Exploring Socioscientific Issues in Language Classrooms

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Jieun Ryu
Youngae Kim
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Seungmin Eum
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Sunyoung Yang

● Training in cultural anthropology
● Specializing in technologies and society
● Directing the Korean language program at UArizona
● Classrooms as everyday field sites
Jieun Ryu

- Training in Second Language Acquisition and Teaching
- Specializing in technology in L2 teaching and learning, LCTL pedagogy, and self-directed learning
- Developing the initial Korean language curricula at UArizona
- Directing the Critical Language Program at UArizona
Young Ae Kim

- Training in STEM education
- Specializing in teacher education, formative assessment, and integration of socioscientific issues in STEM as well as language learning
- Assistant professor at the Defense Language Institute Foreign Language Center
Sojung Chun

- Training in language education and history
- Korean instructor of East Asian Studies at UArizona
- Years of experience teaching Korean at different levels of K-16
Seungmin Eum

- Training in Second Language Acquisition and Teaching
- Specializing in syntax, sentence processing, L2 sentence development, and language education in KFL
- Years of teaching experience of Korean as L2 both in the U.S. and South Korea
Seojin Park

- Training in Second Language Acquisition and Teaching
- Sociolinguist working on the dissertation project on North Korean refugees’ English learning
- Specializing in identity (re)construction and L2 learning/teaching of socially and culturally minoritized groups of learners/teachers
- Teaching experience of English and Korean as L2
Socioscientific Issue (SSI) in STEM Education

- Complex global issues can be addressed by the **integration** of knowledge and skills of multiple disciplines among STEM. (Bybee, 2010, Kelley and Knowles, 2016; Roehrig et al., 2021)

- **Socioscientific Issues (SSI)** have been termed by Sadler (2004), emerging from the connection of science and society.

- SSI can serve as meaningful contexts in STEM curriculum as SSI situates learners to solve real-world problems in an integrated manner. (Zeidler, 2014; Owens and Sadler, 2020).

- SSI are controversial social issues related to science (Zeidler & Keefer, 2003) which are ill-structured, open-ended problems with multiple solutions (Sadler, 2004)

- SSI examples: Cloning, GMO, the use of nuclear fuel, Global warming, etc.
Implications of Bringing SSI into Language Classrooms

- Science and technology are deeply rooted in our everyday lives
- Authentic contemporary Korean context
- Combining SSI reasoning with the use of Korean

Examples: fine dust, Covid-19, environmental issues, etc.

padlet

What kinds of SSI topics do you think applicable/fit to your curriculum?
Characteristics of SSI Reasoning

- **Complexity** - complex contextual and multiple factors (e.g., scientific, socio-economic, political, geographical, cultural context)
- **Multiple perspectives** - various and well-reasoned positions by interested parties (e.g., governors, experts, educators, social workers, or personal views)
- **Inquiry** – ongoing investigation with multiple solutions of the issues
- **Skepticism** – contradictions/conflicts among stakeholders
- **Morality and ethics**

SSI in L2 Classrooms

“Project: Western/Eastern Medicines”

(in Fall 2019)
Class Information

- Language Level: KOR 201 (Low-Intermediate)
- Participation: Two sections of KOR 201 (Fall 2019): 23 students and 20 students each
- Class mode: 50 minutes / In-person
- Total time estimate: A total of 13 times (13 x 50 min.) including project preparation and presentation
- Technologies used: Internet connection, Google slides, D2L, web-cam
Learning Objectives

Students will be able to

<SSI content knowledge & SSI Reasoning>

- Recognize the different viewpoints between Western and Eastern medicine approaches;
- Practice SSI reasoning for decision-making in our daily lives
- Acquire and use Korean medical vocabulary

<Situated Learning>

- Have daily-life knowledge related to hospital and health information such as doctor profile, symptoms, body parts, and folk remedies;
- Use classroom grammar items and words under realistic situations such as introducing a clinic’s location and creating a clinic introduction YouTube video.
Sequence of the SSI Project

Introduction
- K-drama cliche
- Concept of socioscientific issues
- Discussion - SSIs in medical field
- Clinic homepage & video clip samples

Research & Language Learning
**Doctor’s Office**
- [Listening & reading] Clinic introduction video
- [Reading] Doctor profile
- [Reading] Clinic location

Western/Eastern approaches to a cold
- [Reading] a webtoon
- [Listening & Reading] YouTube videos and blogs
- [Research & Presentation] approaches/principles; symptoms; treatments; preventions

Final Project
- YouTube video - clinic promotion and cold prevention suggestions
- Clinic homepage (Fakebook) - doctor profile, office location, and clinic information
여러분의 병원은 어디에 있어요?

도시: 서울 아현동
주소: 서울특별시 마포구 아현동 346-5

장점:
1) 지하철 2호선과 가깝게 있어서 교통이 매우 편리합니다.
2) 학교가 가까이에 있어요. 스트레스를 받은 학생들은 올 겨세요.
3) 근처에 많은 주택가가 있어요.

오시는 길:
지하철로는 아현역 4번 출구로 나와서, 사거리에서 왼쪽으로 도세요. 걸어서 5분 걸려요 가세요. 그럼요, 우리한의사 있어요.
Students’ Samples: Eastern Medicine Research

한의학 Eastern treatments
한방 치료 원리, 감기 증상과 처방 그리고 예방

감기는 왜 걸리요?
1. 날씨가 추울 때.
2. 환절기.
3. 손을 안 닦아서 / 안 씻어서.
4. (갑자기) 비를 맞아서, 눈이 와서, 에어컨 때문에

감기에 걸리면 어디가 어떻게 아파요?
1. 머리가 아프요.
2. 코를 막아요.
3. 낯은 맛이 묻어요.
4. 배가 아파요.
5. 열이 나오요.

감기에 걸리면 뭐 해야 되요?
1. 폭 허니 - ’꿀식’
2. 폭 자다 - ’수면’
3. 황기(refresh air)를 하다.
4. 따뜻한 물/보리차/... 많이 마시다.
5. 얼음팩(an ice pack)을 사용하다, 열수(or a hot towel)를 치트하다(steam).

Eastern Medical Approach to a Cold
1. 매실차, or Korean plum tea. (helps fight fatigue as well as indigestion)
2. 죽 is a warm porridge made from rice, beans, sesame and red beans (azuki). (very soft and easily digestible dish. The grains are full of nutrients and help replenish the body’s needs)
3. Kongnamul guk, or soybean sprout soup. (that’s perfect for indigestion or when you’re feeling queasy. High in vitamin C and low in calories)
4. 듬지차, yuja tea made with citrus and honey.
Students’ Samples: Western Medicine Research

세양 의학 Western treatments
치료 원리, 감기 증상과 치방 그리고 예방

감기는 왜 걸려요?
1. 예를 들면, 눈물태가 됐다 콧물, 냅킨이 오면, 퍼렇게 놓고 헹가 오면 감기에 걸리죠.
2. A common cold is caused by viruses, respiratory viruses are the most common
3. A cold virus enters your body through your mouth, eyes or nose.
4. The virus can spread through someone who is sick coughs, sneezes or talks.

Symptoms & Treatments

감기에 걸린다면 어디가 어떻게 아프죠?
1. Runny or stuffy nose
2. Sore throat
3. Cough
4. Congestion
5. Slight body aches or a mild headache
6. Sneezing
7. Low-grade fever
8. Generally feeling unwell
9. 악몽, 뒷모습, 설사가 빼고 설사 공기에도 신아해요.

감기에 걸린다면 뭐 해야 해요?
- Pain relievers.
- Decongestant nasal sprays.
- Cough syrups.
- Sinex.
- Tylenol Extra Strength.

Cold Prevention Tips

감기때 걸리면 뭐 해야하나요?
1. 감기에 걸릴 때 격침을 빠르고 출신
2. 약 먹고 약 먹고, 물이 빨리 빠지고
3. 코 튀기를 많이 마시거나.

감기에 안 걸리고 살이죠, 어떻게 해야 해요?
- Wash your hands.
- Disinfect your stuff.
- Use tissues.
- Don’t share.
- Steer clear of colds.
- Choose your child care center wisely.
- Take care of yourself.
- 감기때 안 걸리기 위해 마시는 물을 입고 비타민 먹어야 해요.
K201 Final Project Guideline

- Students will make a video in Korean to complete the following tasks: Imagine you are a Korean doctor and a YouTuber. As a doctor, you are making a video about a cold, including its causes, symptoms, prescription, and some medical advice. Following your group’s theme, you want to take either the western or eastern medical approach. Please complete your video with introductions about doctor(s) and your medical clinic.
- To complete the tasks, please use the content that you learned in this course. Your video should provide strong visual support for your audience.

Requirements

- The video should be about 4-5 minutes in total, and you can use any video-creating programs of your choice for this project.
- In the video, you can include some PowerPoint slides with the sentences and visual elements, such as pictures or photos that are relevant to your topic. You want to do a voice-over (reading the sentences you wrote) on the slides.
- Doctor(s) or patient(s) need to appear in the video, but not every group member has to appear in the video. You can take different roles to complete this project, such as making slides, making a video, or acting as a doctor or a patient. Please write down every group member’s role and how you participated when you submit your project.

Grade

- Script (2%) + Video (3%) = 5% of your total grade
Grammar elements

This is the recommendation of the grammar elements to use. Check the list below.

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<th>The benefactive expression ~어/아 주다</th>
<th>The adverbial form ~게</th>
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<tr>
<td>Obligation or necessity: ~어/아 하다</td>
<td>Negative commands ~지 마세요</td>
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<td>~(으)로 수 있다/없다 'can/cannot'</td>
<td>~(으)면서 'while ~ing'</td>
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<td>Noun 때 문에</td>
<td>The nominalizer ~기 / ~기 때문에</td>
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<tr>
<td>N (이)라서 'because it is N'</td>
<td>Negation ~지 않다</td>
</tr>
<tr>
<td>The negative ~지 못하다</td>
<td>The conditional ~(으)면</td>
</tr>
<tr>
<td>~(으)로 돌 아다 / 포로 다</td>
<td>N 때 / ~(으) 면 'when'</td>
</tr>
</tbody>
</table>

Guiding questions

Try to answer these essential questions below (not mandatory).

(About a cold)
1. 감기는 왜 걸려요?
2. 감기에 걸리면 어디가 어떻게 야요?
3. 감기에 걸리면 빨 해야 되요?
4. 감기에 걸리면 밥 먹어야/마셔야 되요?
5. 감기에 안 걸리고 싶어요. 어떻게 해야 되요?

(About the doctor)
1. 의사의 진단 분야가 뭐예요?
2. 언제 진료 하세요?
3. 약을 먹어도 되세요?
4. 의사의 비전이 있어요? 있으면 뭐예요?

(About the medical clinic)
1. 그 병원은 어디에 있어요?
2. 무슨 병원이예요?
3. 병원을 찾아가고 싶어요. 어떻게 가야 해요?
4. 그 병원의 장점이 뭐예요?
Final Product: Doctor’s YouTube Video
SSI Discussion & Wrap-up

What are some common features in western and eastern food for a cold? Why do you think people eat that kind of food for a cold? Are the reasons why people in the east and west eat certain food for a cold similar?

Do you think that vitamin C can help prevent a cold? Currently research findings about the effect of vitamin C are inconsistent. Why do you think that people believe vitamin C can help prevent or treat the common cold? Can you describe the possible mechanism related to the action of vitamin C in the immune system?

Why do you think that there are similar treatments for a cold in western and eastern cultures, for example, in the U.S. and Korea?

Although there are different symptoms of a cold, it seems that people use very similar preventive measures and treatments for each symptom. For example, people eat chicken noodle soup and drink ginger tea for a fever as well as a sore throat. What do you think about these kinds of common treatments for different symptoms?

Think about ways to prevent a cold. Can you describe the ways in which cold prevention measures (such as daily practices, types of food, or medicine) might help the immune system?
Lessons from the First Project

- SSI topics are around us.
- Instructors can control the degree of SSI integration into a language classroom.

Semester-long weekly project VS Intensive final week project
Case 2

SSI in L2 Classrooms

“Project: Pandemic COVID-19”

(in Spring and Fall 2020)
Class Information

- Language Level: KOR201 (low intermediate)
- Classes: two classes of 25 and 23 students
- Class mode: 50 minutes / Live online
- Total time estimate: Total 11 classes including project preparation and presentations
- Technology Approach/Requirements: Internet connection, Google slides, Google doc, D2L
Learning Objectives

Students will be able to

- Reflect their knowledge of COVID-19 as an SSI
- Develop L2 skills and strategies related to COVID-19
- Recognize scientific evidence behind COVID-19 practices
- Interpret COVID-19 practices as cultural product
- Apply SSI decision-making practices
- Create a meme as a sociocultural product related to COVID-19
Day 1 (9/11)
Introduction to SSI-based language learning

Day 2 (9/18)
Getting used to Covid-19 vocabularies

Day 3 (9/25)
Social distancing
- Scientific evidence behind social distancing
- Say social distancing measures in Korean

Day 4 (10/2)
Wearing a mask I
- Scientific evidence behind wearing a mask
- Say mask-related expressions in Korean

Day 5 (10/9)
Wearing a mask II
- Culture discussion
- Role-play activity based on the expressions from day 4

Day 6 (10/16)
Scenario-based Covid-19 discussion and practice decision-making processes

Day 7 (10/23)
Covid-19 and different cultural practices
- Interpreting and creating memes

Day 8 & 9 (10/30 & 11/6)
Final project prep

Day 10 & 11 (11/12 & 11/13)
Final project presentation
Day 6: Scenario-based decision-making practice (Part 1)

Mass Infection: Stores at Risk

Situation
For a couple of months, the virus had not appeared to be widespread among grocery workers and shoppers despite the concern of many health experts. Recently, however, several infection cases among grocery-store workers were reported in City M. According to the city health department report, at least 20 residents started showing flu-like symptoms after visiting the stores where the infected grocery-store workers worked. The city government took this situation as a serious threat to public health and decided to strengthen infection prevention measures during shopping. As one of the follow-up measures, the City M government made an order that each store should update their safe shopping guidelines and enforce them. Currently, you are working as a store manager of a supermarket.

Mission
One of the large grocery supermarket chains G, held an emergency meeting and decided to quickly respond to the government order. As a branch supervisor of G, you need to hear various opinions from customers, store staff, and health & safety officers and create safe shopping guidelines for your store branch. Considering each stakeholder's demands, which may have conflicts, you should embrace their different ideas as much as possible so as to minimize potential complaints and contribute to public health.
Activity Example

Day 6: Scenario-based decision-making practice (Part 2)

Mass Infection: Stores At Risk

Reflect on your essay with the lens of the following SSI elements.

1) Which part reflects the inherent complexity of an issue?
2) Which part reflects multiple perspectives?
3) Which part reflects the idea that issues are subject to ongoing inquiry?
4) Which part reflects your skepticism on possibly biased information?
Activity Example

1. Keyword
Choose the mask that best matches each description.

![Image of masks](image)

- a. KF80
- b. 방진 마스크
- c. 일회용 부직포 마스크
- d. 면 마스크
- e. KF94 마스크

2. Infer the unknown words - guessing meaning from context

침:
락다:
결리내다:
미세입자:
방진:

6. Interpersonal - Conversation with your partner in Korean [Breakout room]
아래 질문에 대한 답을 한국말로 해 보세요.

- 마스크를 살 수 없으면 어떻게 할 거에요?
  (What would you do if you don’t have any facial masks?)
- KF80, KF94, 방진 마스크가 없으면, 어떻게 미세입자를 걸러낼 수 있을까요?
  (If you can’t get KF80, KF94, or 방진 마스크, what would you do to effectively filter any microparticles and virus?)
Final Project

- Creating a meme as a pair regarding COVID-19 and providing the reasoning on their decision-making about multiple modes and messages

- Composing memes with native Korean speakers in mind as the audience/readers, reflecting what they learned from the analysis of the memes created by native Korean speakers
Students’ Samples: Final Products
Students’ Samples: Final Products

15 weeks of Quarantine...

Mother-in-law: Is it another new recipe, today?

Daughter-in-law: Yes, mother. By the way, stand 6-feet back from me, please!
Assessment (Feedback)

- Peer Feedback: the design and messages of their works
- Votes and comments from 1) their classmates and 2) anonymous native Korean speakers through Google Forms
SSI in L2 Classrooms

“Eco-friendly Travel Project”

(in Spring 2021)
Class Information

- Language Level: KOR 202 (Low Intermediate)
- Classes: two classes of 19 students and 23 students
- Class mode: 50 minutes / Live online
- Total time estimate: Total 10 classes including project preparation and presentation
- Technology Approach/Requirements: Internet connection, Google slides, Jamboard, Thinglink, D2L
Learning Objectives

Students will be able to

- Plan a trip to Korea concerning eco-friendly factors
- Create a digital travel brochure using Thinglink
- Understand various authentic materials related to environmental issues
- Develop L2 language skills and strategies regarding environmental issues
- Raise awareness of the green benefits and apply scientific and moral reasoning to real-world situations
Day 1 (4/22)
Planning a trip to Korea
Earth Day!

Day 2 (4/23)
Getting to know about the weather in Korea

Day 3 & 4 (4/26 & 27)
Fine dust
- Scientific evidence behind fine dust
- Social issues behind fine dust
- Possible scenarios

Day 5 (4/28)
Eco-friendly travel
- What is it?
- Scientific evidence behind eco-friendly travel
- What do we want to do to practice it?

Day 6 (4/29)
Carbon footprint
- What is carbon footprint?
- What is carbon footprint labeling?
- Exploring examples of eco-friendly travel

Day 7 (4/30)
Transformation of travel plans
- Understanding eco-friendly travel in depth
- Transforming original travel plans into eco-friendly travel plans

Day 8 & 9 (5/3 & 4)
Final project prep
- Creating a digital pamphlet for eco-friendly travel

Day 10 (5/5)
Final project presentation

Day 10 (5/5)
Final project presentation
Building Lessons

Day 1

Introduction
Students plan a trip to Korea

Day 2-6

SSI contents
- Weather and fine dust
- Eco friendly travel
- Carbon footprint

Language Activities
- Watching video clips
- Reading webtoon
- Role play
- Summarizing presentation

Day 7-10

Final Project
- Modifying their plans to be eco-friendly
- Creating digital brochure
- Presenting the plan
- Writing a reasoning paragraph
Sample Activity

Day 3 Research

미세먼지 조사하기

한국의 일상생활에 긴밀히 들어가있는 미세먼지에 대해 조사 및 자세히 알아보는다. 여러 질환들의 비밀로 알려진 내용을 같이 조사해보세요. 내용은 조사 내용을 발표해야. 발표와 조사는 영어로, 한국어로 1-2문장 요약.

<table>
<thead>
<tr>
<th>정체/설명</th>
<th>연구에 대한 영역과 대비학</th>
<th>온화한 대학</th>
</tr>
</thead>
<tbody>
<tr>
<td>미세먼지의 정의</td>
<td>미세먼지의 영역과 대비학</td>
<td>온화한 대학</td>
</tr>
<tr>
<td>정의와 정의</td>
<td>미세먼지의 영역과 대비학</td>
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</tr>
</tbody>
</table>

Day 4 Role-play based on scenario

미세먼지 역할극(Role play)

- 그룹별로 상황 하나를 골라서 대화 만들고 반에서 시연하기.
- Instruction: 미세먼지 조사한 내용 최소 3가지 포함 / 최소 10lines

1) 상황: 1. 한국의 소화를 하고 늘어 가자고 했다는 것이 한국의 미세먼지에 대한 이미지 상황
2) 상황: 2. 어떤 필, 미세먼지가 유해하다는 뉴스를 본 후 마스크를 식사하기, 대회 준비 / 계획하기 / 경제하기
3) 상황: 3. 한국에서 교통약물로 하면 조율해야 동봉 이론비교도를 하고 있어요. 팀 숙제로 미세먼지에 대해 조사해 오라고 합니다. 숙제를 어떻게 도와드릴까요?

Presentation

미세먼지 역할극(Role play)

- 그룹별로 상황 하나를 골라서 대화 만들고 반에서 시연하기.
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1) 상황: 1. 한국의 소화를 하고 늘어 가자고 했다는 것이 한국의 미세먼지에 대한 이미지 상황
2) 상황: 2. 어떤 필, 미세먼지가 유해하다는 뉴스를 본 후 마스크를 식사하기, 대회 준비 / 계획하기 / 경제하기
3) 상황: 3. 한국에서 교통약물로 하면 조율해야 동봉 이론비교도를 하고 있어요. 팀 숙제로 미세먼지에 대해 조사해 오라고 합니다. 숙제를 어떻게 도와드릴까요?
A: B, have you seen the news?
B: I haven’t, what’s wrong?
A: [The forecast] [s]aid there will be a lot of fine dust today.
B: How is that important?
A: When there is a lot of fine dust, it’s hard to breathe. It won’t be good for your lungs and your throat will be sore.
B: How is regular dust different from fine dust?
A: Since fine dust is smaller than sand, it’s dangerous.
B: Oh, I didn’t know. Then let’s go get some masks. [I] [h]eard it’s safer to wear a mask.
A: Good idea. Then, let’s not go outside today and [get] some rest at a hotel room.
B: Yes, if the air quality is better tomorrow, we can go out.
Final Project

- Create a four-day, digital, eco-friendly travel brochure as a group using multiple modes and explaining how eco-friendly elements were applied

- Write a paragraph in Korean explaining what decision-making process has been taken to make an eco-friendly travel plan
### Students’ Sample (Group 4): Travel Plan

<table>
<thead>
<tr>
<th>Places to go</th>
<th>Activities</th>
<th>What to bring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>첫째 날</strong> 도착</td>
<td>도착</td>
<td><strong>준비물</strong></td>
</tr>
<tr>
<td><strong>도착</strong></td>
<td>다대포해수욕장 자갈치 시장 Airbnb</td>
<td><strong>The reasoning behind your eco-friendly travel plans</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Although the travelers will still be utilizing public transportation throughout the trip, it is still a more eco-friendly option as opposed to traveling solely by car. Once they arrive at the beach, they will be getting around on foot and playing in the water. Make sure to clean up trash and bring reusable water bottles -- no single-use plastic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>둘째 날</strong> Busan Contemporary Art Museum (부산현대미술관) 을속도 Bird Sanctuary</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>재사용한 가방</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A relatively short travel by subway to Eulsukdo. This day they can explore the island by going to the contemporary museum as well as the bird sanctuary all by foot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>셋째 날</strong> 광안리 해수욕장 광안대교</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>What to bring</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>We changed this location from Haeundae Beach to make our travel package more eco-friendly. Haeundae Beach was much further from the other activities and we wanted to keep our locations closer together, as to lessen the amount of carbon emissions.</td>
</tr>
<tr>
<td>�,void 날</td>
<td>용두산 공원</td>
<td>구경해요 소풍을 가요.</td>
</tr>
</tbody>
</table>

Using reusable water bottles:  
일회용 컵 11g (3x per day) (11*3) * 4 = 132g 줄였어요

Not watching TV:  
TV 보기 2 시간 129g (1x per day) (129 * 4) = 516g 줄였어요

Using reusable utensils/masks:  
Use of reusable utensils/재사용 마스크 19g (2x per day) (19 * 4) = 76g 줄였어요

Not eating as much meat:  
고기 생산시 4390g (2x per day) (4390 * 2) * 4 = 35120g 줄였어요.

Using only 1 toilet paper roll per person:  
두루마리 화장지 1개 (283)*4= 1132g

Only use computer each, 1 hour a day:  
컴퓨터 1시간 9000/100=90g/hr, (1*4)*4*90=1440g

Using electricity (light bulbs) 6 hr a night:  
기존형광등 6시간 (6*4)*34= 816g

Amount of carbon emission reduction (student’s calculation)
Students’ Sample (Group 4): Travel Brochure
Group 4

우리 여행 곳으로 부산을 선택하기로 했어요. 한국에서 어디 어디에 갈 수 있는데 비행기로 가는 거 탈소 배출량 별채 많지 않기 때문에 부산에서만 있음을요. 그리고 부산은 서울보다 이세미지가 적어서 쉬워 기가 편해요. 한 곳에서 있는데 근데 재미있는 가게들이 어지간도 만들 수 있어요!

처음 왔을때 AIRBNB에 갈 거예요. 흔히 보다 AIRBNB 더 싸고 천환영이에요. AIRBNB에서 사용하는 물과 전기 앱을 다 재워 할 수 있어요. 그 반대로 호텔에서 매일 매일 빼내하고 전기를 많이 써요. 첫 날에 다다오 해수욕장을 갈 거예요. 가기에 바다에서 놀 수 있고 낙시도 할 수 있어요. 이 여행 동안 고기 보다 생선을 더 많이 먹을꺼예요. 왜냐하면 고기를 많이 사 먹으면 탈소 배출량이 줄일 수 있어요. 이렇게 먹으면 매일 ~4390g 탄소 줄였어요.

두번째 날에 지하철로 음속도에 갈 거예요. 부산현대미술관에서 구경하기고 기념품 삼 살 수 있어요. 물건을 사면 버닐봉지 알고 토탕박서 넣어요. 토탕박 가져 가면 쓰레기 닿았음예요. 또, 사진 찍어 삼으면 일회용 카메라 가지 오지 말아요. 탄소 발자국 줄이기 위해 걸을 때가 많아요. 혹시 이 여행 동안 걸을 수 없을때, 대중교통을 이용할거예요.

셋째 날에 광안리 해수욕장을 갈 거예요. 사실은 처음에 해운대 해수욕장을 가기로 했는데 AIRBNB에서 너무 멀리 있어서요 광안리 해수욕장을 선택했어요. 자동차 보다 대중교통을 이용하는 거 더 좋아요 자주 이용하면 탈소 배출량이 아직도 올라가기때문에 AIRBNB에서 가까운 장소를 선택했어요. 해운대 해수욕장은 더 유명한 것 같은데 광안리에서 걸 일이 아직도 많아요. 여기서 소평하고 음식을 사 먹을 수 있어요. 자전거를 타면 여기서 야시장에 갈 수 있어요. 혹시 음식 사 먹으면 제사용하는 식사 도구를 가져 가요.

미지막 날에 용두산에서 구경하도 피크닉 할 거예요. 재미 레스트랑에서 음식 안 사 먹을거예요. 왜냐하면 재미 레스트랑 들이 탄소 많이 배출해요. 그래서 부산 현지 음식 사 먹을거예요. 여행 미지막 날이야서 싱딩이야요! 우리가 배달 할 일이 많지 않겠군요. 이것은 많은 관광지에 가면 탈소 배출량이 많아요. 탄소 발자국 줄이고 싶으면 더 건전하게 살아야 돼요. 이 여행은 시원하고 간단해요. 행복하고 재미있는 여행 되고 싶으니 많은 물건을 절 필요 없어요.

여행 할 때 천환영 탕 많이 있어요. 손님들이 TV 안 끄게요. TV 안 보면 ~129g 매일 탄소를 줄일 수 있어요. 그리고 일회용 제품 사용하지 않고 재사용하는 제품을 사용하세요! 이거를 하면 ~76g 탄소를 줄일 수 있어요. 쓰레기 싱딩 많이 만들어가지고 재사용하는 제품은 (토탕박, 마스크, 수저, 텀블러...) 아주 중요해요. 만약에 쓰레기 어차피 있으면 제대로 버리주세요. 길 거리에서 쓰레기 버리면 안 돼요.
<table>
<thead>
<tr>
<th>Assessment Elements</th>
<th>Description</th>
<th>Effective</th>
<th>Acceptable</th>
<th>Limited</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multimodal Aspects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Modes</td>
<td>- Did students use 2 or more meaning-making modes such as font, size, color, shape, or background to create pamphlets?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Appropriate Use of Multiple Modes in the Context | - Did students purposefully use each mode with a specific role in the pamphlets?  
- Did students use each mode relevant to specific topics? |           |            |         |
| **SSI Aspects**             |                                                                             |           |            |         |
| SSI Knowledge               | - Did students demonstrate their SSI knowledge of eco-friendly travel?     |           |            |         |
| Appropriate Use of SSI Knowledge | - Did students purposefully use their SSI knowledge of eco-friendly travel in the digital travel pamphlet relevant to specific topics? |           |            |         |
| **Language Aspects**        |                                                                             |           |            |         |
| Task / Function of the pamphlet | - Did students appropriately use vocabulary and sentence structures considering genre specific attributes of the pamphlet? |           |            |         |
| Language Accuracy           | - Did students use vocabulary and sentence structures accurately and effectively to deliver the message without errors or mistakes such as misspellings, grammatical errors, and misuse of words? |           |            |         |
| **Overall Organization**    | - Did students include all the elements with enough information and organize them coherently and effectively? |           |            |         |
1. How would you implement an SSI project (or activities) in your curriculum?

2. What could be the possible challenges?
Guided Use of Machine Translator
G.U.M.T.

Students’ Use of Machine Translator (MT)

Purposes of Students’ Machine Translator (MT) Use

Ranks
1. To search words or phrases that I did not know
2. To revise my texts written in Korean
3. To read texts written in Korean
4. To communicate with Korean language speakers via chat or email
5. To use as a draft to write in Korean
6. Others
Guided Use of Machine Translator (GUMT)

[Goal]
To develop better awareness on how MT can be an effective supplemental tool for FL learning

- Review of MT’s strengths and weaknesses
- Pragmatic appropriateness evaluation of MT outputs
Instructional Session

Strengths and limitations

- Different speech styles
- Levels of politeness
- Genre

Built-in features

- Honorifics function
- A word’s part of speech display
- Direct link to online dictionaries
Instructional Session

Google Images and News as supplementary corpus data to make sociopragmatic judgment

● Example: letter (Eng) > Pyunji / Suhhan (Kor)
Pragmatic and grammar evaluation exercises, which encouraged to think about the contexts of the given samples:

- Formal/informal settings
- Relationship between the speaker (writer) and listener (reader)
- Purpose of the conversation
[Goal]
To confirm the MT outputs and visualize their decision-making process and reflect on their MT use critically

- Scaffolded practice
  with instructor / with peers / on their own
Practice Session

Step 1. Write your first draft in Korean on your own. You may use the glossary at the end of your textbook and/or dictionaries.

Step 2. Write what you drafted in Step 1 in English as well.

Step 3. Use a machine translator (name of translator: Google translate, Naver Papago) and edit your writing in Step 1. Please apply the guidelines you learned in the class.


<table>
<thead>
<tr>
<th>Words/Phrases</th>
<th>Purpose* [Please choose one from the above]</th>
<th>Translator 1st run</th>
<th>Choice after Image search</th>
<th>Choice after News search</th>
<th>Final choice Of Korean expressions</th>
</tr>
</thead>
</table>

Step 4. Please compare your own sentences and translated sentences and share your thoughts and experience using the translator to complete this writing assignment.

1. Which translated part was most similar to your own Korean writing?

2. Which translated part was most different from your own Korean writing? Was the translated sentence contextually awkward or appropriate? Why do you think so?

3. In what ways did image or news searches help you with your final draft? If
GUMT Design

Feedback (after each writing assignment)

Written feedback
- Focus on how the students can use GUMT more effectively
- Grammar and pragmatic evaluation
- Highlighted focus sentence that still needed corrections

In-class feedback review session
- Compared, refined, and revised the highlighted sentences
After GUMT

- GUMT helped the students to use MT effectively
- Developing strategies for using MT and other online resources
- Awareness of uncertainty and limitations of MT as lower-proficiency-level students

At first I looked up 드려 [give - humble form], the translator and images were not accurate at all. I think word is not conjugated properly or because it lacked content. After putting the entire phrase, the results started to be more accurate to what the phrase should be. (Student 1, reflection)

I find that the translator is only as useful as much grammar or vocabulary you know, so the less information you know, the less useful the translator will be and you won’t be able to infer as much information from trying to mess around with the translator. (Student 8, reflection)
After GUMT

- GUMT helped students to see the language more critically and analytically and learned more pragmatically appropriate expressions.
MT as automated feedback resource

Sometimes a word I would use would have multiple meanings, and I needed to make sure that the word I was using was contextually correct” (Student 5, post-survey)

With some of the verbs I know. For example, I didn’t know the meaning of ~([으]ㄹ [when], so I put 먹을 [when] into the translator and it said “when you eat,” so I figured out that ~([으]ㄹ means when you do + a verb. (Student 8, reflection)

Valued instructor feedback and feedback sessions

The written feedback has helped me verify that I am approaching the use of (and the drawbacks inherent in using) machine translators correctly. It was also useful to verify that some of the frustration I experienced trying to get the translated phrases to match my intended meaning was expected, and not due to me using the machine translator improperly. (Student 7, post-survey)
After GUMT

- Fostering confidence in Korean writing
  “... able to gain more confidence in what I have written because the translator could understand me” (Student 15, reflection)
  “... surprisingly! I think I am starting to get better at expressing myself correctly in writing! This was very encouraging. 😊” (Student 10, reflection)

- Motivated students to study
  I mix up my particle usage a lot, and instead of saying I have to get a new book, I said that Barnes & Noble had to get new books, according to both of my translators. It wasn’t appropriate because I had used incorrect particles—I need to go back and review! (Student 10, reflection)
After GUMT

- Promoting fluency in Korean writing

“It made me think outside the box and be a bit more creative.”

Q11: Did GUMT help you to be more creative when you were writing?

Q10: Did GUMT help you to write more in length?

Q12: Did GUMT help you to express your thoughts more freely in Korean?
The work was a little tedious, especially as we moved on with the semester and the writing got better. It instilled good habits and skepticism of the translator though, which is a benefit to me! (Student 17, post-survey)

This [GUMT] not only refined my translator usage and my writing, but made it more efficient than it would have been otherwise. By the final writing assignment, I knew what to look for in the translator right away, and how I could modify my sentences to make them sound better. (Student 3, post-survey)

Q1: What is your stance on the students’ use of MT?
Q2: How you would create activities to guide students?
Instructor Manual Guide
### Day 3
(Topic) How To Respond to COVID-19: 1. Social Distancing and Stay-at-home

<table>
<thead>
<tr>
<th>SLO</th>
<th>Students will be able to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Report interesting social distancing practices in Korean</td>
</tr>
<tr>
<td></td>
<td>2. Interpret the video regarding social distancing and stay-at-home</td>
</tr>
<tr>
<td></td>
<td>3. List important social distancing practices in Korean</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opening</th>
<th>Entire class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. The instructor shares the interesting social distancing pictures and sentences that the students have posted and discusses them together.</td>
</tr>
</tbody>
</table>

**Student Sample**

![Social Distancing Images](https://example.com/social-distancing-images)

2. Ask students to summarize the articles they have read as an assignment and share their thoughts on them. The instructor will summarize the main points of the articles and connect the main ideas to what they will learn today.

**Articles**
- Pandemic Fatigue: I-Team: Mapping 70,000 Social Distancing and Mask Complaints Made Across NYC
  
  [Link](https://www.nbcnewyork.com/news/coronavirus/i-team-mapping-70000-social-distancing-...
Making Safe Shopping Guidelines (as a group)

Instruction
- Make your Safe COVID 19 Shopping Guidelines in Korean.
  - Add a title and short description as in the sample guidelines.
  - Add appropriate visual elements.
  - Include at least 3 guidelines.
  - You may choose some guidelines here and see other references.
  - Don’t forget that you have to explain why your guidelines are sensible (in English) when you share your guidelines with the class.

(Extra resources for the students: Other guideline examples)
1. Here are some tips to keep safe when grocery shopping during Covid-19:
2. 7 tips for safe grocery shopping during Covid-19:

Student samples)
In the assignment for the next class, students will be asked to reflect on their previous essay (Day 6 worksheet) with the lens of the 4 SSI elements. The instructor will briefly explain what the assignment will be about by showing the Worksheet Day 6 Scenario-Shopping [Review] (You can download the worksheet).

Day 6 Worksheet

Day 6 worksheet will be graded. So make sure to upload the answered worksheet on D2L. (Assignment after Day 6 class)

Mass Infection: Stores At Risk

Reflect on your essay with the lens of the following SSI elements.

1) Which part reflects the inherent complexity of an issue?
2) Which part reflects multiple perspectives?
3) Which part reflects the idea that issues are subject to ongoing inquiry?
4) Which part reflects your skepticism on possibly biased information?

<table>
<thead>
<tr>
<th>Excerpts from your essay</th>
<th>Reflections, Questions, &amp; Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Complexity:</td>
<td></td>
</tr>
<tr>
<td>Conceptualizing SSI with contextual and multiple factors (e.g., scientific, socio-economic, political, geographic, cultural context surrounding Covid-19 or machine translator)</td>
<td>Please write why you think these excerpts demonstrate complexity. Please also write if you have any ideas you want to add more to consider complexity better</td>
</tr>
<tr>
<td>2) Multiple</td>
<td></td>
</tr>
<tr>
<td>Day 6</td>
<td>(Topic) Significant Practices for Decision-making in the Context of SSI</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| SLO  | Students will engage in the following significant practices under the multiliteracies framework:  
|      | 1) Situated practice: experiencing the known (reflections) and the new  
|      | 2) Critical framing: analyzing functionally and critically  
|      | 3) Conceptualization via overt instruction: naming and theorizing  
|      | Students will engage in the following significant practices under a SSI framework:  
|      | 1) Engaging in higher-order practices (argumentation, reasoning, decision-making)  
|      | 2) Confronting scientific ideas and theories related to the issue  
|      | 3) Collecting and/or analyzing scientific data related to the issue  
|      | 4) Negotiating the social dimension of the issue. |

| Opening | [Significant Practice] Relating the scientific facts with social behaviors and decision-making  
|         | Theme: Shopping  |
|         | 2 min |

| Revisit Entire class | The instructor will discuss the definition of SSI and the 4 components of SSI reasoning previously discussed on day 1 with the students.  
|                     | SSI lecture PPT  |
|                     | 10 min |

**4 COMPONENTS OF SSI REASONING**

- **Complexity** - conceptualizing SSI with contextual and multiple factors (e.g., scientific, socio-economic, political, geographical, cultural, technical contexts surrounding COVID-19 and machine translation).
- **Multiple perspectives** - various, well-reasoned positions that may be assumed by interested parties (e.g., governors, medical experts, educators, social workers, and personal views of COVID-19 / companies, engineers, educators, and students' views of machine translation).
- **Inquiry** - SSI are ill-structured problems subject to ongoing investigation with multiple solutions (e.g., needs of more scientific and/or social data on COVID-19 and machine translation).
- **Skepticism** - recognizing contradictions/conflicts among stakeholders around the SSI (e.g., the effect of mask or test kits from two different groups of scientists for COVID-19 / efficacy of machine translation for language learning from two different groups of educators).

-Sadler et al., (2007)-
Archiving the Contemporary Discourses of Socioscientific Issues in Korea
Socioscientific Discourses in Korean Media

- Movies
- TV Shows
- Webtoons
- Music

✅ How are people aware of and interpret scientific issues in their lives?
✅ How are socioscientific issues described/presented in narratives?
✅ How is socioscientific knowledge manifested in daily life?

- Word of mouth, Written texts, Images, Memes, Blogs, Web forums
“As I am looking at your face in the dark
without realizing tears are flowing soundlessly you follow me and shine on me
finally were you caring for me because you knew me?
you, who gave my first love shine you also saw my break up”
...

https://lyricstranslate.com/en/no1-no1.html
Theme-based Categories

- **Traditional Science**
- **Biohazard; Biotechnology**
- **Space**
- **Technologies, New & Old**
- **Environment; Energy**
- **Disasters; Apocalypse**
- **Marine Resources; Deep-sea**
- **Time**
Features
1. Linked contents
2. Hashtags & Keyword search
3. Brief introduction
4. Translated lyrics (partial)

Songs in 90’s (from the concert)

내일은 봄이로 (by 산해철)
- Lyrics (the first part, translated)

Come to think of it, the tough years.
I’m here with my breath in front of me.
There’s still a long way to go.
Now I’m looking back on the path I’ve taken here.
The old stream I used to run around in my childhood,
I don’t want to fill it with gray foam, and it flows.
In the thick smoke of factory chimneys.
Tomorrow’s dream is scattered into the cloudy sky.
The narratives of how scientific issues are aware of and interpreted in a community

The ways in which socioscientific issues are described in narratives

The observations of socioscientific knowledge that are manifested in daily life
Thank you!
Q and A