Glory to Ukraine! Glory to the heroes!

COLLECTION OF RESEARCH PAPERS

of the 8th International Research and Practical Conference

CHEMICAL TECHNOLOGY: SCIENCE, ECONOMY AND PRODUCTION

ЗБІРНИК НАУКОВИХ ПРАЦЬ

VIII Міжнародної науково-практичної конференції

ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО

Shostka, Ukraine 2024

Міністерство освіти і науки України
Сумський державний університет
Шосткинський інститут Сумського державного університету
Центральний науково-дослідний інститут
озброєння та військової техніки збройних сил України
Публічне акціонерне товариство «Фармак»
Управління освіти Шосткинської міської ради
Виконавчий комітет Шосткинської міської ради

COLLECTION OF RESEARCH PAPERS

of the 8th International Research and Practical Conference

CHEMICAL TECHNOLOGY: SCIENCE, ECONOMY AND PRODUCTION

ЗБІРНИК НАУКОВИХ ПРАЦЬ

VIII Міжнародної науково-практичної конференції
ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО

(м. Шостка, 27-29 листопада 2024 року)

Суми

Сумський Державний Університет

2024

УДК 66.01

Збірник наукових праць VIII Міжнародної науково-практичної конференції «Хімічна технологія: наука, економіка та виробництво», м. Шостка, 27 - 29 листопада 2024 року. – Суми : Сумський державний університет, 2024. – 242 с.
ISSN 2786-4898.

Збірник містить наукові праці учасників VIII Міжнародної науково-практичної конференції «Хімічна технологія: наука, економіка та виробництво», що складаються з узагальнених матеріалів науково-дослідних робіт науковців різних галузей виробництв та наукових закладів України.

У збірнику висвітлюються актуальні питання спеціальної хімічної технології і виробництва боєприпасів, утилізації відходів виробництв різних галузей, енергозбереження, моделювання технологічних процесів, соціально-економічні аспекти виробництва та природокористування в умовах війни.

Збірник корисний робітникам хімічної промисловості, науковим співробітникам, аспірантам і студентам спеціальностей хіміко-технологічного та соціально-економічного профілів, фахівцям інформаційних технологій виробництва.

Наукові праці учасників конференції подаються в авторській редакції.

VIII Міжнародна науково-практична конференція
«ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО»
27-29 листопада 2024 року, м. Шостка

INTEGRATING ENVIRONMENTAL EDUCATION INTO A GENRE-BASED ENGLISH FOREIGN LANGUAGE WRITING CLASS

Y.V. Pomogaibo
Separate Structural Subdivision
"Shostka Vocational College Named after Ivan Kozhedub
of Sumy State University"
metod.vid@htcolledge.sumdu.edu.ua

Many fields of study are increasingly promoting awareness of the need to protect the ecosystem by thinking and acting "green," the concept of environmental education actually has a long history.

Considering the ambitious objectives of environmental education, increasing students' awareness of environmental problems and possible solutions is a challenging task. This article suggests practical activities for integrating environmental education into English language teaching (ELT) based on the experiences of different authors, who added environmentally related elements to an English as a foreign language (EFL) writing class. Since the general EFL teaching and learning process in our context applies the genre-based approach (GBA), this article also discusses how environmental issues can be incorporated using that approach, especially for teaching the productive skills.

With the number of challenges facing our planet, it is critical to raise students' environmental awareness and teach them environmental values. Connecting environmental concerns with language instruction (1) increases students' interest in significant current issues, (2) educates them on how to make the planet more healthy, and (3) offers real contexts for language learning and authentic interaction.

Because environmental awareness has increased all over the world, there is a wider availability of appropriate materials, and environmentally themed topics are found in numerous resources.

The genre-based approach and the teaching of writing

The GBA gained popularity in the 1980s, when it was realized that students would benefit from studying various text types. The approach originated in response to dissatisfaction with the practices of previous writing approaches that focused on narrative genres and mostly overlooked other types of writing. The GBA offers students explicit and systematic explanations of the ways language functions in social contexts and helps them to consider the forces outside the individual that help guide purposes, establish relationships, and ultimately shape writing. In other words, the GBA reveals the strong association between aspects of language forms and functions, which are essential in teaching writing. Additionally, it enables students to develop flexible thinking and observe the way ideas are organized.

The GBA to teaching writing thus equips students with explicit knowledge of how genres of texts are organized and why they are created that way. Students learn that genres have special communicative functions, and the subject matter and writing style, as well as the introduction, body, and conclusion of a text, are guided by a particular genre. In our context, genres are taught in a four-stage procedure with different learning objectives and activities for each stage. This allows students to gradually achieve independent control of a particular text type. The step-by- step procedural activities of teaching writing using the GBA are described in detail below.

VIII Міжнародна науково-практична конференція
«ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО»
27-29 листопада 2024 року, м. Шостка

Stage 1: Building knowledge of the field

The purpose of this stage is to activate students' schema, or background knowledge, which is essential for them to understand the topic. To reinforce schema activation, teachers encourage idea sharing about the topic so that later students will be ready to write about it. To orient students to general text features, vocabulary, and social and situational contexts, teachers ask leading questions or provide students with information by using aids such as pictures, movie excerpts, slides, or webpages. Some vocabulary related to the topic is also introduced and discussed in this stage.

Stage 2: Modeling of the text

This stage is intended for students to explore a genre through the presentation of a model text, which can be created or found in various places, such as brochures, fliers, newspapers, magazines, and webpages. Teachers help students investigate the text type and its features, covering the social function, the generic structure, and linguistic features. Teachers also ask students about the audience of the model text. Awareness of the text style and format during the modeling stage provides students with input about the organization of the type of text that they are going to write – and what to expect when they encounter other examples of the same text type later on. Student–student and teacher–student conferences can be conducted to identify the generic structure and grammatical features found in the text. Understanding the overall structure of the text goes a long way toward helping students construct their own texts later on.

Stage 3: Joint construction of the text

This stage involves students constructing an example of the genre in pairs or small groups. The philosophy behind this pedagogical activity is based on Vygotsky's (1978) concept of zone of proximal development, which is the stage of learning where students can acquire new knowledge only with assistance and social interaction with the teacher. Therefore, teachers scaffold or provide help for students, particularly at the beginning phase of learning a genre where teachers need to intervene to help students map out the model texts. When students begin to contribute to the construction of the text more independently, the teachers gradually reduce the help they offer.

Stage 4: Independent construction of a text

In this stage, students draft and present an entire text. Working independently on the construction of a text explicitly encourages creative exploitation of the genre and its possibilities.

The following sections illustrate how to apply these four stages of the GBA to teach environmental themes in the descriptive, narrative, and procedure genres.

Teaching descriptive writing

In descriptive text, students should be able to describe something or someone through the exploitation of their senses, and they need to become quite familiar with the object that they are going to describe. To help them, the teacher explores objects within the school context, home context, or the surrounding area, and students describe an object and relate it to environmental concerns.

Stage 1: Building knowledge

To begin, the teacher brings a picture of a tree in the school yard or has the students look out the window at one. The teacher asks general questions about the tree, such as what the name of the tree is, whether the students are familiar with that kind of tree, and where it is usually found. Further questions about details build on the students' knowledge, such as the approximate height and diameter of the tree, parts of the tree, the color of the tree, and the fruit (if any). In terms of raising students' environmental awareness, it is essential

VIII Міжнародна науково-практична конференція
«ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО»
27-29 листопада 2024 року, м. Шостка

to discuss the tree's benefits for humans and animals, and to ask thought-provoking questions such as how the immediate environment would be affected if the tree were cut down. In this question-and-answer session, the teacher writes on the board related vocabulary that will be useful when students describe the tree later on. The teacher can also use semantic webs or graphic organizers to help students classify the vocabulary.

Stage 2: Modeling

In the modeling stage, the teacher shows a model text to the students and asks them to read it individually before working in groups to analyze the text in terms of purpose, generic structure, and linguistic features. Students are given a chart to fill out to help them keep track of these features. It is ideal if the model text relates to the description of the tree or other object presented earlier in order for students to see the vocabulary in use, which means that teachers might need to create the model text themselves.

Stage 3: Joint construction

After the modeling stage, the teacher presents a picture of another tree in a different location. Then students work in pairs and brainstorm ideas about this new tree, perhaps by using semantic webs or graphic organizers. The teacher supports students by giving them a guided writing activity sheet on which they write down the generic structure of the text – that is, the identification and the description sections. To add a sense of environmental awareness, the teacher also provides space for students to fill in their feelings about the tree, describe ways they think the tree is useful, or suggest what should be done to keep it standing strong. Next, students use the writing activity sheet to draft their composition. The length of the draft will depend on students' ability. Drafts are reviewed by teachers or by peers; reviewers particularly focus on checking to see whether the drafts include (1) features of the description genre and (2) details about the importance of the tree in the environment.

Stage 4: Independent construction

The independent construction stage is the most interesting part of teaching description and relating it to environmental education. Either as groups or individuals, students go outside and observe their school environment. This can be done during class and takes 10 minutes or more. Students receive a list of objects that they can select within their school environment – one of the trees in the school yard, flowers in pots, flowers in the school garden, fish in a pond, waste bins, and so on. Students write down important information, such as the name of the object or place to be described, reasons for choosing it, details they noticed, the relationship of the object to other things near it, and benefits to humans and animals. If they like, students can take pictures to help them describe the selected object. Later, back in the classroom, the writing process continues, as students brainstorm ideas and vocabulary, draft, review, and revise. In the end, teachers ask students to revise their composition in pairs and publish it in a class magazine or on their own social media site.

A similar activity, which can also take place in the independent construction stage, is an outside-school observation. Teachers assign students to observe their surrounding environment, such as their home or neighborhood. Students are equipped with the following lists:

• common and easily found things that they can describe, such as a gutter full of rubbish, butterflies flying around a blooming flower, a full waste bin in the kitchen, a clean yard, a dirty yard, a small river nearby, or a wilted plant or flower;

• questions about the object or place they are going to describe (e.g., What is the name of the object? Why did you choose the object? What does the object look/smell/feel like? How does the object benefit or harm humans, animals, or plants?)

VIII Міжнародна науково-практична конференція
«ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО»
27-29 листопада 2024 року, м. Шостка

Whether students do their observing at the school or somewhere else, they will develop awareness of problems and recognize the need to take an active role in protecting the environment. Students are encouraged to write and share their descriptions electronically, on posters, or by reading to the class or in groups, and the class can hold a follow-up discussion in which students consider questions such as:

• What did you learn from this activity?

• What did you notice that you never noticed before?

• What things did you observe that you like and would like to see preserved or strengthened?

• What things did you observe that you do not like, or that are harmful, and would like to see reduced or eliminated?

• What can you do, or what can we do as a class, a school, and a community, to help?

Teaching narrative writing

Before students are asked to write a narrative text, they should be immersed with examples. The texts chosen should not be difficult in terms of grammar and vocabulary. For example, children's storybooks that are rich with environmental themes are appropriate for teaching narrative writing.

Stage 1: Building knowledge

To take advantage of background knowledge, the teacher provides a text or plays a short video or excerpt from a movie (not more than a few minutes). The book or movie should relate to an environmental topic. Some videos found on the Internet A question-and-answer session then follows, with students exchanging opinions about the setting, characters, conflicts, moral issues, and environmental themes.

Stage 2: Modeling

If students have watched a video, it is best to use the same story to model the narrative text. Teachers might even create their own story based on the movie. This approach is beneficial in certain ways. First, the language used in the model text can be adjusted to the students' level; second, teachers can use their language and imagination in creating the story. Teachers guide students in investigating the generic structure of the text – the orientation, complication(s) or conflict, sequence of events, and resolution –as well as language features of the text, such as vocabulary, the use of verb tenses, phrases used to connect events and show relationships, and the dialogue and behavior that develop actions and characters. Teachers work with students to identify these characteristics, and students create and display charts or lists that show these features.

Stage 3: Joint construction

In the joint construction stage, the teacher and students work together to construct texts in the narrative genre through group writing with the help of a picture series or a short movie. Pairs or groups brainstorm environmental themes they would like to emphasize before they write their stories.

Stage 4: Independent construction

Finally, in the independent construction stage, students choose their own environmental theme and then write a story that illustrates that theme. Sample stories with environmental themes might be based on:

• a fish that lives in a dirty pond, told from the fish's point of view;

• a baby bird that has fallen from a tree because someone has cut down the tree;

• a boy who saves a floating kitten from a flooding sewer;

• a girl who feeds a hungry cat that she found in a dark alley.

VIII Міжнародна науково-практична конференція
«ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО»
27-29 листопада 2024 року, м. Шостка

There are many more appropriate scenarios that teachers can suggest; as an alternative, students can come up with their own themes. As the list suggests, it is fine to let students explore using different points of view (not necessarily their own) to imagine what it is like to be an animal or plant in a certain situation. Teachers should not be demanding in telling students how many paragraphs they should write. After students go through the process of writing – including reviewing and revising – they read their text in front of the class or put it on a wall in the classroom. Again, as with the descriptive texts, follow-up discussions focus on what students learned about the genre and what they noticed about the environment as the result of this activity.

Teaching procedure writing

A procedure is a clearly organized set of steps, the main purpose of which is to enable the reader or audience to follow instructions. For a reader to be able to replicate each step of the procedure, the writer needs to comprehend the entire set of steps clearly before writing. Better yet, the writer should experience the process itself before sharing it with the audience. Since experiencing is important for comprehension, teaching techniques for this type of text in the writing class include presentation and demonstration. With these techniques, students make predictions about the number of steps needed to complete the process, and they see that the steps are real and concrete. One way to incorporate environmental themes into the procedure-writing activity is to assign students to describe a process in which materials can be recycled in a useful way.

Stage 1: Building knowledge

Presentation and demonstration provide students with adequate background knowledge that can later trigger better comprehension. In the building-knowledge stage, teachers present products from recycled materials either in the classroom or on a screen. Examples of such products are food covers made from plastic bottles, tin flowers made from soft-drink cans, a stationery box made from a shoebox, and a money box made from soft-drink cans. Seeing these objects arouses students' curiosity. Teachers ask students what the objects are made of, where they can find the materials, and why the creators made the objects from those materials instead of buying new ones. Next, teachers show students how to make one of the products (or perhaps ask students if they know how to make one). This demonstration should not take too much time, so the product chosen should be a fairly simple one, such as bowling pins made from empty water bottles. If it is impossible to bring the real objects to class, the teacher can use a series of pictures, a wall chart, or a computer presentation.

Stage 2: Modeling

After the demonstration, it is ideal if the model text given to students and the product demonstration are based on the same process so that the students have a vivid connection between what is shown and what is written. The discussion of the model text can be done in pairs or in groups. The discussion should be about the generic structure of the procedure, such as the overall goal, the materials (what tools or items are needed to complete the process and how they are presented and described in the text), and the steps (the actions that must be taken and how they are explained). Teachers also help students investigate the language features that are typically used in the procedure genre, such as temporal conjunctions, action verbs, imperative sentences, and the present tense. During the classroom discussion of the model text, teachers refer to the demonstration presented earlier.

VIII Міжнародна науково-практична конференція
«ХІМІЧНА ТЕХНОЛОГІЯ: НАУКА, ЕКОНОМІКА ТА ВИРОБНИЦТВО»
27-29 листопада 2024 року, м. Шостка

Stage 3: Joint construction

During the joint construction stage, students list things that they see around them and generate ideas about different ways to use those things. Students then select the one best idea to develop into a composition. They construct the text together with peers, while the teacher moves around the class and checks the students' progress to support their learning.

Stage 4: Independent construction

In this stage, individuals write their own procedural composition. For example, the teacher assigns a writing project by asking students to look around their homes at unused things and to think of other uses for those items. Students then choose one idea and describe the procedure involved. Once the process of writing is finished, students share their writing with the class. A follow-up discussion again focuses on both the features of the procedure genre and the environmental lessons that the students have become aware of during the activity.

There are several ways to publish the students' compositions. Presenting the composition orally by demonstrating each step of the procedure with the help of the chosen media (e.g., pictures, a short video, actual objects) allows other students to ask questions and presenters to answer. Students' work can also be written on a big piece of paper and hung on the classroom wall, in which case groups of students take turns presenting their procedures to other groups. If the texts are posted on a class blog, other students can then react, pose questions, or comment on the clarity of the steps, the creativity of the idea, and the environmental impact of the procedure described.

Conclusion

The activities described in this article connect students to life beyond classes, making them aware of the challenges of real life, including environmental issues. Learning a language does not mean only learning its structure; it also means learning how to use it to communicate and deliver messages to other people. Thus, it is enriching to have students use the language while they explore life outside the classroom, learn from the world, improve their awareness of the environment, and participate in protecting it. The genre-based approach is a tool to help students master the language, to enable them to broaden their knowledge about the world, and to allow them to express their opinions about environmental problems and ways to solve them. Having an optimistic view for a better world enables us to have many reasons to keep trying to empower the younger generation to brighten the shades of green to come.

Bibliography

1. Ann I. Genre in the Classroom: Multiple Perspective / I. Ann. – New Jersex: Lawrence Erbaum Associates Publishers, 2002. – 358 p.

2. Hyland K. Teaching and Researching Writing / K. Hyland. – New York: Routledge, 2022. – 382 p.