Bringing food sustainability issues into English classes: Preservice teachers’ plans and strategies

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Abstract. The inclusion of content is not new in the world of language teaching. Studies on sustainability issue alone in the world of CLIL (Content and Language Integrated Learning) have reached up to 1,500 studies in google scholar search. With focus rests on the content and less on the language teaching, it is interesting to analyse whether a group of Indonesian preservice English teachers are ready to plan and implement CLIL in their classes. The article reported a document analysis of 13 CLIL lesson plans on food sustainability designed by preservice English teachers after a three-week lesson planning workshop. The lesson plans were analysed by following the 3 iterative steps of qualitative document analysis research methods, i.e. skimming, reading, and interpretation and the 4 frameworks of CLIL lesson planning: content, cognition, communication, and culture. The analysis revealed the preservice teachers’ inadequate understanding of food sustainability issues and disparities in developing activities that would support students’ higher order thinking skills. Despite what seems to be a grim portrayal of the preservice teachers’ understanding of the issue, it is worth acknowledging that most lesson plans explicitly offered collaborative learning activities and refreshing ideas on how to integrate food sustainability in the foreign language classes.

Keywords: Content and Language Integrated Learning (CLIL), English classes, preservice teachers’.

1. Introduction

In order to support students’ development and learning in both content mastery and language competence, a methodology named CLIL (Content and Language Integrated Learning) was developed in 1994. As the definition suggests, the noble idea of CLIL is to complement the teaching and learning of content / subject matters such as science, arts, history, or even maths with foreign or second language learning. In addition to subject matters / content-based mainstream classes, a CLIL class is one of the best places to educate the next generation of youths on food sustainability issues. It is an ideal place where teachers could introduce, guide, and discuss the issues in order to promote students’ awareness and knowledge on the issue and simultaneously improve their language competences.

CLIL focuses on 4 Cs frameworks that includes the content, cognition, communication, and culture [2]. Content relates to the learning of subject matter, such as science, math, arts, geography, and many more. Cognition involves students’ development of learning and thinking during the lesson which links new knowledge to students’ prior or existing knowledge as well as to engage students with higher order thinking skills (HOTS). HOTS is usually based on various taxonomies of learning that was made popular
by Benjamin Bloom in 1956. In 1990’s, Lorin Anderson revised the wide acknowledged Bloom’s taxonomy. The result of the revision was published in 2001 with Revised Bloom’s Taxonomy [10]. The revised taxonomy improves the original by adding a two-dimensional framework: Cognitive Process Dimension and Knowledge Dimension. Cognitive Dimension includes remembering (C1), understanding (C2), applying (C3), analysing (C4), evaluating (C5), and creating (C6). The terminology used in the cognitive dimension of Revised Bloom’s Taxonomy was changed from noun into verb. The use of verb in the terminology portrays active thinking process. The term “knowledge” was changed into “remember” because the term “knowledge” shows the product of thinking rather than the thinking process. The use of terminology “synthesis” and “evaluation” had also been changed into “evaluate” and “create” [10].

The third framework, communication component, emphasises language development through the use of language that is portrayed in the students’ interactions. Lastly, the culture framework expects students and the teachers to create a collaborative learning community that is based on understanding of other people’s culture (intercultural communication). The framework could serve as reference point for lesson planning [3].

The issues of food sustainability in the CLIL classes have been studied and explored from many various angles through project-based lessons [2, 3, 4, 5, 6, 7]. However, most of the current studies and projects rarely studied the preservice teachers’ understanding and development toward CLIL [8, 13]. Likewise, the mainstream foreign language classrooms have paid more attention to the mastery of the language systems and skills thus neglecting the real connections that the language skills and systems could actually relate to students’ real-life experiences. Considering the emergence of CLIL studies on sustainability, and the importance of preparing the next generation of foreign language teachers, it is important to understand the level of knowledge that the preservice teachers have on food sustainability issues and their ways of implementing CLIL’s framework.

Furthermore, since lesson planning determines a successful teaching and learning, it is equally important that preservice teachers are properly trained to design and plan a lesson properly. Lesson plans are organized records of a teacher's ideas about what activities will be done in a lesson. Ideally, lesson plans have measurable objectives. It should be based on thoughtful methodological implications in planning, teaching strategies to use, and careful considerations of the teacher’s and students’ roles in a lesson. These factors will determine whether or not a lesson is a successful CLIL lesson. Since it combines content and language teaching, a CLIL lesson requires extensive preparation.

The purpose of the paper is to reveal a group of preservice teachers’ mastery of the food sustainability content and issues related to it, their ways of integrating the 4 Cs framework, and their methods of introducing and blending the food sustainability issues with language skills. It is expected that this paper will shed some lights on the development of CLIL curriculum for pre-service teachers as well as refreshing ideas on how the teaching of content could be approached by the language teachers. The study was limited to only analyzing 13 lesson plans produced by 13 preservice teachers after a 600-minute workshop on lesson planning and CLIL. Hence, the result may not represent larger group of participants.

2. **Method**

The research was conducted to mainly answer the inquiries on the integrations of food sustainability issues within an English as a foreign language class.

1. What do the lesson plans reveal about the preservice teachers’ ideas and knowledge to integrate food sustainability issues into the classroom?
2. What do the lesson plans reveal about the preservice teachers’ methods to deliver content and language skills in their teaching?
2.1 Participants
The participants of the study were 13 voluntary preservice teachers of 4 males and 9 females who had zero years of formal teaching experiences. They were all Indonesian natives and used Indonesian as their first language. They were juniors from English major and took teaching concentration. Some students were fluent in English with the Grade Point Average of beyond 3.5 / 4.0 (5 students), 5 students with moderate GPA attainment (2.80 – 3.4), and 3 students had the GPA under 2.75.

Most of them were born and raised in Jakarta and its satellite cities like Tangerang, Bekasi, and Depok, except for Moses who was born and raised in Borneo and Eva and Diana (all names are pseudonym) who were born, raised, and educated in the island of Moluccas. They were trained to compose lesson plan for three weeks before given a final task to design a lesson plan on food sustainability. Since the assignment of designing a lesson plan took place during the Corona virus pandemic, the preservice teachers were trained online through video conferences and LMS (Learning Management System) discussion forums. Then, they were given a full one week to search for references on food sustainability and draft a CLIL lesson plan based on the topic.

The instructor (the first author of the article) made his own reflections as he was teaching the group of the students. He did not mention or assign topics on food sustainability before the final assignment was given to the students. In addition to details of preservice teachers’ personal data (Table 1), Table 3 supplies data of students’ preferred topic of discussion. His personal teaching reflection / journal was used as supporting data at the data interpretation stages.

Table 1. Preservice Teachers

| No | Names | Age | Sex |
|----|-------|-----|-----|
| 1  | Anna  | 20  | F   |
| 2  | Moses | 20  | M   |
| 3  | Dian  | 20  | F   |
| 4  | Deborah | 19 | F   |
| 5  | Jaka  | 20  | M   |
| 6  | Shania | 20 | F   |
| 7  | Nisa  | 21  | F   |
| 8  | Nova  | 20  | F   |
| 9  | Chika | 19  | F   |
| 10 | Tony  | 20  | M   |
| 11 | Eva   | 20  | F   |
| 12 | Bram  | 21  | M   |
| 13 | Diana | 20  | F   |

2.2 Frameworks of analysis
The research employed a document analysis method that adhered to the principles of the grounded theory methodology [1, 12]. It means, the study relied on analysis of lesson plans as documents and the instructor’s reflections for building a theory on the preservice teachers’ lesson plans’ quality. The steps taken to collect, review, interrogate, and analyze the lesson plan data can be visualized as Figure 1.
Figure 1. Steps of Data Collection and Analysis

The three-week instruction was included as part of the data collection because the instructor made reflective notes on his teaching / instructing experiences. The notes were subsequently made as additional points to support the interpretation of the lesson plans. This is an essential point of the research as it marked the first day that the preservice teachers began their research and drafting their lesson plan. To evaluate the quality of students’ integration of food sustainability content to the CLIL classes, the 4Cs framework of CLIL were used. In each of the framework, questions were used as guideline for analysing the fulfilment / the integration of it in the lesson plan. Table 2 contains the 4Cs framework and some samples of the guiding questions.

Figure 2. The CLIL Pyramid © Oliver Meyer
To analyse the lesson plan documents, the research applied qualitative document analysis research methods [9] that is essentially done by collecting initial impression of the lesson plans by skimming, followed by interrogating and analysing (reading), and lastly, by interpreting the 13 lesson plans as primary sources of data [3]. The process of data analysis was done iteratively, i.e., as shown by the arrows in figure 1, the analysis was done in a systematic and recursive process where the authors went back and forth analysing the 13 lesson plans until no new information emerged from the analysis.

In the first stage, the lesson plans were skimmed to get the selected content, the learning objectives, the strategies being used to integrate the activities, and the language learning topics of the lesson plans. In the second stage, each sentence and paragraph of the lesson plans and the first author’s reflective notes while teaching were analysed by using the 4Cs framework, Meyer’s CLIL Pyramid [11], and the rubric [App. 1]. The reading analysis identified the dominant framework and the dimension of the rubric that each lesson plan had developed. At the last stage, the authors revisited each lesson plan, the coded lesson plans, the first author’s journal, and made connections among the data components interpret and describe emerging and consistent patterns.

3. Results and discussion
The analysis of the lesson plan document resulted in two main outcomes. First, the preservice teachers’ knowledge and ideas to improve students’ thinking skills (Content & Cognition); second, the lesson’s activities to support collaborative work and opportunities (Communication and Culture).

3.1 Preservice teachers’ knowledge and ideas to improve students’ thinking skills (Content & Cognition)
Table 2 showed the data of the ideas and strategies integrated in the lesson plans. The 13 lesson plans produced showed a wide varieties of teaching strategies but offered modest varieties of topics and discussions.

| No | Names | Food Sustainability Issues Addressed |
|----|-------|--------------------------------------|
| 1  | Anna  | General ideas on FS vocabulary and Sustainability |
| 2  | Moses | Food Vocabulary e.g. biodiversity & soil fertility |
| 3  | Dian  | General ideas on Food Sustainability and Vocabulary |
| 4  | Deborah | General ideas on Food Sustainability and Vocabulary |
| 5  | Jaka  | Food vocabulary: Food packaging, soil fertility, whole wheat, etc. |
| 6  | Shania | Food vocabulary: food waste, diets, dessert foods |
| 7  | Nisa  | FS vocabulary: Urban farming, eco-preservation and governance, etc. |
| 8  | Nova  | FS vocabulary: Agriculture, (points to discuss on FS issues) |
| 9  | Chika | General vocabulary on FS |
| 10 | Tony  | FS vocabulary: Sustainability, aquaculture, conservation, distribution, etc. |
| 11 | Eva   | FS and forest: Energy, wastes, and environmental issues. |
| 12 | Bram  | General Food Sustainability Vocabulary |
| 13 | Diana | General Food Sustainability Vocabulary |

As the Table 2 suggested, in general, the lesson plans designed by the preservice teachers displayed incomplete understanding of food sustainability issues. Despite the amount of time given to do the lesson plan, most of the students did not explore extensive topics on food sustainability. Some students like Jaka, Nisa, Moses, and Tony indeed took the risks by discussing issues like food packaging, soil fertility, urban farming, eco-preservation, aquaculture, conservation, and many more. Unfortunately, most of them chose to bring in the general ideas and vocabulary of food sustainability like food names, exploration of food sustainability as a general concept, and limited choices of vocabulary to introduce.

Furthermore, the modes / resources that were used in the lesson plan did not offer much variety as well. Most of them involved articles, videos, and relied on their own explanations to introduce and
elaborate the concepts and the lexical items. One of the most important concepts about CLIL is that the lessons use authentic teaching materials like newspapers, tools, and real-life items that could be brought to class. Most of the lesson plans failed to mention bringing real life items to the class as part of the activities. With failures to provide extended topics or vocabulary for teaching on the lesson plans, it seemed apparent that the preservice teachers had insufficient knowledge thus hesitation to fully integrate the content with the language teaching.

In terms of cognition frame, unless for Jaka, Deborah, Eva, and Tony’s lesson plans, the other lesson plans did not seem to largely incorporate higher order thinking plans and implementation. On table 3, Jaka planned peer reading activities on food packaging and soil fertility and had students classify (understanding, C2), reflect together (analysing and evaluating, C4 & C5) and write a reflection paper together (Creating, C6). Quite similarly to Jaka, Eva planned to have a discussion session on a pro and con topics on food sustainability issues like food processing, food distribution, and home food preparation that would require students to understand (C2) and analyse (C4) the issues deeply if they wanted to take part. The last activity in Eva’s lesson plan involved students to create an argumentative writing activity (Analysing and Creating, C4 & C6).

The two samples of lesson plans, unfortunately, did not represent the majority of preservice teachers’ efforts in creating activities that would incorporate higher order thinking skills. It seemed that most of them felt quite safe to involve predictable activities like teacher’s presentation and easy YES / NO questions or repeating sentences and commenting on videos like Nova and Nisa’s lesson plans. These preservice teachers were expected early on to produce lesson plans for high school level students and were introduced to the revised taxonomy bloom concept and words.

3.2 The preservice teachers’ efforts to create collaborative work and opportunities (Communication and Culture)

Read aloud activity is a read together activity that is led by a teacher in the class. A read aloud activity could be an interactive activity if teachers hold interactive session where they ask open - intriguing questions about the books for students to respond. Although Anna did not particularly mention the read aloud stages that she could have planned to do in her class, the fact that she proposed an authentic photographic book to read in the class before watching a video on food sustainability, was a good planning statement. While reading, Anna had planned to explore students’ background knowledge before moving to the introduction of new vocabulary and video watching, which happened to be the highlight of her lesson plan’s activities.

| No | Names | Modes used in Lesson Plan | Strategies |
|----|-------|---------------------------|------------|
| 1  | Anna  | Video and book            | Read aloud |
| 2  | Moses | Pictures and articles     | Presentation & Discussion |
| 3  | Dian  | Articles                  | Discuss & writing in pairs |
| 4  | Deborah | Articles          | Reading & Reflective thinking |
| 5  | Jaka  | Pictures and realias / real objects | Classifying from articles, paired writing |
| 6  | Shania | Videos and worksheets   | Reading, writing, and reflective thinking |
| 7  | Nisa  | (Teacher explanation)    | Repetitions and sentence production |
| 8  | Nova  | Pictures, videos         | Commenting on videos and discussion |
| 9  | Chika | Flash Cards              | Collaborative activities |
| 10 | Tony  | Tech and Internet        | Small group Writing activity |
| 11 | Eva   | Videos and graph paper   | Discussion, pro and cons, writing |
| 12 | Bram  | Video and class games    | Discuss, speaking |
| 13 | Diana | Articles                 | Reading and individual writing |

Bram, who was always fascinated with gamification, offered interactive video watching activities where he planned to involve students in guessing the vocabulary from the snapshots of videos that he
would play in the class. In the lesson, Bram stated that he would use the activity as both opening and closing activities. In accordance with Bram, Chika used a pack of self-made flash cards for students to play food guessing games. Even though the vocabulary used in the cards was pretty basic, the explanation on the flash card activity gave clear messages on how fun and how collaborative she wanted the class to be. The least collaborative lesson plan was perhaps the lesson plan designed by Diana who offered class read out loud activity and individual writing as her final assessment. In general, the interesting findings from this part of analysis was the presence of rich varieties of refreshing ideas like discussion, variety of groupings, and other productive activities that would potentially enhance students’ collaborative and communicative possibilities.

4. Conclusion

Interdisciplinary research and teaching concept like CLIL (Content and Language Integrated Learning) benefits students in two folds: opportunities to see the world problems from different perspective and real context-based language learning. Since the emphasis is upon the teaching of the content, it is important that preservice English teachers get proper training and education on two mandatory foci, firstly, in mastering the content and secondly in integrating the content with the language components.

Despite given one week to explore web-based sources design their lesson plans, this study discovered that the preservice teachers seemed to struggle in composing CLIL lesson plan. The lesson plans portrayed their incomplete understanding of food sustainability issues, and their struggles to integrate them with English teaching. The lesson plans revealed a number of similar references and resources that students used as main teaching resources. There were also disparities in the development of activities that were expected to enhance students’ higher order thinking skills.

Most of the lesson plans leaned toward emphasizing the language component instead of the content components. Thanks to previous trainings on communicative language teaching (CLT), the preservice teachers showed confidence in integrating activities that would incorporate collaboration and intergroup discussion. All in all, more vigorous work needs to be done on the curriculum to get preservice teachers ready to teach a CLIL class. A CLIL workshop and lesson planning should go beyond a three-week workshop (of only 600 minute-meetings). The future workshop and training should be developed more systematically where preservice teachers have the opportunity to explore the issues, discuss the ideas, and exercise their CLIL lessons more closely with their peers and facilitators.

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