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## **ESP LESSON ON “FOOD ADDITIVES” WITH ART ELEMENTS**

**Key words:** *ESP for chemists, art integration, food additives, language learners.*

**Introduction.** This abstract is an example of practical art integration in ESP for future chemists. The topic of the lesson is *Food Additives*. All materials are designed to improve the communication skills and specialist language knowledge of chemists, with an emphasis on speaking in pairs or in small groups.

**Methodology.** Research about art integration in science and education was analysed. Current syllabi for future chemists used for ESP lessons at Igor Sikorsky KPI were studied. Lesson planning and material developments were used as well.

**Results and discussion.** To begin, students are asked to collect labels from their favourite packaged food they put in their shopping cart regularly and bring them to the class. Teachers also bring printed labels in English. Many examples may be found on the Internet. In pairs, students scan the labels and list the additives found. Walking around the class, students compare their lists with the lists of other pairs and find the five top additives which are then written with their symbols on the blackboard. Next, students are given time to Google more information about these five additives and share their findings with the group.

Then students stick labels and prepare a mind map on the functions of each additive, its effect on health. The label with the additive will be the center of the mind map. Together students present their maps. It is a good idea to discuss whether we should avoid additives or not and whether there are regulations on food additives in our country and abroad. To get more information on food additives students are encouraged to read articles on the worst food additives or food additives to avoid.

The lesson proceeds with acquiring new vocabulary such as *processed food, flavor, preservatives, shelf life, food dyes, elasticizer, gelling and thickening agent, antimicrobial preservatives, antioxidants, carcinogens, and sweeteners*. Students are then given a task to write a story about their favorite food using as many words from the list as possible. Students should post their stories on the walls. Walking around the class, they read each one and draw a heart below the story they like most of all. Only one heart can be drawn. The story with the most number of hearts wins.

Next, to learn E numbers, future chemists are asked to stick stickers with shorthand additives' names on a disposable paper plate. In pairs, students discuss in which products these additives can be found, how often they eat these products, and whether they have a habit of reading labels. In addition they should discuss how to eat healthier. All together students sing *Insecticons Food Additive* song.

Next, interesting statements about food additives are read aloud. For example, *I want to work as a flavourist*. Students are asked to move to different corners of the room according to their attitudes. Each of four corners represents one of the points of

Likert scale (2019); students who are undecided about a particular statement should stand in the center of the room.

To finish, students choose one product label among those brought at the beginning of the lesson and get different roles to play. Their homework is to prepare a speech about the chosen additive according to the role. Students get these roles:

- You are a buyer. Tell why you like this product. Listen to different speeches and make your decision concerning whether you would buy this product or not. Justify your opinion.
- You are a flavor chemist who tells about the additive in this product and its functions.
- You are a dietician who recommends that people limit processed food because of additives and added sugar; tell about natural alternatives.
- You are a doctor who discusses the influence of additives on health and recommends choosing natural colors, flavours and preservatives.
- You are a manufacturer of the product who wants to advertise the food and sell as much of the food as possible; tell about the benefits of the additives.
- You are a local activist who wants producers to be honest with people and make label changes in case of any violations; describe the case of a violation.
- You are a scientist who presents the results of the scientific tests and research about this product.
- You are a buyer's friend who can give him/her advice about whether to buy the product or not and why.

The art elements in English for Specific Purposes (ESP) help teachers make their course content more memorable and meaningful. Moreover, recent research by Hardiman, JohnBull, Carran, and Shelton (2019) and Hardiman, Rinne, and Yarmolinskaya (2014) confirms that art-integrated instruction leads to better retention of science content by students with limited language. These results should be beneficially used by ESP teachers.

Art integration is an opportunity to foster creativity in ESP. As Oliver, Hall and others noted (2019) this way it is possible to resist technical, mechanical high stress, high-stakes fast-paced education models. Integrating art into ESP lessons with future chemists leads to deeper insight into content and as a result to stronger learning outcomes.

We agree with Thurley (2016) that the humanities in the sciences help emphasize analytical thinking, in-depth research and the importance of effective communication. Art element in ESP help students get involved in scientific discourse and research. Moreover, a combination of art and science provides students and educators with opportunities to explore personally relevant connections between materials, design, society, and the environment (Sochacka, Guyotte, Walther, 2019).

Taking a creative approach employing art elements fosters multimedia usage. This can be beneficially used in the condition of temporary university closure for online learning caused by the coronavirus outbreak in 2020. For example, during the lesson on "Food Additives" different roles can be assigned to students within Google classroom where they comment on the situation corresponding to the role requirements.

In addition, they can post their creative stories, photos of collages done at home, as well as record and post podcasts.

The current situation in the world and consideration of future chemists' needs poses a question of development of more art-infused study materials for such topics as health care, antibiotics, vaccines, different kinds of bacteria and viruses, processes of water treatment, safety of consuming some kinds of food, personal hygiene, climate change and others.

**Conclusions.** This ESP lesson on “Food additives” for future chemists contains different forms of art such as making collages with food labels, writing creative stories, singing a song, and role playing. These and many other forms of art should be used for ESP lessons of future chemists to develop specialist language skills, creativity, cooperation, critical thinking and other important skills of the 21<sup>st</sup> century.

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