the methodology, an explanation of the two studies that took place as part of this research and the methodological approaches used in each. The data, findings and analysis will be followed by the study’s limitations, concluding remarks and further implications. Throughout this study, the issue of whether spatial prepositions have any effect on temporal prepositional uptake will be addressed as well as effective methodologies used to teach temporal prepositions.

## **2. Theoretical background and relevant literature**

### **2.1 Differences between languages**

In studies of non-native speakers learning English, analysis of temporal prepositions have shown that where large differences in prepositions of time between the native language and English exist, subjects' written work shows significant grammatical error rates as shown by Lorincz and Gordon (2012), Arjan, Abdullah, and Roslim (2013), Zheng and Park (2013), Lee, Yoo, and Shin (2020). A study by Hendricks (2010) pointed out that temporal prepositions are essentially unavoidable grammatical units when learning English. This requires the raising of awareness regarding their importance, and development of effective techniques to teach these concepts. Unfortunately, between the Korean and English languages, differences in temporal prepositions are significant.

In English there are three prepositions of time ("in", "on" and "at"), however, there is only one in Korean ("ey"). Thus, any Korean learning English as their second language has to consider which preposition to use in the context of its application. Boquist states; "The ELL (English Language Learner) will not understand why the temporal prepositions can only be used with certain words" Boquist (2009: 11). Put simply, Korean subjects learning English will have to consider the context and the subsequent words in the given sentence that the temporal preposition is situated in and make a decision about which is appropriate to use.

In addition, temporal prepositions in English are polysemous in nature, as noted by Catalan (1996) and Lorincz and Gordon (2012). Furthermore, they are hard if not impossible to directly translate as they lack meaning outside of context as shown by Kranjec, Cardillo, Schmidt, and Chatterjee (2009), and are relatively uninteresting single syllable "function words" as argued by Hendricks (2010), Mueller (2011), Song and Sardegna (2014). All of the above make an already demanding concept more complex. Accurately described by Loke, Ali, and Anothny as "short and insignificant looking (words) but (with) very important functions" Loke, Ali, and Anothny (2013: 128), it should therefore come as no surprise that Seong, and Lee's study of Korean learners' difficulties with prepositions was summarised with the statement; "Prepositions in English are found among Koreans (to be) somehow very difficult to master." (Seong and Lee 2008: 90).

## 2.2 Spatial-temporal links

Since the early 2000s, cognitive linguistics has suggested that a relationship between how the mind processes temporal prepositions might be linked to an understanding of spatial prepositions, examples of which can be found in the research of Gentner et al. (2002), Kemmerer (2004), Matlock et al. (2004), Boquist (2009); Kranjec et al. (2009). Such studies as those by Gentner et al. went so far as to say that an understanding of space could be intrinsically linked to concepts of time:

“The results of these studies suggest that spatio-temporal expressions are processed as belonging to large-scale conceptual systems and not as isolated lexical entries” (Gentner et al. 2002: 552).

As Kemmerer pointed out; “Humans have a cognitive predisposition to structure temporal concepts in terms of spatial schemas.” (Kemmerer 2004: 797). Such views are supported by historical language development which appears to show languages consistently developing abstract temporal meanings as extensions from spatial concrete origins as demonstrated by Kemmerer (2004). Put simply; evidence suggests that an understanding of space can help process an understanding of time. If this is the case, it could have significant implications for this study. If spatio-temporal prepositions are linked in some manner then teaching spatial prepositions, (a concrete and easy to understand concept for English language learners) alongside temporal prepositions may aid temporal comprehension, (a far more abstract and complex grammatical unit).

Academic studies on spatio-temporal links in cognitive linguistics research fall into two camps suggesting that there are either “weak” and/or “strong” links between the two concepts. The “strong” link asserts that both time and space are from the same conceptual structure and processed within the same part of the brain, one essentially being fundamental to understanding the other. The “weak” link, supported by researchers such as Kemmerer (2004) suggests that although there is a link, it is not necessarily part of the same lexical system and that instead spatial prepositions can be used more for cognitive mapping as a support structure for temporal prepositional understanding. This is a hypothesis that this paper explores. This view is supported by Kemmerer’s study (2004) of brain damaged subjects. His research demonstrated that when one cognitive

concept, (time or space) had been damaged severely, it did not necessarily critically impair the understanding of the other. Furthermore, Kranjec et al. found evidence to support the weaker theory regarding spatio-temporal links when using ambiguous questions designed to test subjects' ability to answer temporal questions under timed circumstances, both with and without spatial prepositions to aid subjects (Kranjec et al. 2010). They found that although "spatial prepositions are modulating temporal thought" (Kranjec et al. 2010: 115) such a link was not definitively shown to be intrinsically tied at a cognitive level:

"We found strong evidence that prescribed prepositions, (temporal) retain semantic content and modulate how we think about time. However, we found no compelling evidence that the pairing of time units with particular prepositions, (spatial) reflects an ontologically deep or psychologically obligatory relation between spatial and temporal representations" (Kranjec et al. 2010: 115).

Whether a "strong" or "weak" link exists, the repercussions of such a link regardless of relative strength could have implications for the teaching of temporal prepositions in English language learning. If a link does indeed exist, presenting spatial prepositions and using them as a support structure to further map temporal prepositions could have significant value in subjects' understanding. This is what this study explores.

### **2.3 Gender**

There are clear differences between gender and language uptake. However, the reasons are an extensive research area too broad to assess effectively here (for examples see Tatarinceva (2009), who compiled data from 34 different research papers on gender based differences in language acquisition). Data derived from the first study, (see section 3.1) did not take gender as a topic of interest into account but this was subsequently revisited and investigated. If such differences exist, Teachers could in theory prepare appropriately and support both gender groups.

### 3. Methodology

#### 3.1 Test phases

The study was broken into two separate phases. The first took place in 2018 after discovering the difficulties explained in section 2.1. It sought to find the most effective teaching strategy for a complicated and under discussed topic for foreign teachers in Korea and test the success of the methodologies discovered in section 3.1 (see appendix for examples of test sheets administered before and after to gauge temporal uptake). While the methodologies used proved to be successful in aiding temporal understanding, (see figure 1) the study was revisited in 2022 as new research from the field of cognitive linguistics revealed that spatio-temporal links could be possible in language (see section 2.2). The 2022 study aimed to test if such links could be found. Furthermore, the 2022 study considered the possibility of a difference between genders regarding spatial-temporal links and if any variability could be found between the sexes in the study.

#### 3.2 Subjects

The first set of tests involved 60 subjects with roughly ten subjects per class. The original data had a pre test worksheet, (see appendix) followed by a class dedicated to teaching prepositions of time involving a variety of individual and group activities. Finally, there was a post test worksheet, (see appendix) designed to assess comprehension. The original test data is presented below with the grade and ability set followed by the improvement across the tests in each classes' score.

Grade (age) and Proficiency Level	Improvement in accuracy regarding prepositions of time
Grade 4 (11) Intermediate level	+37%

Grade 4 (11) High level	+20.5%
Grade 5 (12) Intermediate level	+25.2%
Grade 5 (12) High level (class one)	+30.4%
Grade 5 (12) High level (class two)	+42.7%
Grade 6 (13) Intermediate level	+26.7%

Figure 1. Improvement in accuracy of temporal prepositions between pre and post tests in the first 2018 study. The first study's results shown above did not test for gender or spatial-temporal links, it simply tested the methodology shown in figure 2 and the effectiveness of teaching strategies aimed at aiding uptake in temporal prepositions. In each class there was a marked improvement with an average improvement of 30.4% across all of the classes.

When the test was revisited four years later it involved 55 subjects and the testing process was more complex and rigorous in part because of the current research findings in relation to potential spatial-temporal cognitive links. This time, where two classes of identical grade and level were present, one was taught with the aid of spatial mapping, the other without. It is important to note that the subjects in this study already had a competent understanding of spatial prepositions, as these had already been taught in previous years. One of the reasons for the study was to explore the cognitive linguistics theory regarding links between time and space and whether any such links could be found. The methodology used involved teaching prepositions of time visually alongside spatial prepositions as opposed to in isolation, as well as talking through spatial prepositions as a primer before moving onto temporal ones and trying to form a link between the two lexical groups. For example, both groups received the following timeline diagram as part of their class, the same diagram that was found to be highly effective during the 2018 study and was influenced by combination of prepositional research by Kranjec et al. (2010), and Christiani (2019).

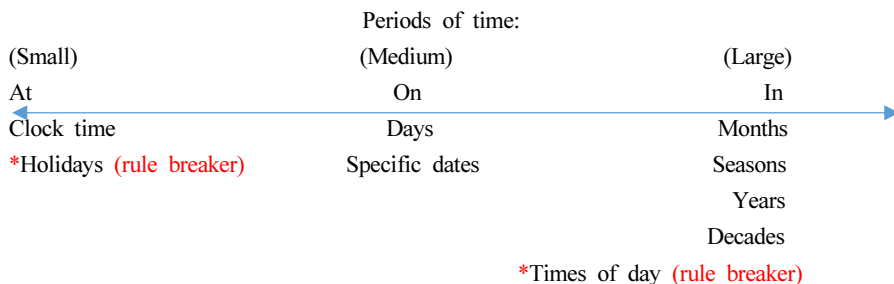


Figure 2. The timeline used in both studies to teach the rules regarding exclusively temporal prepositions. It was designed to create an easy to understand set of rules and was used throughout the entire first study to teach temporal prepositions, the effectiveness of which is shown in figure 1. This was then used in the second study but only with the groups being taught using time in isolation as unlike figure 4, figure 2 shown above does not attempt to make any combination of the concepts of time and space. Holidays and times of day are exceptions to the given rules, (rule breakers) and thus have to be identified to the subjects as being different when applying the small (at), medium (on) and large (in) categories for associated periods of time. Using the diagram above subjects should be able to associate smaller periods of time with the word “at” and larger periods of time with “in”. “On” is used between the two for temporal prepositions associated with days and specific dates as it is neither dealing with small or large periods of time.

However, only the second group was also given the following diagrams (2 and 3), designed to help trigger spatial cognition and transition from the temporal to the spatial. These diagrams were examples used by three different Korean teachers during the qualitative interviews regarding the visual techniques they considered to be the most effective when teaching spatial prepositions to Korean English language learners. More detailed examples of these can be found in “Great Sentences for Great Paragraphs” by Folse, Muchmore-Vokoun, and Solomon (2010).

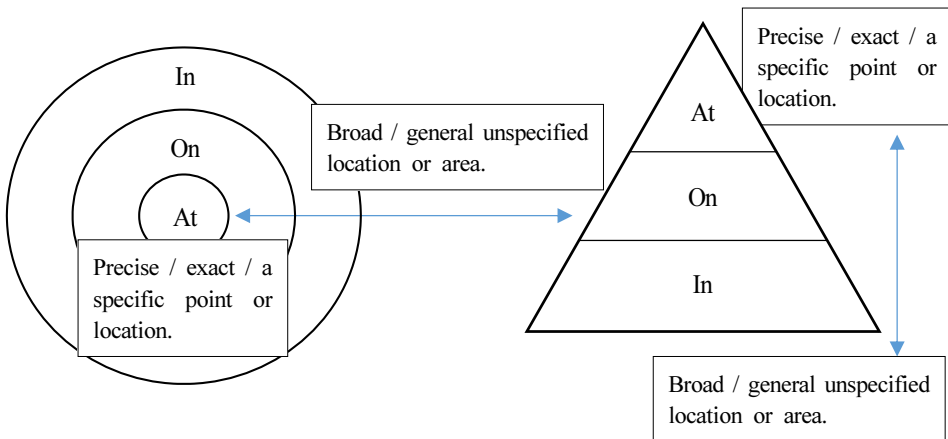


Figure 3. Diagrams drawn by some of the Korean Teachers interviewed that they used to aid spatial preposition uptake in their classes. Both diagrams represent concepts of spatial time. These were then used here to assess if spatial mapping could aid temporal uptake when the two concepts, (space and time) were combined. Both diagrams were drawn by hand from several of the interviewees when asked to provide some of the methods they use for teaching



spatial prepositions to their Korean subjects in class. These were then used throughout the 2022 study for the classes that were being taught using combined spatial and temporal teaching methodologies to assess the role that spatial concepts had in aiding temporal uptake. Both the circle and the triangle are ways of representing a scale of specific spatial information to broader more undefined spatial information.

Periods of time:

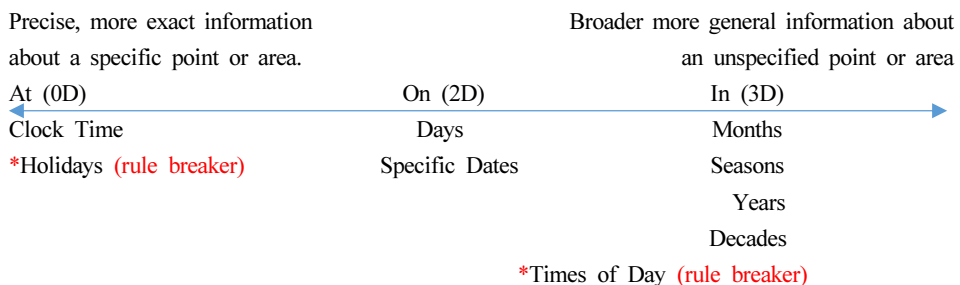


Figure 4. A diagram designed to start combining the spatio-temporal groups into a single teaching concept used exclusively in the second 2022 study to start combining the concepts of space and time. “0D” was intended to portray a single and small specific point; “at”. If an object is “on” a flat surface that invokes a spatial preposition in two dimensions which would be larger in size. 3D was reserved for the preposition “in” which would require an object “in” another object thus requiring an even larger three dimensional shape. For further visual examples, refer to Kranjec et al. (2010: 112).

### 3.3 Timelines

Considering the success of the timeline used above, (see figure 2) and that all classes would be learning using a timeline to aid explanations regardless of whether they were in the group that had spatial-temporal linking or just temporal teaching, more time was spent ensuring that the timeline suited Korean learners. The reason for this was based on Gentner et al. (2002) who found that whereas English speakers may view a timeline horizontally, mandarin speakers commonly use horizontal and also vertical timelines in concepts of time. To explore the accuracy of Gentner’s research, the only two Chinese born speakers who worked at the school were interviewed. Both conceptualized time in a vertical rather than horizontal frame. Hence, there was a need to ensure Koreans viewed time on a horizontal axis. Otherwise, the teaching of the timeline and its use in class should be drawn in a vertical manner to enable understanding and familiarity when

talking about time. All of the Korean teachers interviewed in this study confirmed that they conceptualized time horizontally. Hence, horizontal timelines were selected again for the second element of the study as shown in figure 2, (an exclusively temporal timeline) and figure 4, (a timeline designed to start combining the concepts of space and time). For clarification of both concepts please see figure 5 below.

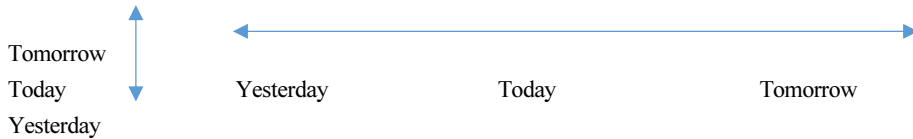


Figure 5. Examples of a vertical and horizontal time frame The concept of a vertical timeline for Mandarin speakers was explored by Gentner and then supported by the Mandarin speaking teachers interviewed in this study.

### 3.4 Tests

The first journal data showed considerable misuse errors in subjects' written work regarding prepositions of time. To see whether this was the case in the second study, several journal topics were selected for the new sets of classes. As with the previous study the majority of errors came from a misuse / substitution of incorrect prepositions as opposed to the omission or addition of prepositions in incorrect locations. This is in line with studies by Zheng, and Park (2013) which found that selecting the wrong preposition was the second most frequent of all grammatical errors in a study of Korean and Chinese university students. Additionally, Lee, Yoo, and Shin's study of Korean University students (2020) showed misuse errors accounting for 70% of preposition errors. Considering these data was in line with this study's findings, it felt appropriate to focus exclusively on correcting errors of temporal preposition misuse as the previous study had. This would also ensure that the data was more aligned with the first study which had also tested for misuse errors.

The tests focused on a set of ten questions in the pre-test phase, a lesson dedicated to the subject, followed by a further ten questions to gauge uptake as part of the post-test phase (see examples in the attached appendix). The tests focused exclusively on misuse errors and were designed to test the full range of temporal prepositions with fill in the blank questions with the words "in", "on" and "at" removed from sentences with subjects

required to write the answers in.

### 3.5 Teachers

Finally, interviews were undertaken with nine Korean teachers and nine foreign teachers all based in Korea to add a broader perspective. They were asked questions regarding the degree of their understanding of the language differences between English and Korean when it comes to prepositions of time, as well as what teaching techniques they use to help enable prepositional uptake with their subjects. The interview questions were influenced by personal experiences and difficulties teaching English prepositions to Korean language learners as well as the research studies previously discussed in section 2. For reference please refer to the appendix.

## 4. Data and discussion

The second study’s data showed three findings. As with the first study, there was a significant improvement in temporal prepositions across all classes, abilities and grades when they were taught using the methodology shown in section 3. Secondly, compared to females, males had a less developed initial understanding of temporal prepositions. Thirdly, it showed the significant role that spatial prepositions might play in aiding and “scaffolding” or supporting the uptake of temporal concepts particularly for male subjects.

### 4.1 General improvements

When assessing the total data of both studies and all classes, the pre and post tests on temporal prepositions measured across the classes showed an improvement between 13% and 42.7% with an average of 27.85%. Each individual class’ results are documented below as follows:

Year of Study, Grade, (age), Proficiency Level and Methodology Used:	Post test prepositions of time accuracy in %
2018 Grade 4 (11) Intermediate (Temporal Prepositions Taught	+37%

Exclusively)	
2018 Grade 4 (11) High (Temporal Prepositions Taught Exclusively)	+20.5%
2018 Grade 5 (12) Intermediate (Temporal Prepositions Taught Exclusively)	+25.2%
2018 Grade 5 (12) High (Temporal Prepositions Taught Exclusively)	+30.4%
2018 Grade 5 (12) High (Temporal Prepositions Taught Exclusively)	+42.7%
2018 Grade 6 (13) Intermediate (Temporal Prepositions Taught Exclusively)	+26.7%
2022 Grade 3 (10) High (Spatial and Temporal Methodology Used)	+19%
2022 Grade 3 (10) High (Temporal Prepositions Taught Exclusively)	+20%
2022 Grade 5 (12) High (Spatial and Temporal Methodology Used)	+32%
2022 Grade 5 (12) Intermediate (Spatial and Temporal Methodology Used)	+21%
2022 Grade 5 (12) Intermediate (Temporal Prepositions Taught Exclusively)	+13%

Figure 6. Grade, age, level, year, teaching methodology used and improvement percentage in temporal prepositions. The first 6 rows shows the first study's data which was undertaken in 2018 and taught the concept of time exclusively. The following 6 rows show the 2022 study which combined the concept of time and space to see if any potential link could be found between the two concepts. The table above shows overall temporal uptake, regardless of whether the classes shown were taught using the exclusively temporal methodology or a combination of temporal and spatial methodologies as shown in section 3.2.

#### 4.2 Gendered data

When the individual class data was split into genders in the second tests, the results showed a significant difference between males and females. When the mean was calculated between the two groups the results show that although both boys and girls were taught together, in the pre and post tests, the boys generally scored significantly lower. This was in spite of the fact that they also showed a larger degree of improvement across the two tests when compared to their female counterparts as shown in figure 7.

Gender	Grade/ (Age)	Proficiency Level	Pre-Test Mean Score	Post-Test Mean Score
Boys	3 (10)	High	5	6.8 P<0.05
Girls	3 (10)	High	6	8.2 NS
Boys	3 (10)	High	4.4	6.8 P=
Girls	3 (10)	High	5.5	7 NS
Boys	5 (12)	Intermediate	5.6	6.8 NS
Girls	5 (12)	Intermediate	5.6	7 NS

Boys	5 (12)	Intermediate	5.5	7.8 P<0.05
Girls	5 (12)	Intermediate	6.5	8.25 NS
Boys	5 (12)	High	5.5	8.8 P<0.05
Girls	5 (12)	High	5.2	8.2 P<0.01

Figure 7. Individual class data from the second test which tested for both gender and the effect that spatial prepositions play in aiding temporal uptake. The data is broken into male and female cohorts with mean score and p-value for each calculated via the Mann Whitney U score. A score of NS was given when there were not enough female subjects to calculate the relative p-value.

### 4.3 The importance of spatial “scaffolding” in males

The third significant finding was that when the data was separated into male and female cohorts, (figure 8) the boys appeared to benefit significantly from being taught temporal prepositions when spatial prepositions were reinforced beforehand (sections 3.1 and 3.2). This was in spite of the fact that the subjects in all groups and of both genders already had extensive knowledge of spatial prepositions and the classes were mixed sex.

Gender and the Methodology Used	Percentage Improvement in Temporal Prepositions
Girls improvement in temporal prepositions when they are taught in isolation from spatial prepositions:	+18% P<0.05
Girls improvement in temporal prepositions when they are taught with spatial prepositions alongside them:	+20.8% P<0.05
Boys improvement in temporal prepositions when they are taught in isolation from spatial prepositions:	+15% P<0.05
Boys improvement in temporal prepositions when they are taught with spatial prepositions alongside them:	+26% P<0.05

Figure 8. Percentage improvements between classes when calculated for girls and boys taught exclusively with temporal prepositions or temporal prepositions alongside the concept of spatial prepositions and p-value for each calculated via the Mann Whitney U score. The data shows a 2.8% improvement for girls when temporal and spatial prepositions are taught together as opposed to in isolation and an 11% improvement for boys when temporal prepositions are taught together as opposed to in isolation.

### 4.4 Interview data

The data findings were complicated because some of the non-Korean English teachers

did not know what temporal prepositions were. The Korean teachers all knew and understood both temporal prepositions and the issues between the languages as described in section 2.1 as they all possessed a strong understanding of both languages. As the foreign teachers only had a solid understanding of English, (and some did not have a particularly strong aptitude for grammar) this represented a significant group difference. Generally, foreign teachers recognized that there was a problem for Korean subjects studying prepositions of time as they had experienced it, but unless they also studied Korean, (three out of the nine interviewed did) they did not appear to understand where the problem originated.

The Korean teachers' interviews provided a window into the teaching of spatial prepositions in Korea as shown in figure 3. These spatial diagrams were repeatedly used by several interviewees when explaining how space might be taught by Korean teachers. These were then used when assessing the role spatial prepositions may play in effecting and aiding temporal uptake. According to the Korean teachers interviewed, subjects had already been taught using the types of spatial diagrams shown in figure 3. This would have been at some period between 6-8 years old, 2 years prior to the earliest age group in this study. As such, the subjects already had a solid understanding of spatial prepositions. The current research was designed to test if using familiar, already understood concepts regarding space could help the understanding of time.

Furthermore, one teacher specifically spoke about the concept of "precise" and "imprecise / vague" information regarding temporal prepositions, although she had never used a scale or any type of visual approach to teach, (figure 2 and 3). She taught prepositions of time as follows; precise time would be used for the word "at". When used for the concept of time it describes when an event precisely took place, for example "at 3pm", with imprecise, (more vague time) being used for the word "in". For example "in summer". The word "on" was used in between the "at" and "in". This information was fundamental as the concepts of precise and imprecise or vague information has a spatial and temporal connotation, and this concept was taken and combined with the scale used in the original study, (see figure 2) to create figure 4.

None of those interviewed, (Korean or non-Korean) had ever seen a visual scale as shown in diagrams 1 and 3 to help teach temporal prepositions.

## **5. Limitations**

There was a lack of balance regarding classes and their genders. However, this would be unlikely to change the outcomes. Had symmetry been present, it would likely have shown a more detailed difference between those taught using spatial methods and those taught with spatial and temporal methods. The High level Grade 5 set in particular might have benefitted from having a symmetrical class that was taught exclusively using temporal prepositions as the other sets did. Furthermore, symmetry between individual genders within each class would have made it possible to calculate using the Mann Whitney U score the two classes where the female participants were too few to calculate a proper p-value. However, it is unrealistic to expect an Elementary School to lend itself conveniently to research. It would also have been beneficial to have a longer period between the two tests, perhaps one spanning several months. Such a period could have tested if a concept had been learned or simply memorized by the participants.

Finally, to ensure that these findings regarding the differences in gender between spatial and temporal links are not a Korean phenomenon, it would be advantageous for future studies, similar in nature to this one, in different countries but also different cultures and continents to take place. Then it could be determined with accuracy whether such findings were dependent on culture or perhaps the effects of the native language when understanding prepositions both of time and space as well as how they are processed.

## **6. Implications**

This study's findings support the concepts of linking spatial prepositions to temporal prepositions in English Foreign Language Teaching, particularly for males. The study was unable to support either the "strong" or "weak" links between space and time as it is hard to set a parameter for what constitutes either. However, the data does clearly show that a link exists between the concepts of space and time for males. Hence, it is clear that spatial prepositions serve a useful role in scaffolding temporal uptake specifically in the Korean male subjects of this study.

The study revealed a lack of awareness from non-Korean teachers regarding a substantial and complicated language issue, that Korean subjects struggle with

prepositions of time. This potentially reveals the lack of structured teaching of grammar in western educational systems that results in limitations when these concepts that are acquired subconsciously need to be taught formally. One solution to this might be for educational publishers to include figure 4 used in this study in some of the English textbooks that are used in Korean schools, ideally ones specifically aimed at a Korean audience which could briefly explain such differences which teachers could then use to effectively and efficiently teach their subjects, thus making the abstract more concrete.

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## Appendix 1. Pre and post test worksheets

Pre-Test Worksheet:

Korean Name \_\_\_\_\_

English Name \_\_\_\_\_

Prepositions of time help to tell you when something happens. These include words such as "on", "at" and "in". Can you fill in the blanks using these words?

1. \_\_\_\_ Friday we went to the restaurant.
2. \_\_\_\_ 3pm we ate ice cream.
3. \_\_\_\_ Christmas we get presents.
4. \_\_\_\_ the morning I did not wake up.
5. \_\_\_\_ summer Daegu feels like Africa, that's why it has the nickname "Dafrica."

6. \_\_\_\_ December 25<sup>th</sup> maybe I'll eat chocolate.
7. \_\_\_\_ 2021 there was not much snow in Daegu.
8. \_\_\_\_ the 1950s South Korea and North Korea had a war.
9. \_\_\_\_ winter Daegu can get very cold.
10. \_\_\_\_ Chuseok we don't have to go to school!

Post-Test Worksheet:

Korean Name \_\_\_\_\_

English Name \_\_\_\_\_

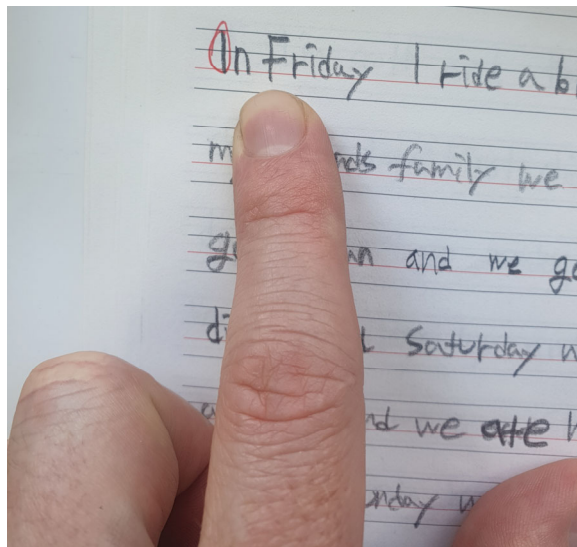
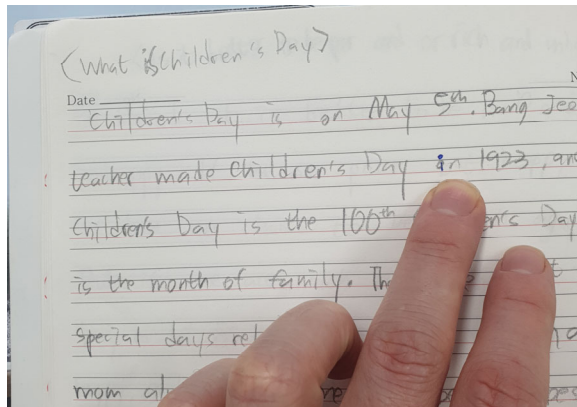
Prepositions of time help to tell you when something happens. These include words such as “on”, “at” and “in”. Can you fill in the blanks using these words?

1. \_\_\_\_ Tuesday I went to the dentist.
2. \_\_\_\_ 1pm we eat lunch.
3. \_\_\_\_ August it gets too hot!
4. \_\_\_\_ the evening I have dinner with my family.
5. \_\_\_\_ winter Korea gets so cold!
6. \_\_\_\_ May 15<sup>th</sup> we have sports day.
7. \_\_\_\_ 2020 there was a lot of rain in Daegu.
8. \_\_\_\_ the 1970s South Korea built its first highway.

9. \_\_\_\_ spring Daegu can be very pretty.

10. \_\_\_\_ 설날 we spend time with our families

## Appendix 2. Examples of different journal errors and difficulties understanding temporal prepositions



and play. And also sometimes we get  
this day is on May 5<sup>th</sup>. I thought that his b  
5<sup>th</sup>, but his is in November 9<sup>th</sup>. Although  
about the men's day that much I like  
much

ers with <sup>my</sup> feather. I was so happy  
It is cold but I have pretty  
I love snow. In winter  
I love every seasons

**Journal**

He was absent.

No. #3 Date \_\_\_\_\_

Date \_\_\_\_\_ My favorite season is \_\_\_\_\_ Because \_\_\_\_\_

My favorite season is summer. Because my birthday is  
in July. So I like summer. And also we can play at th  
swim in the pool. It is very co

### **Appendix 3. Interview script / questions for Korean and non-Korean teachers:**

Before we begin, it is important to note that you do not have to answer any questions that you do not want to. My phone will be out to record the conversation but the data will be deleted immediately after it has been coded and at no point will your identity be revealed. Please answer honestly and do not feel embarrassed, these questions involve grammar and are not easy. This paragraph is rather labored and could be shorter.

There are significant differences between the Korean and English languages regarding grammar. Arguably, one of the biggest differences between the two languages are prepositions of time, (“in”, “on” and “at”). I will explain quickly these differences and then ask you your opinion on whether you have experienced these differences while teaching.

#### *Explanation of differences*

Prepositions of time:

For prepositions of time the rules in Korean are simple, but actually very complicated for English. In Korean the word **에** is used for all prepositions of time regardless of context. In English, we use three different words depending on the context. These words are; “in”, “on” and “at”. For example in English we might say:

1. **At** the weekend ....
2. **On** Sunday we ...
3. **In** winter I ...

In Korean the word **에** is used each time, meaning the sentences would be as follows:

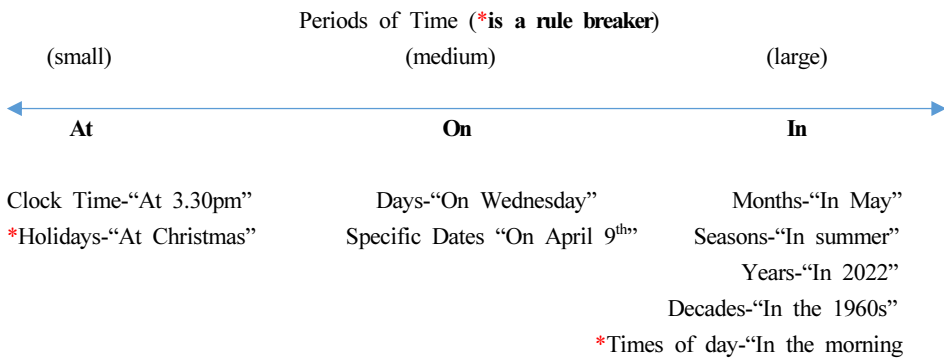
1. 주말**에**...
2. 일요일**에** 우리는...
3. 겨울**에** 나는...

In Korean, (unlike English) the context and what you are referring to does not matter.

The same word ㉮ is used each time.

*Questions*

1. Have you ever encountered students having difficulties understanding prepositions of time (“in”, “on” and “at”)?
2. Were you aware of these grammatical differences between the two languages? If you are aware, are there any techniques or methods that you use to overcome this difference when teaching your students?
3. Have you ever seen or used a visual approach as demonstrated below for teaching this concept such as the one shown below?



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